



THE  
CHARLES H. BEST  
DIABETES CENTRE

“To keep our  
children, youth and  
adults living with  
type 1 diabetes  
healthy until a cure  
is found”

# New Patient Manual



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## Welcome from the Executive Director

The Charles H. Best Diabetes Centre is a one-of-a-kind community healthcare centre and a registered charity, which exclusively serves the needs of patients living with type 1 diabetes. Our founder, Marlene Grass, opened the doors in 1989 to the type 1 community because she saw a need for a centre where patients and families could receive full, complete and ongoing support. We provide expert education to patients of all ages and work closely with their families and caregivers. We are with our patients throughout all stages of their lives, providing care to children and adults, seeing teens through the transition to adulthood and working with adults through lifecycle changes such as pregnancy and into the senior years.

We offer intense clinical programming and services based on a truly integrated and collaborative care model. The interdisciplinary team of educators includes members of all health disciplines and we are proud of our staff whose work with you is guided by the values of the Best Centre: Respect, Integrity, Communication, Person-centredness and Quality. Please visit our website for more information; [www.charleshbest.com](http://www.charleshbest.com).

Type 1 diabetes is life altering; we understand that and we are here to help you or your child or your family live your best life. Please do not hesitate to ask questions, get involved and above all, take good care of yourself and each other.

Rest in health



**Lorrie Hagen, RD, MHSc, CHE**  
*Executive Director*



## Your child has been diagnosed with type 1 diabetes

A diagnosis of type 1 diabetes is not easy, and can be unsettling for the whole family. You may be overwhelmed and flooded with emotions and questions. Most people are unfamiliar with type 1 diabetes and it is common to feel shock, guilt, sadness and even anger. These feelings are normal and can come and go, and even change over time. Keep in mind that this difficult time will pass and you will regain your feeling of balance. The best way to move forward is to address your child's medical condition directly, as well as your feelings. The Charles H. Best Diabetes Centre (the Centre) has a team of professionals to help you with all aspects of your child's diabetes education; this includes Physicians, Registered Nurses, Registered Dietitians and Registered Social Workers.

The team provides support and education to help you work through this adjustment period. It is important to express your thoughts and feelings. It is critical for both you and your child's adjustment to talk openly. Children often take on parents' feelings, anxiety or stress, so it helps them when you role model healthy expressions of feelings. Children need to know that they did nothing wrong and they did not cause their diabetes. Many children need time

Many children need time to express their feelings, and recognize that they too will go through a grieving process

to express themselves and understand that they too will go through a grieving process.

Initially, many children appear to handle the diagnosis with ease and they may even try to comfort you. Expect this to change. Suddenly your child's daily routine has been altered

and they feel forced to make changes against their will. You may notice that they start to struggle or express anger, sadness or fear. This is normal and it is healthy to continue to talk about these feelings, long after the initial diagnosis. It is important to reassure your child (and yourself) that they will be healthy and remain healthy.



## Your pediatric team

Type 1 diabetes is best cared for by a team of health care professionals. The team members interact closely, but they each have their areas of focus. Each week there is approximately 1 child diagnosed with type 1 diabetes. Our goal is to keep diabetes well controlled so that it can be kept in the background of your lives. We aim to keep your child well-adjusted, happy, healthy and safe.

Type 1 diabetes is a specialized area, the team of educators at the Centre have many years of experience. They are experts in their field and maintain a comprehensive knowledge of type 1 diabetes and current treatment methods. They are specifically trained in type 1 diabetes assessment, management and education.

**A PAEDIATRICIAN DIABETES DOCTOR** is a specialist in the medical care of diabetes in children and adolescents. You will meet with the doctor at diagnosis and every 3 months at the Centre for your child's diabetes clinic appointment.

**A DIABETES NURSE EDUCATOR'S** main role is to teach your child and family about diabetes and how to care for it now, and in the future. The Nurse Educator will continue to meet with you frequently after the initial diagnosis. The Nurse will help you understand your child's diabetes and how to manage the everyday issues related to living with diabetes such as: blood sugar monitoring, taking insulin, and communicating with your school or daycare.

**A DIABETES EDUCATOR DIETITIAN** focuses on food and nutrition. The Dietitian will meet with you at diagnosis and regularly throughout the year. The Dietitian will provide education about food choices, carbohydrate counting and meal planning.

The Registered Nurses and Registered Dietitians are educated in all aspects of diabetes management and can answer your diabetes questions.

**A DIABETES SOCIAL WORKER/COUNSELLOR** provides therapeutic support in coping and managing type 1 diabetes, as well as coping with other aspects of life. Learning healthy communication and coping skills are essential components of diabetes management. It is recommended that you meet with the Social Worker/Counsellor within the first month of diagnosis, and as needed throughout the years. The goal is to support your child in returning to, and continuing to, participate in all their normal childhood activities whether it is pizza day at school, birthday parties or elite sports. The Social Worker/Counsellor will provide support to you, your child and family, and can also link you with community resources and services as needed.



## What to expect in the first week of diagnosis

In the first 24 to 48 hours everyone in the family is often in shock and exhausted. Some children are hospitalized at diagnosis to receive medical attention and IV (intravenous) fluids. Most children are only in hospital for 24-48 hours. During this time in hospital your child will be assessed, insulin will be started, and you will learn some of the basics of diabetes care.

If your child does not require hospitalization, your child will be seen at the Centre every day for several days, and then 1- 2 times per week over the next few weeks and months.

The Nurse will assist with the first few insulin injections until you have learned this skill. You will meet with the Dietitian to discuss your child's nutrition. You will spend a number of hours at the Centre but will go home at night which will allow you to get back into a regular daily routine. You will be in contact with the Nurse or Dietitian by pager daily for insulin dose adjustments, and to answer any questions you may have.

You will call the EMERGENCY PAGER NUMBER once a day, usually before each meal, for insulin doses. Before calling, check your child's blood sugar and have their breakfast and lunch blood sugars available. We will assist with insulin dose adjustments for approximately 2-4 weeks, and then we will transition to communication by email.

Ask your educator for the pager number and email instructions.

Children with diabetes generally start to feel better within a few days of starting insulin. It is important that your child remain in your care until those around them (extended family/friends/school/daycare) are trained in type 1 diabetes management.

The initial days of education are a very busy and important time for parents. It normally takes 20-25 hours to provide the necessary initial diabetes education. Parents need to be available as much as possible to concentrate on education and be with their child. Many families take the first week off to receive initial diabetes education. Please arrange to take time off work and school. We can provide a letter to your employer, if needed.

The aim of diabetes education is to give your child and family the knowledge and skills to be self-reliant in the care of diabetes. The diabetes team will also help you learn to cope and come to terms with the diagnosis of type 1 diabetes. Diabetes requires frequent adjustments in treatment (insulin doses) for various situations as well as with growth and development. The diabetes team continues to help you at follow-up visits, by telephone and email. By the end of the first week, families start to feel more confident in caring for their child with diabetes.



## Establishing a routine

Consistency and routine are essential for children with diabetes. Use this guide to help you with the timing of blood sugar testing, administering insulin and meals. Clear expectations are crucial to help you and your child be successful in diabetes management.



## An overview of your day. Timing is important

- : **Breakfast:** Good Morning  
Check blood sugar before breakfast, carb count the meal  
Give insulin  
Eat breakfast
- : **Morning snack,** carb count the snack  
There is no need to test blood sugars before morning snack
- : **Lunch:** Check blood sugar before lunch, carb count the meal  
Give insulin  
Eat lunch
- : **Afternoon snack,** carb count the snack. There is no need to test blood sugars before afternoon snack
- : **Dinner:** Check blood sugars before dinner, carb count the meal & call pager  
Give Insulin  
Eat Dinner
- : **Bedtime snack:** check blood sugar before bedtime snack, carb count the snack  
Eat snack

- Test blood sugars before breakfast, lunch, dinner and bedtime snack.
- You do not need to test blood sugars before morning and afternoon snacks.
- We may ask you to do a blood sugar test 2-3 hours after meals or at 3am if needed to evaluate insulin doses.
- Give insulin before eating. Infants and toddlers can take insulin after eating if food intake is unpredictable and erratic.

If your child stalls or tries to delay a blood sugar check or insulin injection – make the choice for them.

**For example:** “Yes, you can get a drink of water after we are done the blood sugar check or injection.” Make it clear that blood sugar checks and injections are not a choice. After the injection, give your child praise and/or a hug. Let them know that they did great.

## Responsibility of diabetes care

Diabetes is a disease that affects the whole family. It requires the active involvement of parents for many years. You can lessen the emotional burden by sharing in the day to day tasks of diabetes management which include: blood sugar testing, insulin injections, carb counting, communication with the school/daycare, time off for appointments as well as paging and emailing the Centre.

Most children above four years of age do their own blood sugar testing while parents supervise and read the blood sugar on the meter. Children should not be responsible or pressured to do their own injection until they feel confident and ready. Injections, regardless of how capable the child is, should always be directly supervised by a parent to prevent errors. Injections should always be done in a common area such as the kitchen or living room. Avoid doing injections in bedrooms or washrooms as this often leads to children hiding their diabetes, feelings of shame and challenges in diabetes management.

Adolescents can take on a significant amount of responsibility. Although many teens are capable of managing their diabetes, they still require guidance and support from parents. They should not be left to manage diabetes on their own.

After the initial learning phase, it is important to maintain the momentum with all aspects of diabetes management. Most children and adolescents are capable of managing much of the diabetes management on their own. However, as the novelty of these new routines wears off, the reality quickly sets in that this is a long term condition with ongoing daily demands. It is common to hit a rough patch several weeks to months after diagnosis. Parents should look out for disappearing routines such as decreased or no blood sugar testing, falsely recording blood sugars or omitting insulin. Please let us know if this happens so that we can work with you to find strategies for improvements.

## Returning to school

In preparation for your child's return back to school, we provide training to the school to help your child transition to a safe and positive learning environment. We normally provide education to the teachers, principal or vice principal and other relevant teachers, such as the gym teacher, resource teacher or educational assistant involved in your child's care. We will also provide education for daycare staff.

A class presentation is also encouraged as your child's classmates will be

Please notify your school about your child's diagnosis of type 1 diabetes as soon as possible and encourage them contact the Centre to arrange an appointment for us to visit with the school staff. **We recommend this is done within the first few days of diagnosis.**

A class presentation is also encouraged as your child's classmates will be curious about diabetes. This is always well received and gives the class an opportunity to ask questions, and for us to dispel many of the myths around type 1 diabetes. Also, their friends can be a great support in helping them stay safe. Your child may be reluctant to talk about their diabetes however most children find the class presentation beneficial and a huge relief as they do not have to do



# Responsibility of diabetes care

Establish a routine and location for diabetes care within the school.

The following items should be kept in the school, often both in the office and classroom. The supplies should be replenished on a regular basis.

## Diabetes school supplies checklist:

Blood sugar meter, "finger poker," lancets, and blood sugar test strips

Low Blood Sugar Emergency Kit:  
juice and snacks for treatment of low blood sugar  
Keep low blood sugar treatment in the classroom and other locations as needed (such as the office or gym).

Insulin and insulin pen:  
date insulin and replace it every 28 days once opened (many parents provide new insulin on the first of each month)

Sharps containers

Emergency contact phone numbers

it themselves.

## Returning to school

It is important to keep your child in school. Diabetes should not become a reason to stay home from school or get out of class. Occasionally, children may stay home due to illness, but generally the attendance and academic performance of children with diabetes is no different than for any child. Be a positive advocate for your child and help the school staff understand the role of diabetes in your child's life. Keep communication open with the teachers. Parents and school staff are allies to good care. This also applies to child care settings and others who care for children with diabetes.

Communication between the teacher and parents regarding class trips, gym class, timing of meals and snacks, frequency of low blood sugars, and special occasions/events in the classroom is a key part of diabetes management at school. Communication can be done through your child's school agenda, a specific communications log, texting or any other method that works for you and the teacher.

## Insulin injections at school

A parent is required to do the lunch time injection for the first few weeks. Once your child's insulin doses are stable, a nursing agency can assist with lunch time injections at school. Nursing agencies do not go into daycares. Nursing agencies cannot give injections if your child is on a school trip, therefore alternate plans must be made. Many parents feel more comfortable attending school trips with their child, you will require a police check if you plan to do this.

*For more information on diabetes in the school and the resources we provide to the school, refer to the [diabetes@school.ca](mailto:diabetes@school.ca) website.*



# Responsibility of diabetes care



Medic Alert



Universal Medical



Lauren's Hope



Sticky Jewelry

## Returning to sports

We encourage full participation in all sports as soon as your child is feeling strong enough and no longer has ketones. It may take 1-2 weeks for your child to regain their energy and muscle mass. It is important to communicate with your diabetes educators the activities your child participates in, at school, after school and weekends as adjustments to insulin doses and food (carbohydrates) may be necessary.

## Extended family/friends/coaches

Please share this resource with extended family as it provides basic education in type 1 diabetes management. If needed, we can provide education to family or caregivers that are directly involved in the day to day care of your child. Additionally, we recommend bringing caregivers to appointments with you.

## Split families

We encourage parents that are separated be educated together as this ensures consistency in education and communication. Unless there are legal reasons, we encourage all initial education, follow-up visits, and clinics be booked together.

## Medical alert identification

Medical alert identification is extremely important for all people with diabetes, especially children who may not be able to speak for themselves. Paramedics and emergency department staff are trained to look for medical alert identification in emergency situations and when a person is acting confused or is unconscious.

Your child's medical identification can be as unique as they are. There are many options available on line to choose from:

Medic Alert: [www.medicalert.ca](http://www.medicalert.ca)

Universal Medical: [canada.universalmedicalid.com](http://canada.universalmedicalid.com)

Emergency ID: <https://ca.emergencyid.com>

Lauren's Hope: [www.LaurensHope.com](http://www.LaurensHope.com)

Sticky Jewelry: [www.stickyj.com](http://www.stickyj.com)

# Education at the Centre

The following list includes the appointments needed to receive basic education at The Charles H. Best Diabetes Centre within the first month of diagnosis. Additional appointments will be scheduled monthly and then quarterly, or as needed.

## CHB APPOINTMENTS

## DATE | TIME | LOCATION | NAME

Initial Nursing Appt  
(2-3 hours)

Initial Dietitian Appt  
(2-3 hours)

Initial Diabetes Doctors Appt  
(1 hour)

Follow-up Nursing Appt  
(2 hours)

Follow-up Dietitian Appt  
(2 hours)

Meeting with School Staff  
(1 hour)

Follow-up Nursing Appt  
(1 hour)

Follow-up Dietitian Appt  
(1-2 hour)

Follow-up Diabetes Clinic Appt  
1 month (30 mins)

Social Work Appt  
(1 hour)

Diabetes Clinic Appt  
(3 months after diagnosis)

\*Please bring recorded blood sugars and insulin doses to all appointments.



# What is type 1 diabetes?

## AUTOIMMUNE DISORDER:

In type 1 diabetes, a person's body attacks the part of the body (beta cells) that makes insulin.

## The symptoms of type 1 diabetes are:

Increased thirst and urination

Change in appetite and increased hunger

Unusual weight loss

Feeling tired or nauseous

Blurred vision

Irritable or other behaviour changes

Heavy laboured breathing and fruity smelling breath

Type 1 diabetes (sometimes called Juvenile Diabetes, childhood diabetes, or Insulin Dependent Diabetes) is caused by a problem with the body's immune system. Specialized cells (called beta cells) in the pancreas make *insulin*, a hormone in the body that allows sugar (glucose) to enter the cell and provide energy. In type 1 diabetes, the beta cells in the pancreas are attacked and destroyed by your own immune system. The cell damage leads to a lack of insulin production. When insulin is no longer produced, too much sugar stays in the blood and symptoms of type 1 diabetes start to

You do not catch diabetes, it is not a bug like the flu bug. Diabetes is an autoimmune disorder that you develop. The cause of type 1 diabetes is complex and still not completely understood by researchers. It is **NOT** caused by eating too much or having too much sugar, candies or carbohydrates. We know that people inherit a tendency to get diabetes, but not all people who have this tendency will get type 1 diabetes. There is **nothing** you can do to prevent it and you and/or your child did not cause it. At this time, there is no cure for diabetes. The best we can do is try to keep blood sugar levels as close to normal as possible. This can be achieved by balancing insulin, food and physical activity.

**Type 1 diabetes is one of the most common chronic diseases in children.**

**1 in 300 children have type 1 diabetes.**

**More than 300,000 Canadians live with type 1 diabetes.**

<sup>1</sup>Public Health Agency of Canada, 2011. Diabetes in Canada: Facts and figures from a public health perspective; Chapter 5 – Diabetes in children and youth: [www.phac-aspc.gc.ca/cd-mc/publications/diabetes-diabete/facts-figures-faits-chiffres-2011/chap5-eng.php](http://www.phac-aspc.gc.ca/cd-mc/publications/diabetes-diabete/facts-figures-faits-chiffres-2011/chap5-eng.php) (Accessed August 15, 2014).  
<sup>2</sup><https://www.jdrf.ca/>, accessed Feb 15, 2019.

It is common to get type 1 and type 2 diabetes confused. Type 2 diabetes is the most common type of diabetes and occurs more often in adults. People with type 2 diabetes usually produce some insulin, unlike people with type 1 who do not produce any insulin. Type 2 diabetes can usually be managed with healthy eating and exercise. Type 2 diabetes can also be managed with pills in combination with or without insulin. Type 1 diabetes must be managed with insulin.



# Diabetes management

The body uses glucose to make muscles move, the heart beat, lungs breath,

## How is diabetes treated?

Children with type 1 diabetes require insulin. Insulin is injected by syringe, pen, or pump. Insulin cannot be given by any other means such as a pill, patch or nasal spray. Children with type 1 diabetes generally need 4 injections of insulin every day.

## What is insulin?

Insulin is a hormone produced by the pancreas. Much of the food we eat becomes a type of sugar called glucose. Insulin carries the glucose from the blood to the rest of the body to be used as energy. The body uses glucose to make muscles move, the heart beat, lungs breath, and brain think. Without insulin our bodies cannot use glucose for energy. Essentially, we need insulin to survive.

## Types of insulin

**There are two different types of insulin your child needs; long acting insulin and rapid acting insulin.**

### Long acting insulin

Long acting insulin is also called basal insulin. Basal insulin balances the amount of glucose used by the cells in the body with that released by the liver. The liver releases glucose between meals and while you sleep so that the brain and nerves receive the constant supply of glucose they need to survive.

Long acting is given 1 time per day, and lasts between 16-24 hours, depending on the one your child is prescribed. Some examples of long acting insulin are: Levemir®, Lantus®, Basaglar®, Toujeo® and Tresiba®.

### Rapid acting insulin

Rapid acting insulin is also called bolus insulin. Rapid acting insulin is used to manage the rise in blood sugar that occurs with food. Rapid acting insulin is also used to correct high blood sugars.

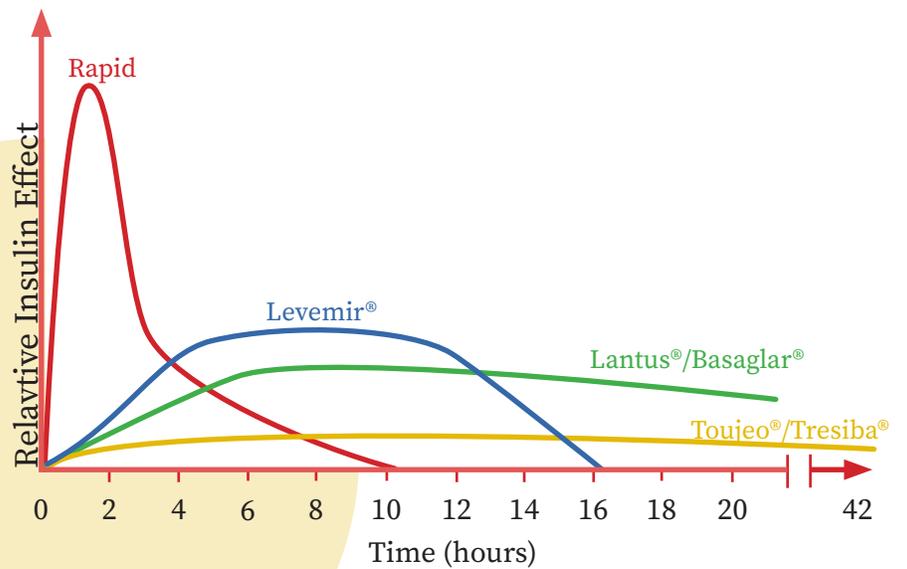
Rapid acting insulin is given 3 times per day: before meals, and lasts 3-4 hours. Some examples of rapid acting insulin are: Humalog®, Novorapid®, Apidra® and Fiasp®.



# Diabetes management

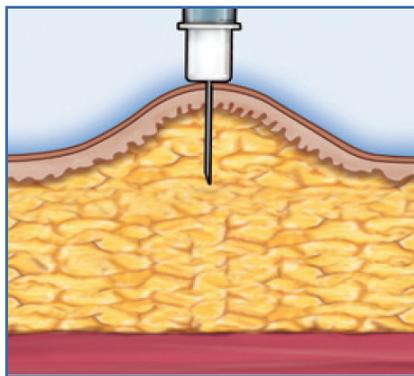
Type of Insulin	Onset	Peak	Duration
<b>Rapid-acting</b>			
Novorapid® Humalog® Apidra®	10-15 min	1-2 hr	3-5 hrs
Fiasp®	4 min	30 min-1.5 hrs	3-5 hrs
<b>Long-acting</b>			
Levemir®	1 hr	Flat	16-24 hrs
Lantus® Basaglar®	1.5 hr	Flat	24 hr
Toujeo®	Not applicable	Flat	up to 30 hrs
Tresiba®	Not applicable	Flat	up to 42 hrs

## Activity Profiles of Different Types of Insulin



## How to give insulin

Insulin must be injected under the skin. You can use a syringe or insulin pen. Most parents and children prefer insulin pens. Injecting insulin is not difficult. It's easy to learn and more comfortable than you would think. Your approach greatly affects how quickly your child adjusts. If you are anxious and frightened about giving your child a needle they will be anxious as well.



*Insulin must be injected into the subcutaneous fat, which is the layer of fat just below the skin.*

## Insulin pens

There are many brands and models of insulin pens, however insulin pens can be divided into two basic types:

**Disposable pens** which come prefilled with insulin. The pen is thrown away.

**Reusable pens** where you replace the insulin cartridge and reuse the insulin pen.

Each insulin brand has its own pen device. Use the correct pen for your brand of insulin in order to get the correct dosing. Pens from different manufacturers may operate slightly differently therefore it is helpful to read the operating instructions for your pen. Some information you could look for is:

- How to dial the insulin dose
- What to do if you accidentally dial too much insulin
- How will you know if you have enough insulin remaining in the cartridge
- How to load a cartridge in your pen (for reusable pens)

Never carry a pen with a needle attached as this can affect the accuracy of your insulin dose. Keep pens and needles separate until you are ready to inject. After injecting, remove the needle immediately.

## Where do you give insulin?

Insulin must be injected into the subcutaneous fat, which is the layer of fat just below the skin. This is where insulin absorption is most predictable and consistent. Also, there are not as many nerves in these areas which mean it will be less painful.

### Give insulin in the:

**Abdomen:** stay 2 inches (5cm) away from the belly button

**Upper Buttocks or hips:** not the part you sit on

**Arm:** back of the upper arm

**Thigh:** top or outer side of the thighs, not the inner thighs

Your body absorbs insulin differently depending on where you inject. Insulin is absorbed fastest in the abdomen, less quickly in the upper arms and thighs, and slowest in the buttocks/hips. Use this difference to plan where to inject insulin. For example, inject insulin into the abdomen before meals to take advantage of the faster absorption rate. Inject the long acting into the buttocks to take advantage of the slower absorption rate.

- Do not inject close to moles or scars, the tissue there is tougher so insulin absorption will not be as consistent
- Do not inject in an area that will be exercised soon. Exercising increases blood flow, which causes insulin to be absorbed faster than you need. For example, do not inject in the thigh before a soccer game

## How to give insulin

### MAKE SURE YOU USE DIFFERENT AREAS

Give insulin in a new spot every time. If insulin injections are given in the same spots too often, lumps can form. This is called lipohypertrophy. Insulin is poorly and inconsistently absorbed in these areas which can affect blood sugars.

### How can I prevent puffiness and lumps (lipohypertrophy)?

- Give insulin in a new spot every time. Rotate *between* injection sites.
- Rotate *within* injection sites: right to left and front to back. Space insulin injections about 1 finger apart each time.
- Inspect and feel your child's injection sites on a regular basis. Your Doctor or Diabetes educators (Nurse or Dietitian) will check as well.

Be careful when asking your child where they would like to do an injection as children often have a favourite spot. Use at least 2, but preferably 3, areas on the body for injecting insulin. For example: buttocks, abdomen and thigh.

If your child is anxious about trying new sites, consider using a sticker chart when a new site is used and offering a bravery award after a certain number of stickers are earned. Try putting an ice pack or cold spoon on the site to cool it. Most importantly, do not let your child "call the shots" on where insulin is to be given!

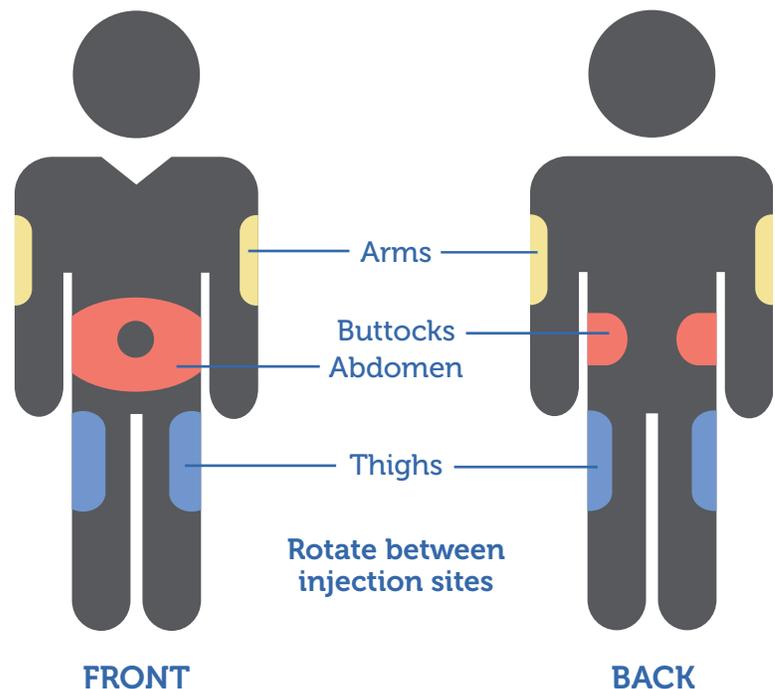
Adapted from: <http://www.fit4diabetes.com/canada-english/fit-technique-plus/>

### WHERE YOU INJECT INSULIN MATTERS

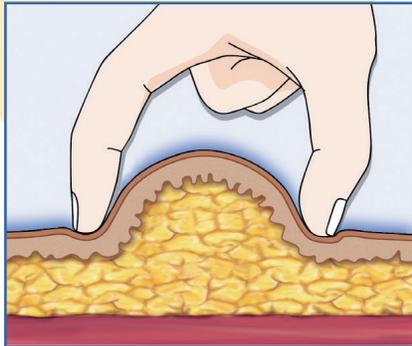
The preferred areas to inject are:

- Abdomen
- Thighs
- Buttocks
- Arms

Rotate between and within injection sites and should be spaced at least 1 to 2 cm from each other



## How to give insulin



*There is a correct and incorrect way to perform a skin lift. Delicately lift the skin and tissue between your thumb and index finger, leaving the muscle behind.*

### Needle size

Use 4mm needles to inject insulin into the subcutaneous fat. There is a risk of going too deep with longer needles. Injecting into muscle can speed up the action of insulin and potentially result in a low blood sugar.

#### Do you need to pinch or lift the skin?

Lift the skin to ensure that you do not inject into muscle for:

- Children 2-6 years of age
- Children with a slim build who are greater than 6 years of age up to teenagers

There is no need to pinch the skin for children greater than 6 years of age with a normal body weight.

As children begin to regain weight after diagnosis, you may not need to pinch any longer.

### Bleeding at the injection site

It is normal for a small amount of blood to appear when you inject insulin. The bleeding is usually caused when the needle punctures a tiny blood vessel. Put pressure on the injection site with your finger to stop the bleeding, this will also prevent bruising. If a bruise does appear, do not use that injection site again until the bruise is gone. Do not rub the spot.

If you often bleed when you inject insulin, please talk to an educator as you may be injecting incorrectly.

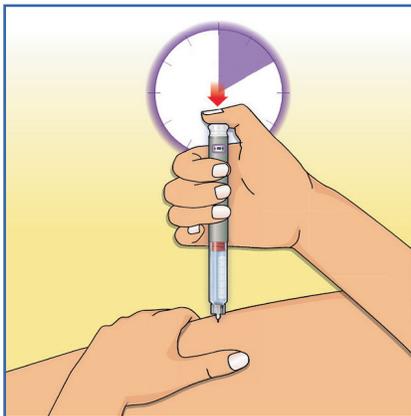
### Comfortable injection technique

**Most insulin injections do not hurt. However, if your child frequently experiences pain, try the following:**

- Inject insulin when it's at room temperature. Cold insulin hurts and does not work consistently.
- Keep the muscles in the injection area relaxed during injections. Ask your child to exhale or blow bubbles.
- Never use your needles more than once. Reusing a needle can bend or dull the tip, which will increase pain.

# How to give insulin

**COUNT SLOWLY  
10 SECONDS**

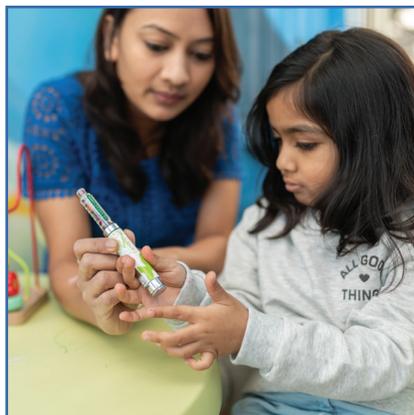


## How to give an insulin injection

The steps below explain how to give insulin:

- 1** Wash your hands. Inject into a clean site with clean hands. An alcohol swab is not required.
- 2** Choose an injection site. Remember to choose different sites each time.
- 3** Attach a pen needle to the insulin pen, and remove both the outer and inner caps.
- 4** Prime the pen. Dial 2 units and depress the plunger by holding the pen needle. If drops come out, your needle is primed. If not, repeat the step until drops come out. Prime the pen before every injection.
- 5** Dial the dose.
- 6** Hold the pen straight up and down. Push the needle into the skin.
- 7** Push down the top of the insulin pen with your thumb. Make sure to push down completely so that all the insulin has been given.
- 8** Count to 10 slowly.
- 9** Pull out the needle.
- 10** Remove the pen needle and put the used needle in a sharps box. Replace the pen cap.

## How to give insulin



*Let your child help prepare the injection. For example: screwing on the pen needle, and priming the insulin pen.*

### How can you help with your child's daily injection routine?

There are a number of creative things you can do to help with your child's daily injection routine.

- Approach your child in a matter-of-fact manner, stating that it is time for "insulin". Do not use the word "needle".
- Offer a simple explanation as to why they need insulin. For example: to help you grow and be strong.
- Tell your child that sometimes insulin hurts and it is okay for them to cry, but their job is to stay still.
- Avoid negotiating and bribing, instead deliver the injection quickly.
- Restrain your child if necessary.
- Give your child a hug and kiss after the injection is over

#### Tips for toddlers, preschoolers and early school-aged children:

- Let your child help prepare the injection. For example: screwing on the pen needle, and priming the insulin pen.
- Pretend that one of their stuffed animals or dolls has diabetes and let them give it an injection. Do not attach a pen needle to the pen to prevent accidental poking.
- Use a sticker chart to encourage your child to hold still for injections.
- Try to keep your child distracted while giving the injection. For example: watching T.V., playing with your phone, wiggling toes, counting, blowing bubbles or finding objects in a picture.

Adapted from FIT Technique Plus- FIT for Kids: Pointers for Parents

## How to give insulin



Pharmacies will provide approved sharps containers and accept full containers free of charge through the Ontario Sharps Collection Program (OSCP).

## Disposal of sharps

More than a million syringes, needles, and lancets are used for diabetes care in Canada each year. If they are not disposed of properly, these items can injure other people.

### What are sharps?

Sharps are something that can puncture or cut the skin. Sharps include: pen tips, syringes and lancets (pricker/poker needle). Do not try to put the cap back on a syringe, pen tip or lancet, put it directly into a sharps container.

Always ensure that sharps are kept safely out of reach of small children.

### Where should sharps go?

All sharps must be put into an approved sharps container which is labeled with the universal or cytotoxic biohazard symbol. These containers are made of hard durable plastic and are designed so that it is very difficult to remove sharps once they are inserted. The appropriate disposal of sharps will help reduce the risk of accidental needle stick injuries.

Pharmacies will provide approved sharps containers and accept full containers free of charge through the Ontario Sharps Collection Program (OSCP). The pharmacy will dispose of the sharps in a safe manner.

Speak with your pharmacist about getting an approved container when you are filling your prescriptions.

### Away from home

Small travel sharps disposal containers are available to use when you are away from home. Ask your pharmacist about these. Additionally, some public facilities (such as restaurants, hotels, stores and airports) have designated sharps containers in their restrooms.

Sharps are never accepted in garbage or recycling. Also, do not flush sharps down the toilet.

Visit [www.medicationsreturn.ca](http://www.medicationsreturn.ca) for the list of enrolled pharmacies nearest you or e-mail the Health Products Stewardship Association (HPSA) at [info@medicationsreturn.ca](mailto:info@medicationsreturn.ca)

## Taking care of Insulin

**If you think your insulin has gone bad, do not take any chances: throw the vial/cartridge away immediately and open a new one.**

Insulin can become damaged and not work well if it is not stored properly. The temperature you store and use insulin is very important.

Insulin should be stored in the refrigerator until the expiry date. Check the expiry date on the box of insulin before you use it. Use the insulin before this date.

Insulin can remain at room temperature (15-25°C) for 28 days. Therefore, the insulin you are currently using can remain at room temperature. You do not have to put it back into the fridge after each injection. After 28 days, throw away the insulin, no matter what the expiration date is or how much is left. Always record the date that you start a new cartridge of insulin to help you keep track. Some people change cartridges on the first of each month to make it easier.

Make sure your insulin does not get too warm or too cold. Do not keep insulin in the car during very warm or cold months. When travelling, remember to keep insulin at room temperature, use a cooler with an ice pack or an insulated case such as a Frio Pack®.

### How will I know if my insulin has gone bad?

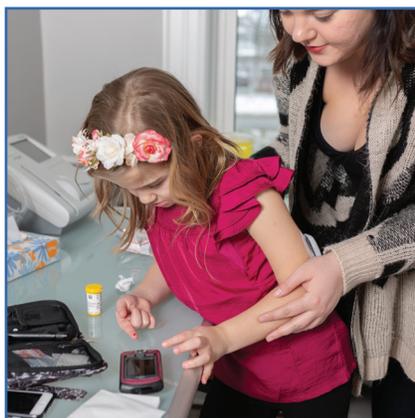
There are two ways to tell when insulin is no longer good: poor performance and unusual appearance. If your child's blood sugar stays high even though you are following your treatment plan, the insulin may have lost its effectiveness. Poor performance could be due to:

- The insulin has been open at room temperature for greater than 28 days
- The insulin may have gotten too hot or too cold.

**If your child's insulin has an unusual appearance, it's probably no longer effective. Here are some warning signs:**

- The insulin is cloudy when it is supposed to be clear.
- The insulin looks stringy.
- The insulin has changed in color.

## How can I monitor my child's diabetes day-to-day?



*The meters are small, simple to use and involve just a tiny drop of blood.*

People with diabetes must check their blood sugar many times every day in order to balance insulin, food and exercise.

Check blood sugars 4 times every day.

Check your child's blood sugars before meals to determine the correct amount of rapid acting insulin for the food your child will eat, and to correct their blood sugar (when needed).

Check your child's blood sugar before bedtime snack to help determine the long acting insulin dose.

It is helpful to occasionally check blood sugars before daytime snacks, increased activity, or overnight, especially if your child is out of their usual routine.

It is very important to check more often during illness as insulin needs and blood sugars can vary significantly. Your diabetes team will give you specific recommendations on when and how often to check blood sugars.

### How to check a blood sugar

Use a blood sugar meter to measure the amount of sugar in a drop of blood. Your diabetes team will recommend a meter and teach you how to use it. The meters are small, simple to use and involve just a tiny drop of blood.

- Clean your child's finger: have them wash and dry their hands. Food, dirt or water on hands may cause the blood sugar meter to give results that are not correct.
- Put a test strip into the meter.
- Poke your child's finger with the lancet device ("the poker"), and put blood into the opening on the strip (on the front or side of the strip, not on top). If you do not apply enough blood, you may get an error message and will need to start over with a new test strip.
- Wipe the rest of the blood off your child's finger with a tissue.

#### Additional information:

- Check the expiration date on the test strip before using it.
- Test strips are sensitive to changes in temperature and moisture. They should always be kept in their original container and used immediately after they are removed from the container. Check the manual for your meter for more information.

## What are blood sugar targets?

Diabetes Canada sets out target blood sugars for children and adults. Your child's educator will recommend the best target range for your child. If the blood sugars are in the target range most of the time, this means that your child's diabetes is well controlled.

### Blood sugar targets:

#### Before meals:

Blood sugar before meals  
4-8 mmol/L

#### After meals:

2 hours after meals  
5-10 mmol/L

<b>HIGH BLOOD SUGARS</b>	22.0	<b>Signs and symptoms:</b> • Thirsty • Tired • Blurry eyes • Need to pee a lot
	20.0	
	18.0	
	16.0	
	14.0	
	12.0	
	10.0	
<b>TARGET BLOOD SUGARS</b>  Before meals 4.0- 8.0	9.0	
	8.0	
	7.0	
	6.0	
<b>LOW BLOOD SUGARS</b>	5.0	<b>Signs and symptoms:</b> • Hungry, shaky • Sweaty, weak • Tired • Change in mood • Confused
	4.0	
	3.0	
	2.0	
	1.0	
	0.0	

## What is a low blood sugar?

A low blood sugar is less than 4 mmol/L. A low blood sugar must be treated right away. Most children with type 1 diabetes will have some low blood sugars.

## Hypoglycemia is another word for low blood sugars

### What causes a low blood sugar?

- Too much insulin
- Not enough food or a missed snack
- Unplanned physical activity
- Illness



### Signs and symptoms may include:

- Hunger
- Shaky
- Sweating
- Fatigue or tired
- Irritability or mood changes
- Blurred vision
- Difficulty concentrating or speaking
- Poor coordination or confusion
- Loss of consciousness and/or seizures



## What is a low blood sugar?

Treat a low blood sugar right away.

**Do not wait!**

## How do you treat a low blood sugar?

**1** Test your child's blood sugar.

If blood sugar is under 4mmol/L, treat according to your child's weight following the table below.

If blood sugar is under 3mmol/L, add an **EXTRA** 5g of fast-acting sugar.

Your child requires fast acting sugar that is easy to absorb and consume.

Fast-acting carbohydrate for treatment of mild-to-moderate hypoglycemia

Child's weight	Less than 15 kg (33 lbs)	15–30 kg (33–66 lbs)	Greater than 30 kg (66 lbs)
Amount of carbohydrate	5 g	10 g	15 g
Dex4 glucose tablets	1	2 or 3	4
Dex4 LiquiBlast (bottle)	1/3 bottle	2/3 bottle	1 bottle
Dex4 glucose gel	1/3 tube	2/3 tube	1 tube
Juice or regular pop	40 mL or 1/4 cup	85 mL or 1/3 cup	125 mL or 1/2 cup
Honey, corn syrup or maple syrup	1 teaspoon (5mL)	2 teaspoon (10mL)	1 tablespoon (15mL)
Skittles	5	10	15

### BE PREPARED

Always carry fast-acting sugar (such as juice, dex tabs or skittles) and food (such as granola bars or crackers) with you.

**2** Wait 15 minutes then re-test blood sugar.

If blood sugar is still less than 4mmol/L, repeat treatment and retest in 15 minutes.

Repeat these steps until blood sugar is above 4mmol/L.

**3** When the blood sugar is over 4mmol/L, eat a snack if the next meal or snack is more than 1 hour away.

It is important to wait until the blood sugar is above 4mmol/L before giving any food. Eating food too soon slows down how quickly the fast acting sugar gets into the blood and how quickly the blood sugar gets above 4mmol/L.

## What is Glucagon?

Glucagon is an injectable hormone used for the emergency treatment of a severe low blood sugar. Glucagon works by sending a signal to the liver to release its stored sugar.

Glucagon must be injected; it cannot be given by mouth.

Your Doctor will give you a prescription for glucagon. Glucagon is manufactured by Eli Lilly (Lilly Glucagon™) and by Novo Nordisk (GlucaGen® HypoKit).

### Your glucagon kit includes a:

- Small bottle with a 1 mg tablet of glucagon powder inside it
- Syringe pre-filled with 1mL of sterile water

The contents of the syringe and glucagon powder are inactive. You MUST mix the syringe with the glucagon powder before giving the injection. Do not prepare the glucagon until you are ready to use it.

## When should I use Glucagon?

Glucagon should be given when your child has a severe low blood sugar.

### Symptoms of a severe low blood sugar may include:

- Loss of consciousness
- Seizure(s)
- Unable to cooperate to take fast acting sugar by mouth

**CALL 911 IMMEDIATELY!**

### How much Glucagon do you need?

Lilly Glucagon™	Weight	GlucaGen®	Weight
1mL (the whole syringe)	children above 20kg (44 lbs)	1mL (the whole syringe)	children above 25kg (55 lbs)
0.5mL	children below 20kg (44 lbs)	0.5mL	children below 25kg (55 lbs)

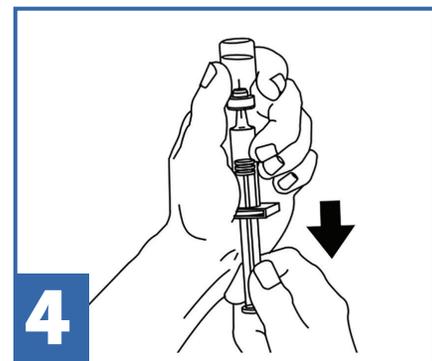
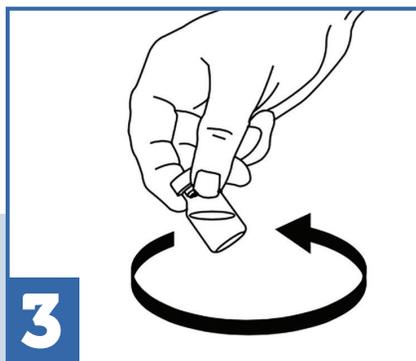
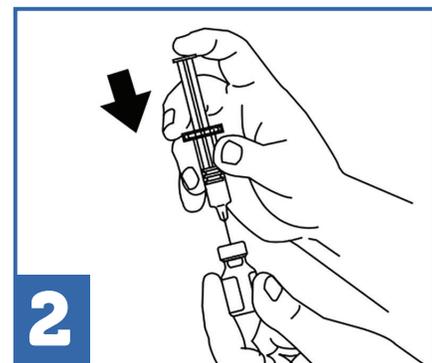
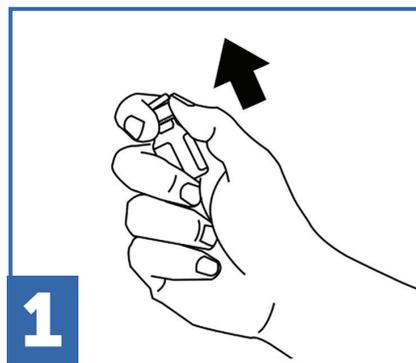
### If you do not know how much a child weighs:

1mL (the whole syringe)	children over 6 years	0.5mL	children under 6 years
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**Adult dose: 1mL**

## How do I inject Glucagon?

Be prepared, show family and babysitters how to use glucagon, just in case.



- 1** Remove the plastic cap from the bottle and plastic cover on the needle.
- 2** Push the needle of the pre-filled syringe through the centre of the rubber stopper of the bottle. Inject all the water from the syringe into the bottle containing the glucagon tablet.
- 3** Gently shake the bottle until the glucagon is dissolved in the water and the solution is clear. Do not use if a gel has formed or if you see particles in the solution.
- 4** Carefully turn the vial and syringe together upside down. Gently draw all the fluid back into the syringe. Be careful not pull the plunger out of the syringe. Remove air bubbles from the syringe. With the needle pointing upwards, tap the syringe with your finger. Push the plunger slightly to release any air that has collected at the top of the syringe. Remove the syringe from the vial.
- 5** Inject the glucagon into the thigh muscle, buttocks or upper arm. Push the plunger all the way down.
- 6** It may take 10 minutes for glucagon to work.
- 7** If your child is unconscious, Put your child on their side. When an unconscious person awakens, they may vomit. Put the person on their side, this will lessen the chance of choking.
- 8** Once your child is alert and able to drink, give them juice or other fast acting sugar.
- 9** Once the blood sugar is above 4.0 mmol/L, give a carbohydrate containing snack of at least 15 grams such as a granola bar, crackers and cheese or toast with peanut butter.

## Are there any side effects of Glucagon?

### Are there any side effects of Glucagon?

An upset stomach or vomiting are possible after receiving glucagon. This can last up to 24 hours.

Glucagon may not be effective if the severe low blood sugar is due to alcohol consumption.

Once your child is stable, make an appointment to see the team at the Centre as insulin doses might need to be adjusted.

### Storage of Glucagon?

Store Glucagon at room temperature. Tell family and babysitters where it is, in case they need to use it.

Check the expiry date, 1 year from dispensing is usual.

## What is a high blood sugar?

A high blood sugar is greater than 10 mmol/L. A high blood sugar is not an emergency but must be treated with rapid acting insulin in the next few hours. A high blood sugar can become an emergency if insulin is not given and ketones develop.

### Hyperglycemia is another word for high blood sugars

#### What causes high blood sugars?

- Not enough insulin or missed insulin
- Too much food relative to insulin given
- Emotions such as anger or excitement
- Rapid growth
- Illness

### Signs and symptoms may include:



- Thirsty
- Tired
- Blurry eyes
- Need to pee a lot



## What are ketones?

Ketones are made when there is not enough insulin for the body to use sugar for energy. Without enough insulin, sugar builds up in the blood and cannot enter the cells. The cells break down fat for energy instead of sugar. Ketones form in the blood, and eventually spill into the urine. Ketones can make you very sick.

Ketones are not caused by eating too much. Eating more food than usual can cause high blood sugars but will not cause ketones. A lack of insulin causes ketones in type 1 diabetes.

## What is Diabetic Ketoacidosis (DKA)?

DKA is caused by a severe shortage of insulin. DKA can occur when diabetes is first diagnosed. DKA can also happen if insulin is missed or if illness is not well managed.

### How can I test for ketones?

You can test for ketones with a finger poke blood test. Your diabetes educator will provide a meter that tests for ketones. Your child may have had ketones at diagnosis and may have small amounts of ketones for several days after diagnosis. This is normal for the first few days and will go away once the insulin dose goes up and the blood sugars come down.

Encourage your child to drink plenty of water. Water alone will not eliminate ketones, only insulin can do that, however water will help flush out some of the ketones.

### When should I test for ketones?

- At diagnosis
- During illness
- If your child is vomiting or has diarrhea

### The signs and symptoms of ketones are:

- High blood sugar
- Feeling very tired
- Rapid breathing, shortness of breath or difficulty breathing
- Flushed face/cheeks
- Stomach pain
- Breath that smells fruity or like nail polish remover
- Vomiting
- Dehydration

**If these symptoms are present, check blood ketones and contact your educators or go to hospital immediately. Ketones are a serious medical emergency. They can be life threatening if not treated properly.**

## What do I do if my child is sick?

Children with adequately controlled diabetes do not have more illness or infections than children without diabetes. With illness, there is a release of stress hormones that can lead to high blood sugars, therefore increasing insulin needs. However, illness can also lead to low blood sugars, along with decreased intake of food and fluids.

## Follow these general guidelines during illness

**1** Never skip an insulin dose entirely, even if your child is vomiting or unable to eat. The body needs insulin to convert sugar into energy so that it can fight the infection. Many illnesses increase blood sugar, however in some cases, vomiting or diarrhea can result in lower blood sugar, especially in very young children. Insulin is still required, especially the long acting dose. Never omit the long acting insulin.

Contact the Centre during working hours or the pager after hours for advice.

**2** Check blood sugars and blood ketones every 2-3 hours. This is especially important if your child is vomiting. Mini-dose glucagon may be required if blood sugars are low (less than 4mmol/L) and your child is unable to keep food down.

Rapid acting insulin is often required if blood sugars are high and ketones are present. Contact the centre if your child has blood ketones above 0.6. Some children have ketones due to vomiting or eating poorly which are called starvation ketones, and may not need extra rapid insulin.

**3** Vomiting and diarrhea can lead to dehydration. Offer your child lots of clear liquids to prevent dehydration. Offer sips of fluids; avoid large amounts as this usually leads to more vomiting.

If blood sugar is less than 10mmol/L offer carb containing fluids.

If blood sugar is above 10mmol/L offer sugar free fluids.

**4** Ensure your child gets plenty of rest and avoids physical activity.

**5** Over the counter medications are appropriate for treatment of short-term illness such as cold or fever. They do not have a significant effect on blood sugar levels if taken in prescribed amounts.

## What sick day supplies do you need?

**Keep a supply of sick day items regularly available.**

- Blood sugar meter and strips
- Blood ketone meter and blood ketone strips
- Glucagon and syringes for mini-dose glucagon

**Low carbohydrate and regular carb containing fluids such as:**

- Juice
- G2 and regular Gatorade
- Sugar free and sugar containing jello
- Kool-aid and sugar free kool-aid or crystal light
- Sugar-free and regular popsicles and freezies
- Broth
- Pedialyte drink and freezer pops (oral electrolyte solution)
- Lollipops to keep blood sugars up when children can not tolerate fluids

## What can my child eat?

A diagnosis of type 1 diabetes often comes with worries about what to feed your child. Parents often wonder if their child can still eat certain foods, have foods with sugar or treats. You will meet with a Registered Dietitian who will answer your questions and put your mind at ease since your child can eat many of the same meals and snacks as before diagnosis.



For some families, meal planning is the hardest part of managing diabetes. The Registered Dietitians at the Center will help you every step of the way.

## What is a diabetes meal plan?

A diabetes meal plan is developed to balance the amount of food your child wants to eat with the insulin they receive. At diagnosis, it is common for children to lose weight, feel hungry and be very thirsty. The Dietitian will ensure that your child's nutritional needs and appetite are being met.

A meal plan consists of 3 main meals and 1-4 snacks each day. Every child's meal plan will be **individualized** for them.

### The goal of a meal plan is to:

- Promote normal growth and development (the Dietitian will measure your child's growth on a regular basis at visits)
- Satisfy your child's appetite
- Balance blood sugars
- Be easy to follow and be able to incorporate into daily life.

## What are carbohydrates?

Carbohydrates are one of the three key nutrients in food; fat and protein are the others. Carbohydrates break down to form sugar in the bloodstream. Insulin takes the sugar out of the blood and puts it into the muscles, liver and other cells of the body where it is used as energy. Carbohydrates are the best source of energy for your body, especially your brain. Most carbohydrate containing foods are also very good sources of fibre, vitamins and minerals which keep your body and bowels healthy.

Carbohydrates are the only group that directly raise blood sugar levels. The effect of carbohydrates on blood sugars will depend on the amount and type of carbohydrate consumed.

### Foods with carbohydrates

**Starches:** breads, pasta, rice, grains, cereals, corn, potatoes, cookies, crackers

**Fruit and vegetables:** fruits and fruit juices, including tomato juice; sweet vegetables, such as turnip, squash, carrots, peas, beets, parsnip

**Dairy products:** milk, yogurt, pudding, ice cream

**Sugars:** white and brown sugar, honey, molasses, syrups; jams and jellies; candy; chocolate; regular soft drinks

## What can my child eat?



## What is protein?

Protein is essential for growth and to promote healing and tissue repair. Foods with protein also provide essential vitamins and minerals.

### Examples of food with protein:

- Meat, poultry, fish, shellfish, eggs
- Legumes: beans and lentils, nuts, peanut and nut butter, tofu
- Milk, yogurt, cheese, cottage cheese, ice cream, pudding

Foods with protein alone do not directly raise blood sugars. Foods which contain both carbohydrates and protein such as milk, yogurt, ice cream and legumes (beans) will affect blood sugars.

## What is fat?

Fats are an important part of a well-balanced diet. They provide essential building blocks for growth and development and allow for the absorption of certain vitamins.

### Examples of food with fat:

- All oils: butter, margarine, lard, shortening
- Salad dressings, gravies, nuts, seeds, olives, coconut, avocado
- Meat: especially red meat, but also poultry, fish and shellfish
- Dairy products: milk, cream, cheese
- Eggs

Like proteins, fat does not directly raise blood sugars.

## Carbohydrate counting

Carbohydrate counting, or "carb counting," is a meal planning technique for managing blood sugars. Carbohydrates in food raise blood sugars and rapid acting insulin lowers blood sugars. Carbohydrate counting matches insulin doses with food to keep blood sugars within the target range of 4-10mmol/L. Since protein and fats do not raise blood sugars significantly, they do not need to be counted.

The Dietitian, in consultation with the parents and child, will set a target carbohydrate range for each meal and snack. The carbohydrate range is based on your child's lifestyle, eating habits, hunger and growth. Carbohydrates are an important source of vitamins, minerals and nutrients needed for growth and development, and are therefore an important part of your child's meal plan. Limiting or eliminating carbohydrates from your child's diet is not recommended.

After you become more familiar with carbohydrate counting, your Dietitian will help you figure out the amount of rapid acting insulin your child needs for a specific amount of carbohydrates. This is called a carb ratio. A carb ratio will allow you to adjust your child's carbohydrate intake and will provide more freedom and flexibility with your child's eating routine.

# Carbohydrate counting

## How do I carb count?

In order to count carbs, you need to know how much total carbohydrate and fibre are in the foods you choose. You can find this information through:

- Food labels on packages
- Nutritional Food Scales
- Restaurant nutrition pamphlets (ask at the restaurant or check the website)
- Government of Canada: nutrient value of foods at [www.canada.ca](http://www.canada.ca)
- Nutrient Analysis Apps such as Myfitnesspal. Visit your smart phone's app store. Review your choices with your dietitian.
- Cookbooks that provide nutrition information
- Calorie King <http://www.calorieking.com> (please note this is an American site so the information may be slightly different)

Look at the Nutrition Facts table below

Nutrition Facts Valeur nutritive	
Per 125 mL (87 g) / par 125 mL (87 g)	
Amount Teneur	% Daily Value % valeur quotidienne
<b>Calories / Calories</b> 80	
<b>Fat / Lipides</b> 0.5 g	1 %
Saturated / saturés 0 g + Trans / trans 0 g	0 %
<b>Cholesterol / Cholestérol</b> 0 mg	
<b>Sodium / Sodium</b> 0 mg	0 %
<b>Carbohydrate / Glucides</b> 18 g	6 %
<b>Fibre / Fibres</b> 2 g	8 %
Sugars / Sucres 2 g	
<b>Protein / Protéines</b> 3 g	
Vitamin A / Vitamine A	2 %
Vitamin C / Vitamine C	10 %
Calcium / Calcium	0 %
Iron / Fer	2 %

## How do I read a food label?

- 1 Use the Nutrition Facts table to find the serving size of the food.
- 2 Find the total amount (in grams) of carbohydrate for the serving size.
- 3 Subtract the fibre from the total amount of carbohydrate. This will give you the amount of carbohydrate that will affect blood sugar (also called “available” carbohydrate). Fibre is a carbohydrate, but it does not affect your blood sugar. That is why you subtract it from the total amount of carbohydrate. Remember to adjust the carbohydrate amount if your child is eating more or less than the serving size listed on the package. Use measuring cups or a food scale to measure your serving size. Accuracy is important.

How much total carbohydrate is in a 125 mL serving?

**Total carbohydrate = 18 g**

How much fibre is in the 125 mL serving?

**Fibre = 2 g**

How much “available” carbohydrate is in the 125 mL serving?

**18 g total carb – 2 g fibre = 16 g of available carbohydrates**

**Therefore, 16 grams of carbohydrate will have an effect on your blood sugar.**



## Putting it all together

The hardest part about carbohydrate counting is getting started. It can seem overwhelming at first. However, once you know the number of carbohydrates in your child's most common foods, the mental calculations become second nature. You can keep a running list of these common foods with the corresponding carbohydrate amounts near your recipes, in a binder or on your phone for easy reference.

## Nutrition food scale

Nutrition food scales provide the amount of carbohydrate in a food based on its weight. Nutrition food scales provide accurate carb amounts for foods without labels such as fruits and vegetables. Some people find food scales easier to use than measuring cups. Your Dietitian will give you more information.



Keep in mind that carb counting is not an exact science. Whether a piece of multigrain bread is 15grams or 16 grams of carbohydrates, it is not going to make much difference in how your child's blood sugar responds. But a level of accuracy does count.

Some Tips to Remember

- 1** Continue to eat how you would normally eat until you meet with the Dietitian.
- 2** Avoid concentrated sugars such as juice, regular pop, regular syrup, and candies which have a tendency to raise blood sugars quickly. These are often used to treat low blood sugar because they are fast.
- 3** If your child is thirsty, drink WATER.
- 4** Continue to consume carbohydrates and include protein and fats with meals. Do not eliminate or limit carbs.
- 5** A healthy meal plan consists of 3 main meals and 1-4 snacks each day. Meals should be well balanced according to Canada's Food Guide for Healthy Eating.

# Meal examples

Here are some examples of meals and snacks for your child to eat, pick one from each group:

## Breakfast:

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- Toast or bagel or cereal or waffles
- Milk and/or water to drink
- A piece of fruit, if desired
- Peanut butter or eggs or bacon, if desired

*For Example- toast with peanut butter, milk and strawberries*

## Lunch:

---

- A meat sandwich or pasta or soup with crackers
- Milk and/ or water
- A vegetable, if desired
- A piece of fruit, if desired
- Cookies or granola bar or yogurt, if desired

*For example- Grilled cheese with a glass of milk, apple and yogurt*

## Supper:

---

- Meat or legumes
- Pasta or rice or potato or corn or bread
- A vegetable
- Milk and/or water to drink
- A piece of fruit or plain cookies, if desired

*For example- chicken, rice, green beans, milk and 1 chocolate chip cookie*

## Snacks:

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- Cereal • plain cookies • chips or popcorn or pretzels crackers
- Fruit • granola bar • milk or yogurt
- ½ sandwich

## Add any of these foods as desired at any time:

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- Cheese • nuts • sliced meats • peanut butter • butter or margarine
- Cucumbers • peppers • celery • tomatoes • lettuce



## Hemoglobin A1c (HbA1c or A1c)

A hemoglobin A1c is a way to check blood sugar control. The A1c reflects blood sugars over the past 3 months. This test measures the amount of sugar attached to hemoglobin which stays attached for the life cycle of a red blood cell, about 3 months. This is a separate number from your blood sugar meter readings. An A1C is an important test because it reflects how blood sugar is staying in balance in the long term.

### What is the target A1c?

An A1c less than 7.5% is recommended for all children under 18 years of age.

#### Practice these habits to stay in target blood sugar control:

- Check blood sugars 4 to 5 times per day
- Take insulin as prescribed
- Carbohydrate count accurately
- Send blood sugar reports to an educator regularly for help with insulin dose adjustments.

It takes at least 1 month, usually closer to 3 months to see a change in A1c.

### Honeymoon period

Within a few weeks of beginning insulin for type 1 diabetes, the cells of the pancreas may start to produce some insulin. This is referred to as the **honeymoon** period. The honeymoon period can last from several weeks to several months. There is no way to tell how long it will last or whether there will be one at all. Your child may not need as much insulin during this time, although your child still has diabetes. Be sure to let your diabetes team know when the honeymoon period starts as insulin doses will need to be lowered to prevent low blood sugars (hypoglycemia).

## What is the Diabetes Clinic?

The “Diabetes Clinic” is an appointment with a multidisciplinary team who work together to provide comprehensive care for your child and family. The team includes the Doctor, Nurse, Dietitian, and Social Worker.

### What happens at the clinic visit?

- A nurse will take your child’s blood pressure, weight, height and A1C. The A1C is done through a “finger poke” just like a blood sugar test.
- You and your child will meet with the team. Your child’s doctor will do a physical examination.
- The team will review blood sugars, adjust insulin if necessary and answer questions.

### Clinic visits are 30 minutes in length and occur every 3 months at the Centre.

Diabetes management depends heavily on blood sugar testing data. Please bring recorded blood sugars and insulin doses to all clinic appointments. Most meters can be downloaded to provide useful information, ask your diabetes educator for information about how to do so.

If you have questions or concerns you would like to discuss, consider emailing [bloodsugars@charleshbest.com](mailto:bloodsugars@charleshbest.com) before your clinic appointment. The Diabetes educators (Nurse or Dietitian) may be able to answer your questions, and will let you know if they would be better addressed by your child’s doctor during the clinic appointment.



# Physical activity

## TIPS;

- Check your blood sugar before and after activity. This will help you learn how much, if any, extra food your child needs for each activity. Sometimes it is also a good idea to check part way through an activity.
- Do not give insulin near muscles that will be active. For example, do not give insulin in the arms while swimming, use the abdomen area instead.
- Wear a medical ID.
- Keep records of the amount and type of food eaten so you are able to adjust as needed or share with your diabetes care team.

## Are there any times when my child should not be active?

- blood sugar is higher than 14mmol/L with ketones
- illness.

## An active lifestyle important for everyone with and without diabetes as it:

- Builds strong bones and muscles, and strengthens your heart
- Helps promote a healthy weight
- Reduces stress and improves mood
- Provides social interaction with other children.

## Physical Activity Recommendations for type 1 diabetes management.

**1** Be active for a minimum of 60 minutes a day

**2** Before activity, check blood sugar and use the chart below to assist you.

Blood Sugar Level	Suggestion
< 4 mmol/L	Do not exercise. Treat with 15 grams of fast-acting carbohydrates. Follow low blood sugar treatment guidelines
< 5 mmol/L	Consume 10-20 grams of carbohydrates and delay exercise until blood sugar is above 5 mmol/L.
5-7.9 mmol/L	Consume 10-20 grams of carbohydrates before performing aerobic activity
8-14 mmol/L	Aerobic and anaerobic activity can be started
>14 mmol/L	If the high blood sugar is unexplained, check blood ketones. If ketones are greater than 0.6, delay exercise until your child no longer has ketones. Contact the centre for assistance.

\*If your child is participating in activity longer than 30 minutes, more carbohydrates may be needed. Check blood sugars during activity to determine if your child needs more.

Aerobic exercise is any activity associated with an increased rate of breathing such as running, swimming, bicycling, brisk walking, aerobics classes, dancing, cross country skiing, and kickboxing.

Anaerobic exercise consists of brief intense bursts of physical activity, such as muscle building, sprinting and jumping.

**3** Physical activity can lower blood sugar many hours later. If your child is active after dinner, they should eat extra carbohydrates at bedtime. This will help prevent a low blood sugar during the night. If your child is active for a long time late in the day they may also need more carbohydrates at bedtime.

**4** Your child may need less insulin when extra activity is planned. This is common for activities that last a long time such as sports tournaments. Talk to your diabetes team about how to adjust insulin. With practice, you will learn how to change it on your own.

## Continuous or Flash Glucose monitors (CGM):

Continuous or flash glucose monitors (CGMs) are devices that display blood sugar readings 24 hours a day while doing few blood sugar pokes (finger sticks). CGM's use a small sensor to measure the level of sugar in the fluid under the skin. The sensor is attached to the skin with a sticky patch and automatically wirelessly transmits results to a receiver which is a small recording device the size of a cell phone. The monitor updates and displays the blood sugar every few minutes. CGM's do not eliminate the need for finger sticks due to the need to calibrate some of the devices, and reliability issues.

Flash glucose monitors transmit blood sugars to a receiver or cell phone when you scan the sensor.

CGMs and flash glucose monitors are generally changed every 6-14 days, depending on the brand.

Some challenges of CGM include cost, alarm fatigue, feeling overwhelmed by data (this could lead to too many insulin adjustments), unrealistic expectations, skin irritation and still needing finger stick blood sugar tests for some situations.

### Devices available in Canada:

#### 1 Abbott's Libre

- <https://myfreestyle.ca>
- change sensor every 14 days
- no calibrations (finger stick testing) required

#### 2 Dexcom

- [www.dexcom.com](http://www.dexcom.com)
- change sensor every 7 to 10 days (may last longer, although off-label)
- calibrations every 12 hours may be needed depending on the version

## Insulin pumps

Insulin pumps are small computerized devices that mimic the way the human pancreas works by delivering small doses of rapid acting insulin continuously, which works like basal insulin. At mealtimes, carbs and blood sugars are entered into the pump to deliver a bolus of rapid acting insulin.

The pump, which is about the size of a smart phone or deck of cards, is worn on the outside of the body. The pump delivers insulin through a tube (catheter), connected to a thin cannula, placed into the layer of fat under your skin (anywhere you would do an insulin injection). The pump can be worn around your waist in a pump case or attached to a belt or bra, in a pocket, or on an armband. You require hands-on training from your diabetes team to use an insulin pump.

Pumps are covered under The Assistive Devices Program (ADP) in Ontario if your child meets eligibility. Pumps are not started in new patients and your child must have diabetes for at least 1 year to qualify for ADP.

# Finances and type 1 diabetes

Diabetes often adds a financial strain, even when you have medical insurance. The extra costs of medications and medical appointments can be quite overwhelming. The disability tax credit (DTC) is a Government of Canada program that can help to offset some of the financial cost of diabetes management. The DTC is a non-refundable tax credit that helps persons with disabilities, or their supporting persons, reduce the amount of income tax they may have to pay.

## Who can apply for the DTC?

Parents/caregivers of children under the age of 18 years with type 1 diabetes can apply for the DTC. Once your child is over the age of 18, they need to reapply as an adult.

## How do you apply for the DTC?

Complete the T2201 Disability Tax Credit Certificate found on the Government of Canada website. Ask your child's pediatrician to sign this form to verify that your child meets the outlined eligibility criteria.

The eligibility criteria set out by the Canada Revenue Agency (CRA) for children with type 1 diabetes is spending at least 14 hours per week on activities related to administering insulin.

## The CRA permits the following activities to be included the 14 hours per week calculation:

- Checking blood sugar
- Checking ketones
- Preparing and administering insulin
- Calibrating/preparing necessary equipment, including changing infusion sites for the insulin pump
- Maintaining a logbook of blood sugar levels

## The CRA does not allow the following activities to be included in the 14 hours per week:

- Counting carbohydrates
- Exercising
- Recovering from hypoglycemia or hyperglycemia
- Meal preparation
- The time the insulin pump takes to deliver insulin
- Attending medical appointments
- Shopping for medication

## For more information please visit:

### Diabetes Canada:

<https://www.diabetes.ca/diabetes-and-you/know-your-rights/tax-credits-your-rights>

### Government of Canada:

<https://www.canada.ca/en/revenue-agency/services/tax/individuals/segments/tax-credits-deductions-persons-disabilities/information-medical-practitioners/eligibility-criteria-disability-tax-credit.html>

<https://www.canada.ca/en/revenue-agency/services/tax/individuals/segments/tax-credits-deductions-persons-disabilities/disability-tax-credit.html>



## Key/trusted diabetes websites

There are many websites that have diabetes information. Be careful to seek information from reliable sources. Here is a list of websites that can be trusted and are in Canada.

### Education:

The Charles H. Best Diabetes Centre: [charleshbest.com](http://charleshbest.com)

Diabetes Canada: [diabetes.ca](http://diabetes.ca)

The Forum for injection techniques : [fit4diabetes.com](http://fit4diabetes.com)

Diabetes at school: <https://www.diabetesatschool.ca/>

BC Children's Hospital:

[bcchildrens.ca/health-info/coping-support/diabetes](http://bcchildrens.ca/health-info/coping-support/diabetes)

### Research:

JDRF: [jdrf.ca](http://jdrf.ca)

### Support:

Diabetes camps: [dcamps.ca/home.aspx](http://dcamps.ca/home.aspx)

Children with Diabetes online community:

[childrenwithdiabetes.com](http://childrenwithdiabetes.com)

IChallenge Diabetes: [ichallengediabetes.org](http://ichallengediabetes.org)

Diabetes Hope Foundation: [diabeteshopefoundation.com](http://diabeteshopefoundation.com)

Connected in Motion: [connectedinmotion.ca](http://connectedinmotion.ca)

### Smart Phone Apps – There are many

- Carb Counting with Lenny (great for elementary age children)
- My Fitness Pal: Calorie Counter and Diet Tracker • Lose It!



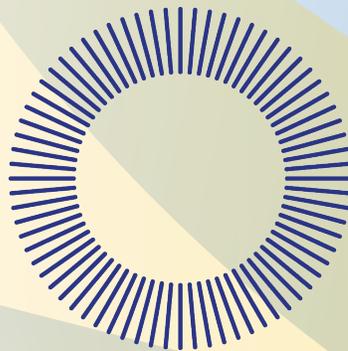


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