

Pediatric Diabetes

Part 2: A more in-depth look



This guidebook is to help you and your family understand diabetes and manage your child's care.



Hôpital de Montréal
pour enfants
Centre universitaire
de santé McGill



Montreal Children's
Hospital
McGill University
Health Centre



Acknowledgements

This pediatric diabetes guidebook was developed by the following:

Nancy Dumouchel BSc.inf, CDE,
Sandra Kambites BSc.N,
Meranda Nakhla MD MSc FRCPC
Catherine St-Gelais MSN, RN

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IMPORTANT: PLEASE READ

Information provided by this booklet is for educational purposes. It is not intended to replace the advice or instruction of a professional healthcare practitioner, or to substitute medical care. Contact a qualified healthcare practitioner if you have any questions concerning your care.

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This material is also available at:
MUHC Patient Education Portal
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About Part 2

Dear parent,

Now that you have learned some of the basics of diabetes, this second part of your guidebook will cover the care of diabetes in more depth.

By following the advice and guidelines described in this guidebook, you will help your child keep their blood sugar levels more in balance and prevent health problems. While this may be overwhelming at first, we can assure you that it gets easier with time.

The key to keeping your child's blood sugar within target is finding the right balance between your child's food plan, insulin, and activities.

Children with diabetes may be just as healthy as kids their own age. You are adapting to a lot of changes right now, and remember that you and your family will find a new routine over time.

Your diabetes care team is here to help your family adjust to life with diabetes.

The pediatric diabetes team

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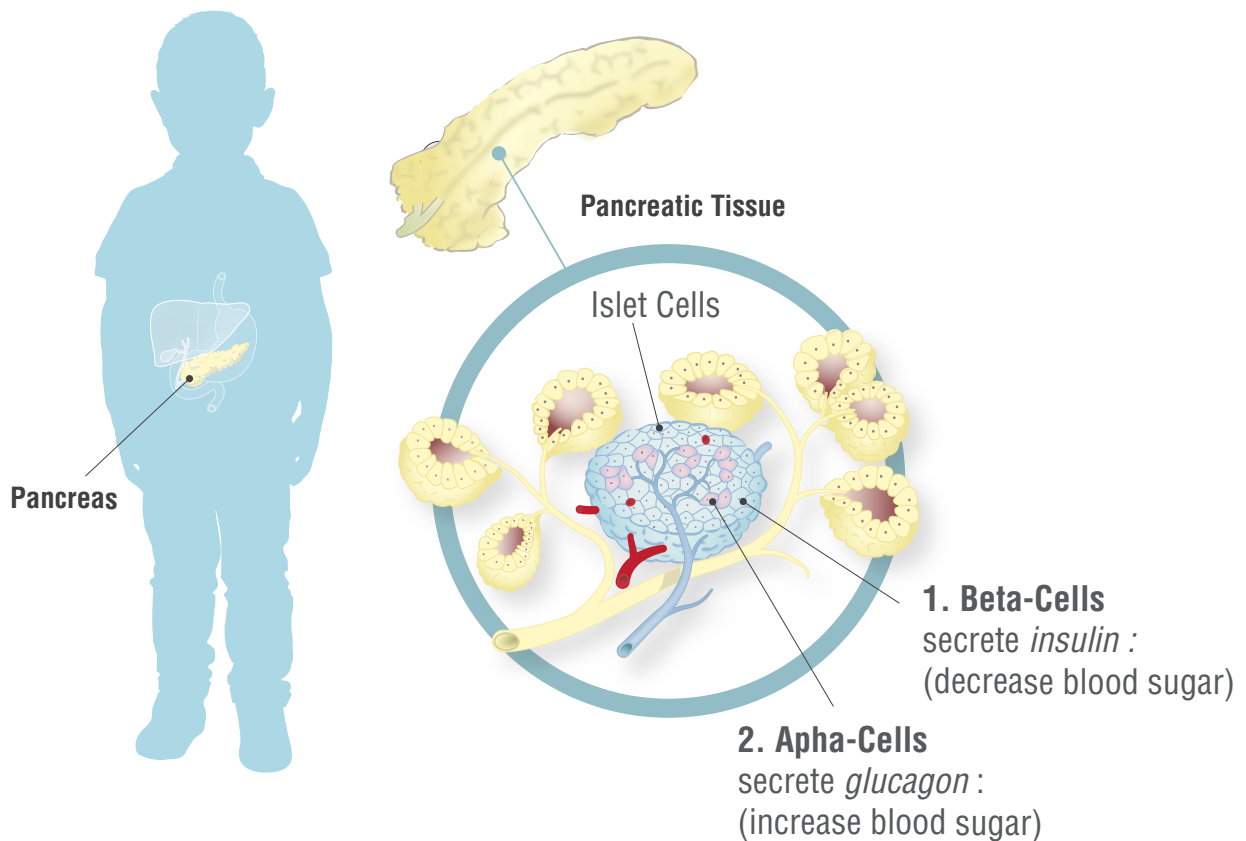
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How a body without diabetes controls sugar

What does the pancreas do?



Your pancreas is an **organ** (a body part inside you), just like your brain and your heart. It is long and flat. It sits in your belly between your stomach and your spine.

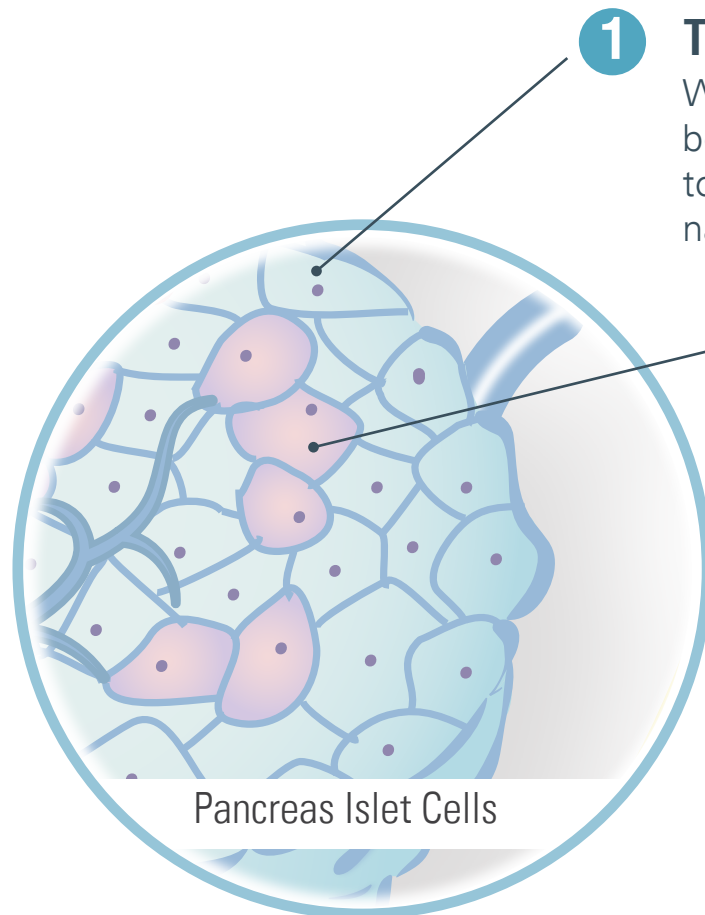
Most people do not know much about the pancreas because they cannot see or feel it in their day-to-day lives. However, the pancreas

plays a big part in helping digest food. In a person without diabetes, its main job is to control how much sugar is in the blood.

To do this, the pancreas makes 2 **key hormones** (special messengers in your body that control the way your body works). These 2 hormones are **insulin** and **glucagon**.

Insulin and glucagon work together to keep your blood sugar within a normal range

The pancreas is made up of different types of cells: **beta cells** and **alpha cells**:



1

The beta cells make insulin.

When food enters the stomach the beta cells make insulin. Insulin works to lower your blood sugar which naturally goes up after eating.

2

The alpha cells make glucagon.

When your blood sugar is low, the alpha cells make glucagon. Glucagon works to bring your blood sugar level up. Your body will then have the energy it needs to work well.

Did You Know?

Your **cells** are the building blocks that make up all the tissues and organs of your body. There are billions of cells in your body. These cells work differently, depending on where they are (e.g. heart cells, brain cells, stomach cells, bone cells) and what they need to do.



Insulin and glucagon play an important part in diabetes. We will cover this later in “*What happened in my child’s body?*” (see page 12 to learn more).

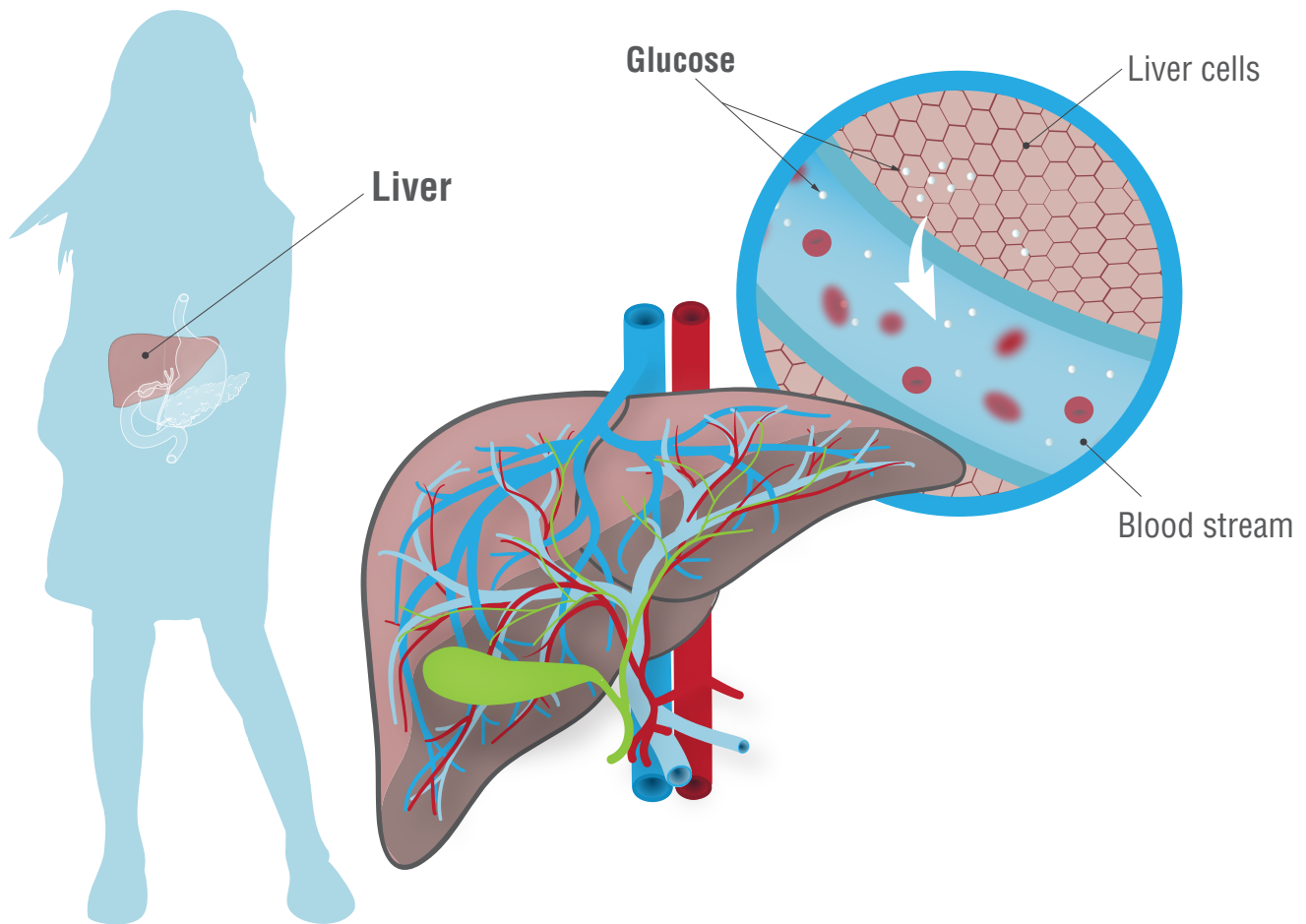
What does the liver do?

Just like your pancreas, your liver also sits in your belly, right next to your stomach. Your liver is the largest


organ (a body part inside of you). By the time we are adults, our liver is the size of a football!

The liver has many jobs, but its 3 biggest jobs are to:

1. Clean your blood,
2. Make a liquid, called **bile** (which helps your body digest food), and
3. Store sugar (**glucose**) for later in the form of glycogen.



The liver acts like a storage room. It sends out sugar into the blood, a little at a time throughout the day, to use as it is needed. This is very important because we are not eating all the time.

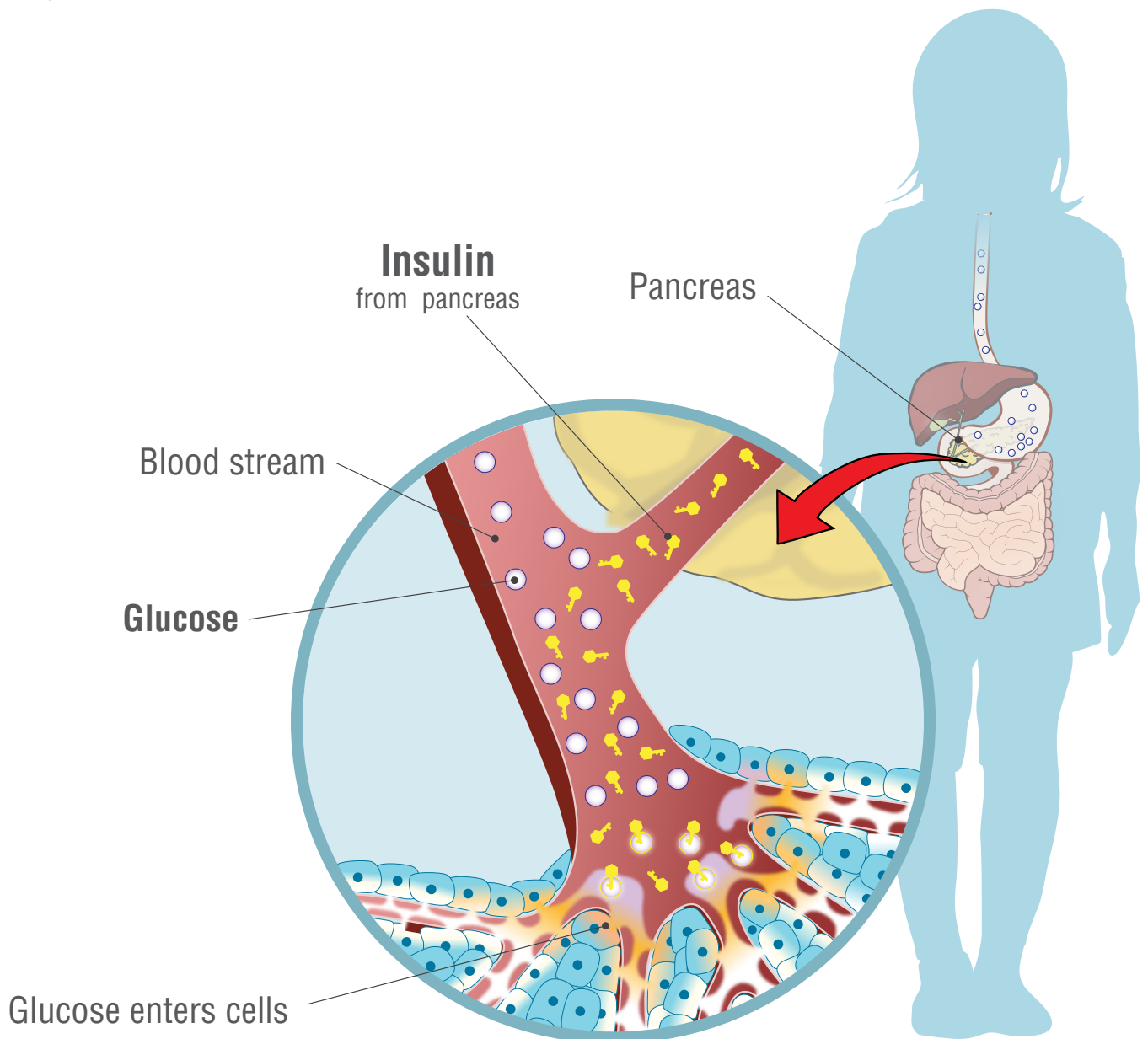
 **In other words: When a person is not eating, the liver gives the body the energy it needs to work well.**

What does insulin do?

Insulin is a hormone made by the **beta cells** of the pancreas. Insulin is a messenger that talks to the cells of the body. Insulin works by telling the

cells in the body that there is sugar (**glucose**) in the blood for the body's cells (e.g. muscle cells) to use for energy.

 **The body uses insulin 24 hours a day.**



How did my child get Type 1 Diabetes?

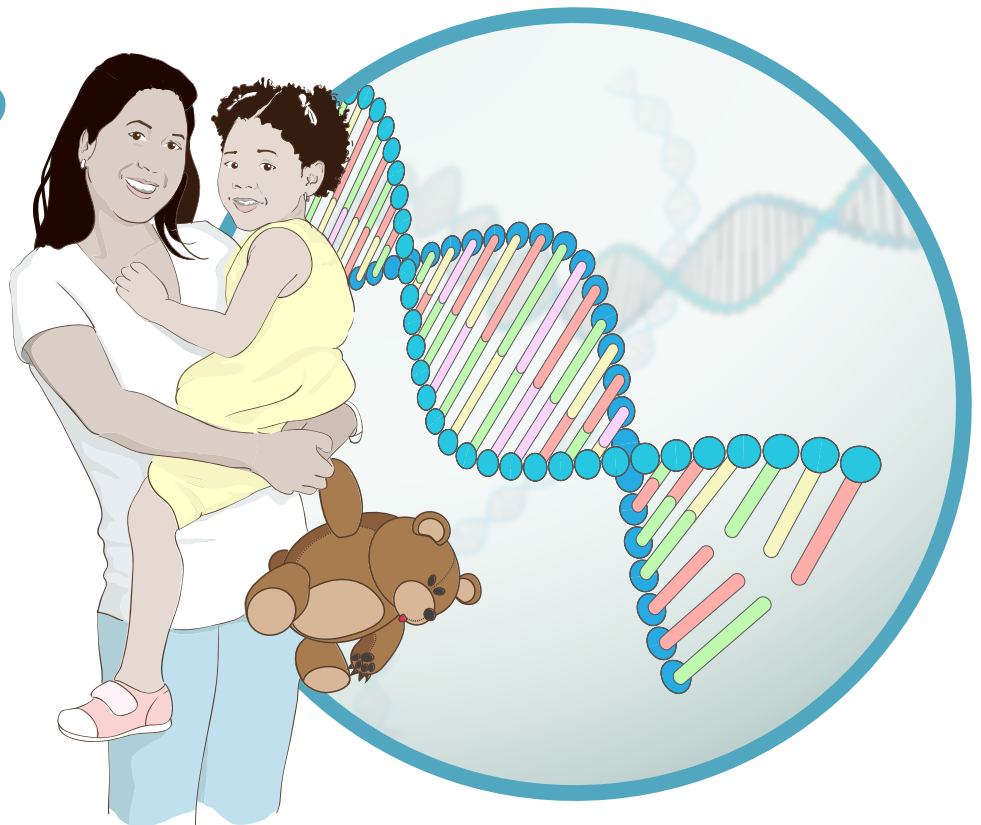
What causes Type 1 Diabetes?

Even though we understand a lot about diabetes today, we still don't really know **why** someone gets the disease.

What we know is that diabetes is **not** contagious. There is a **genetic** and an **environmental** side to the disease.

What is genetics?

What are genes?



Genetics is the study of genes. Every person carries genes in their body. These are passed down through families, from a parent to a child. Genes are very complex. They can sometimes change over time or as

we grow. While some decide hair colour and skin tone, others carry the chance of possibly making you develop some health problems.

Your genes help make you the unique person that you are today.

If one parent has or is “carrying” diabetes in their genes, there is always a chance (risk) that their child might develop it.

Today, scientists are doing a lot of research to try and understand why some children develop the disease and others do not.

We know that certain triggers around us (for example pollution, stress, an infectious illness) can spark or activate certain diseases. This is what we mean by the environmental side of diabetes. That said, we do not yet know what the exact environmental triggers of Type 1 Diabetes might be.



Whatever the cause, keep in mind that who does or does not get diabetes is out of your control. Your child does not have diabetes because of what your child ate or what you did while you were pregnant.

Remember: parents and children cannot do anything to cause or prevent diabetes.

This is not your fault. No one is to blame.

The good news is that **Type 1 Diabetes can be treated**. Research has shown that, by following the advice and guidelines of your diabetes team, your child will be able to keep blood sugar levels in a healthy range. This will help lower the chances of diabetes-related health complications.



Keep in mind that your child is not more likely to have colds or flus. Children with diabetes are as healthy as any other children. Your child can continue to live a full and meaningful life.

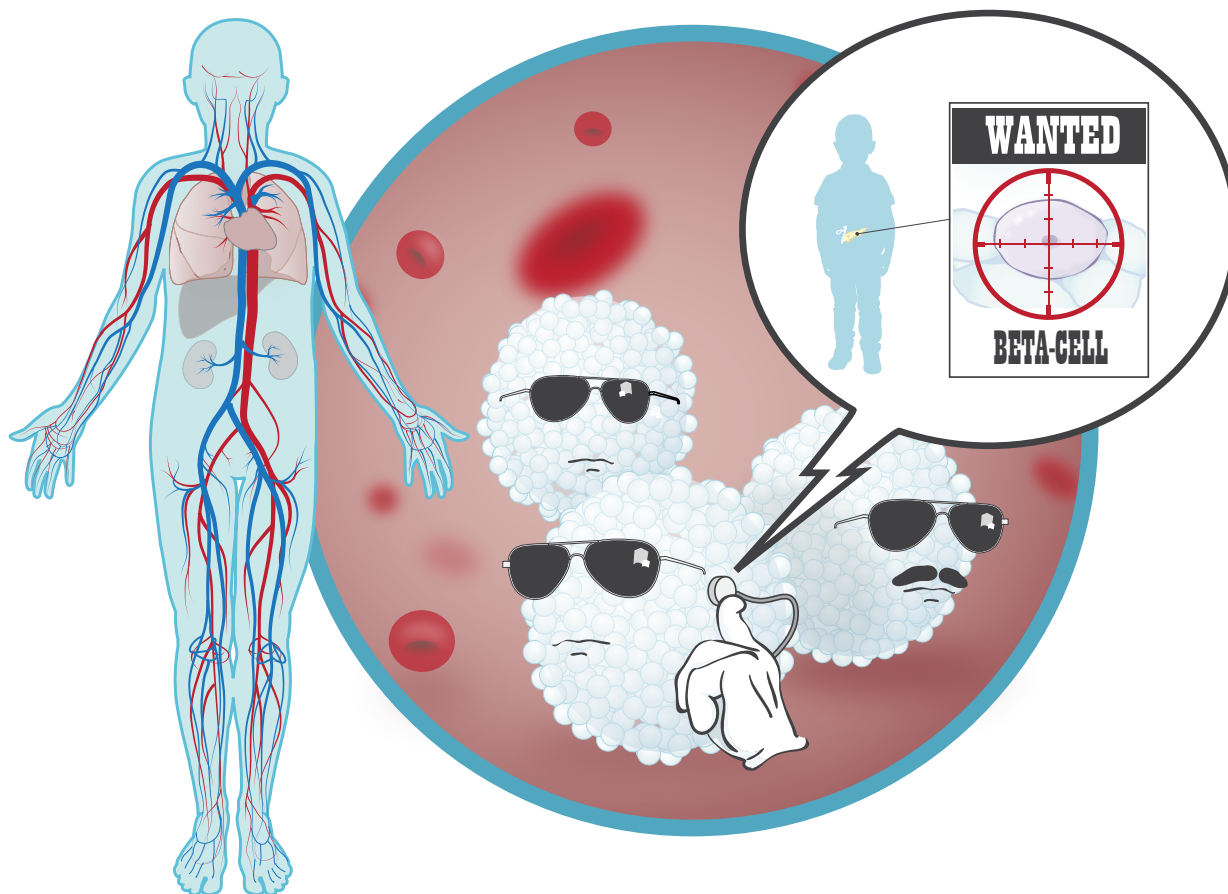
What happened in my child's body?

To understand diabetes, you need to understand how your **immune system** works.

Your immune system keeps your body healthy and well-balanced. It does this by defending your body from tiny, invisible germs (such as bacteria and viruses). These germs are all around us. They live in water droplets, living things, in blood, and on surfaces. They even float in the

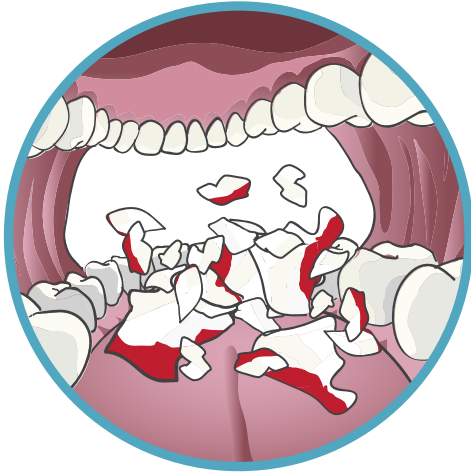
air. If we had no immune system to protect us from these germs, we would be very sick. (So we are lucky to have it!)

When your body sees a part of yourself as an outside danger and attacks that part, we call this an **autoimmune response**. When this causes an illness, we call this an **autoimmune disease**.

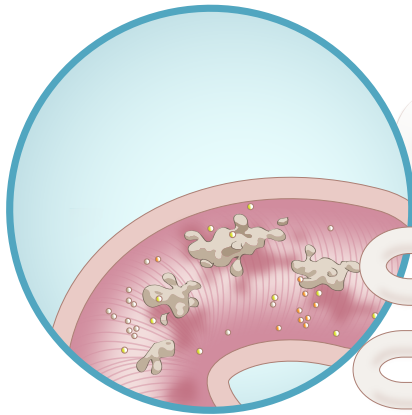


With diabetes, your body mistakenly decided that your healthy **beta cells** (which make insulin) were dangerous. For this reason, your immune system received the message to destroy them.

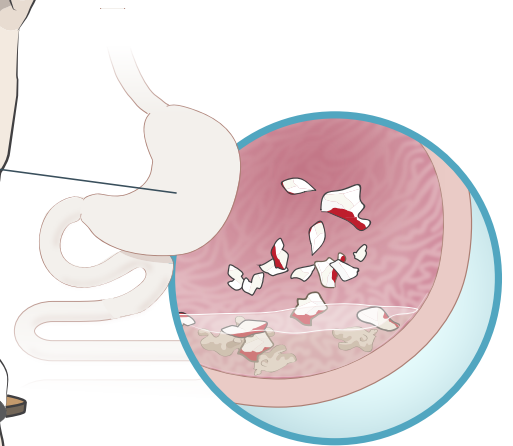
The story of Type 1 Diabetes



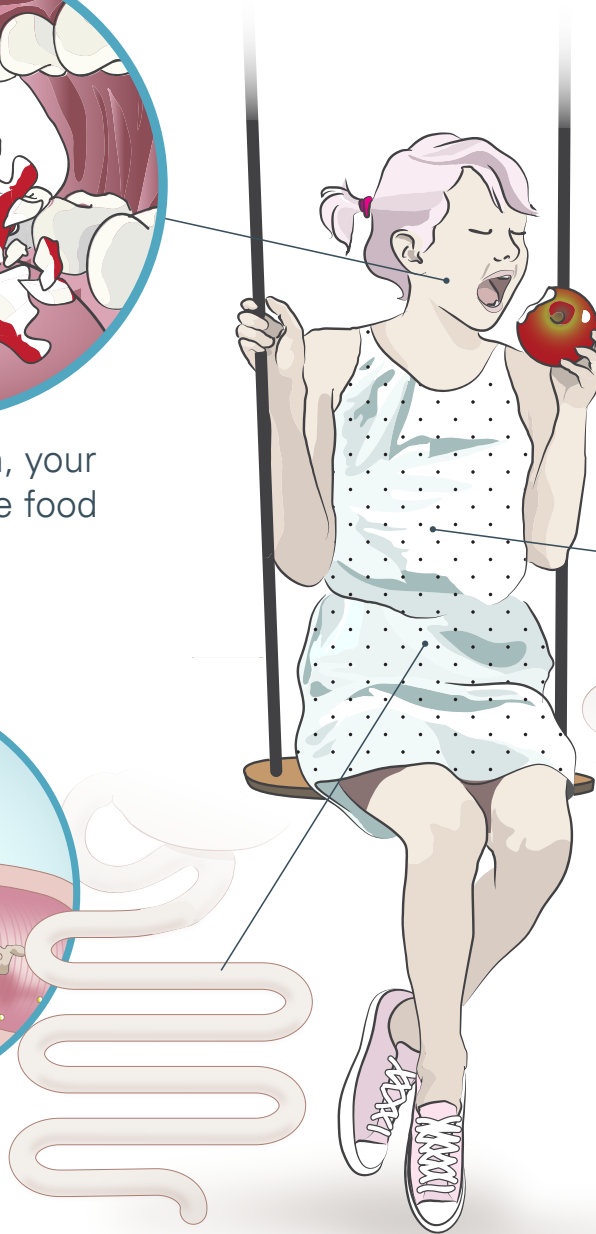
1 In your mouth, your teeth chop the food that you eat.



2 Your stomach turns the food that you ate into food juice.

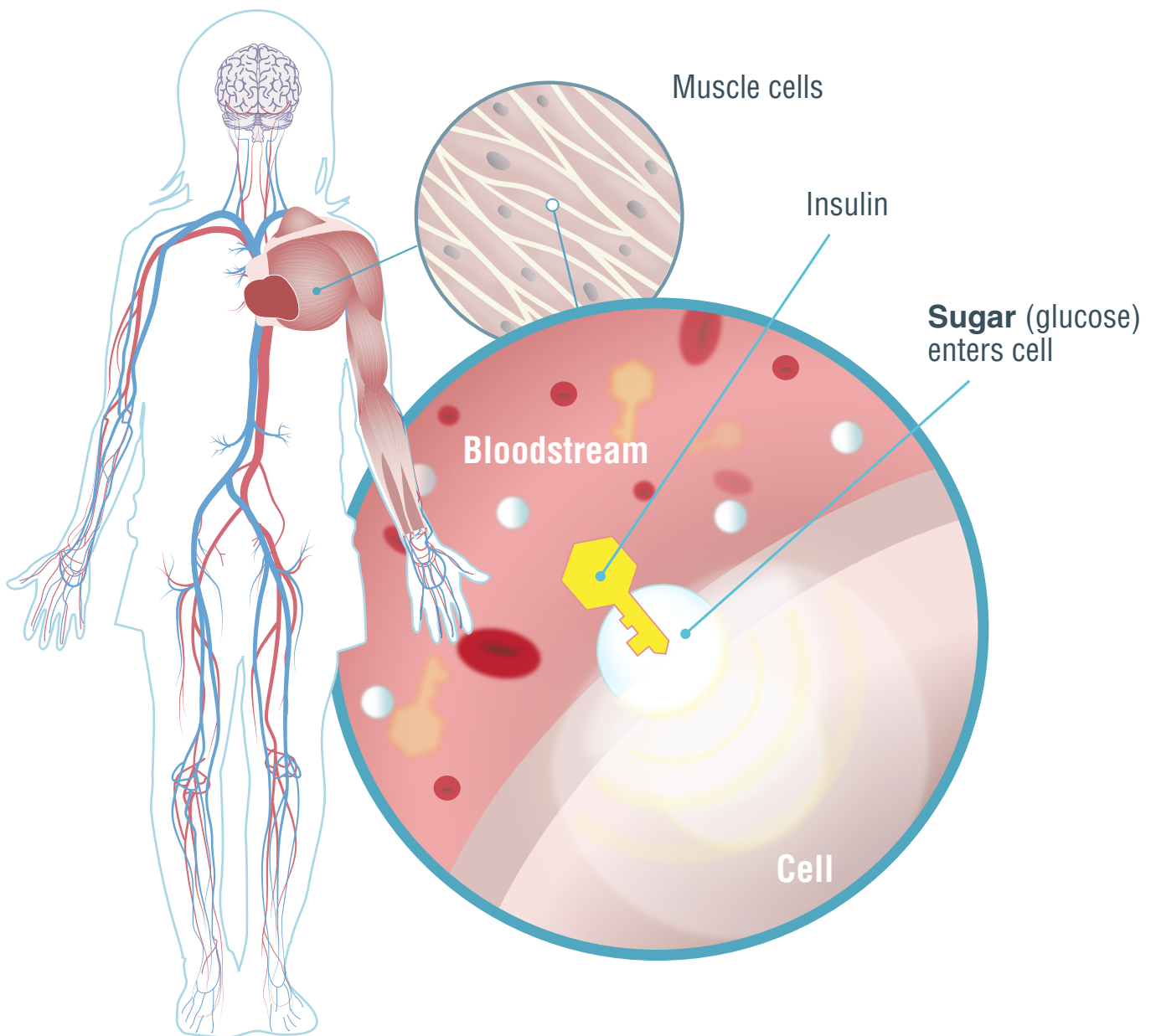


3 Your intestines separate the food juices into sugar, fat, minerals, etc. Then these components enter your bloodstream.

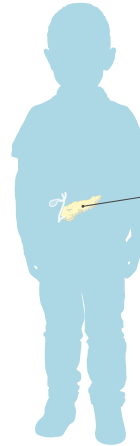


4 All of your body cells (muscle cells, brain cells, heart cells...) need sugar to function. The sugar will ONLY enter a cell with the help of insulin. If there is no insulin, the sugar will stay in the bloodstream. The bloodstream is the body's transport system. It is a huge network of tunnels that deliver

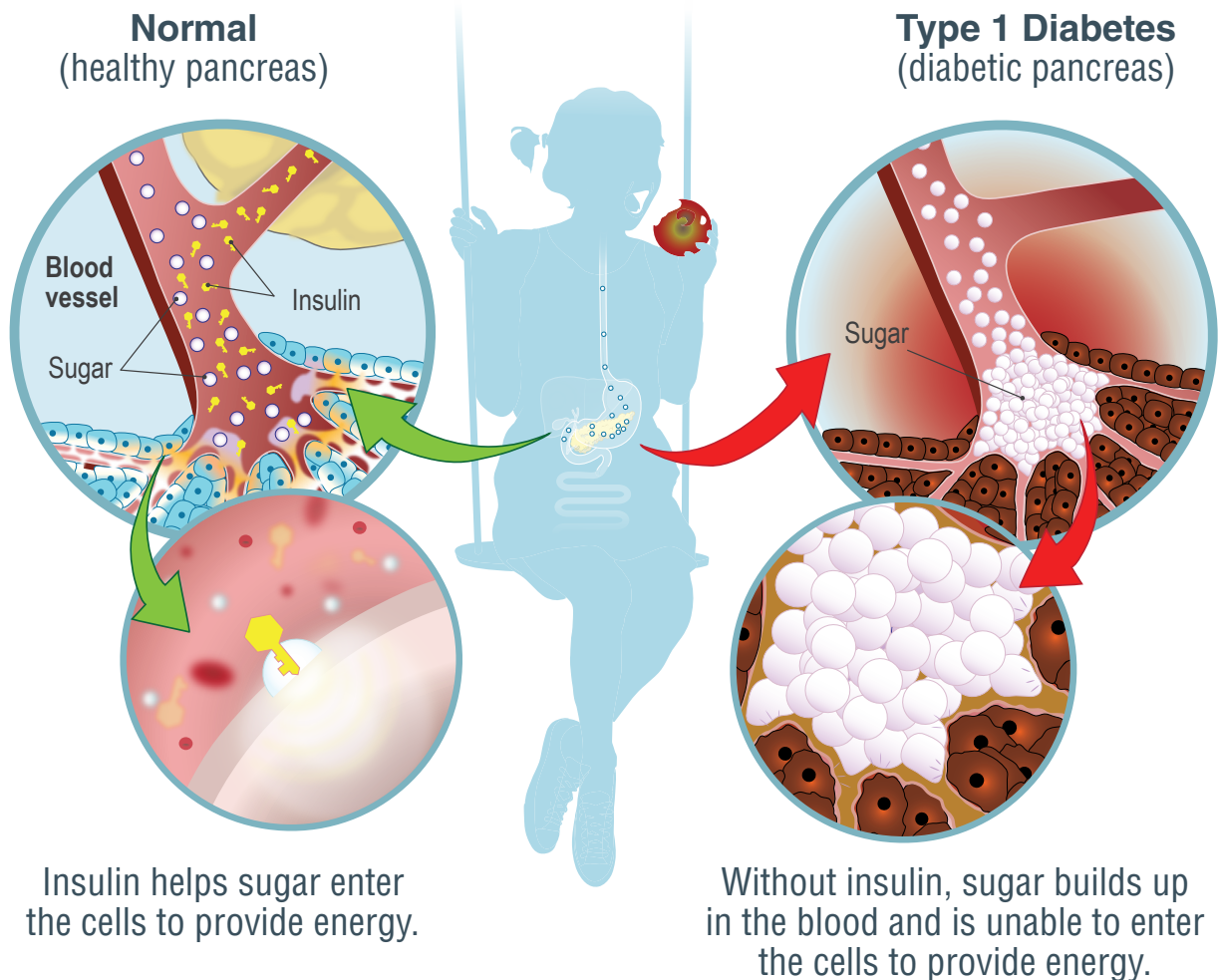
sugar to your whole body. Once the sugar is in your cells they will use it for energy. For example, your brain needs sugar (energy) to keep thinking. Your muscles need sugar (energy) to keep moving. Your stomach needs sugar (energy) to keep digesting. Your heart needs sugar (energy) to keep pumping.



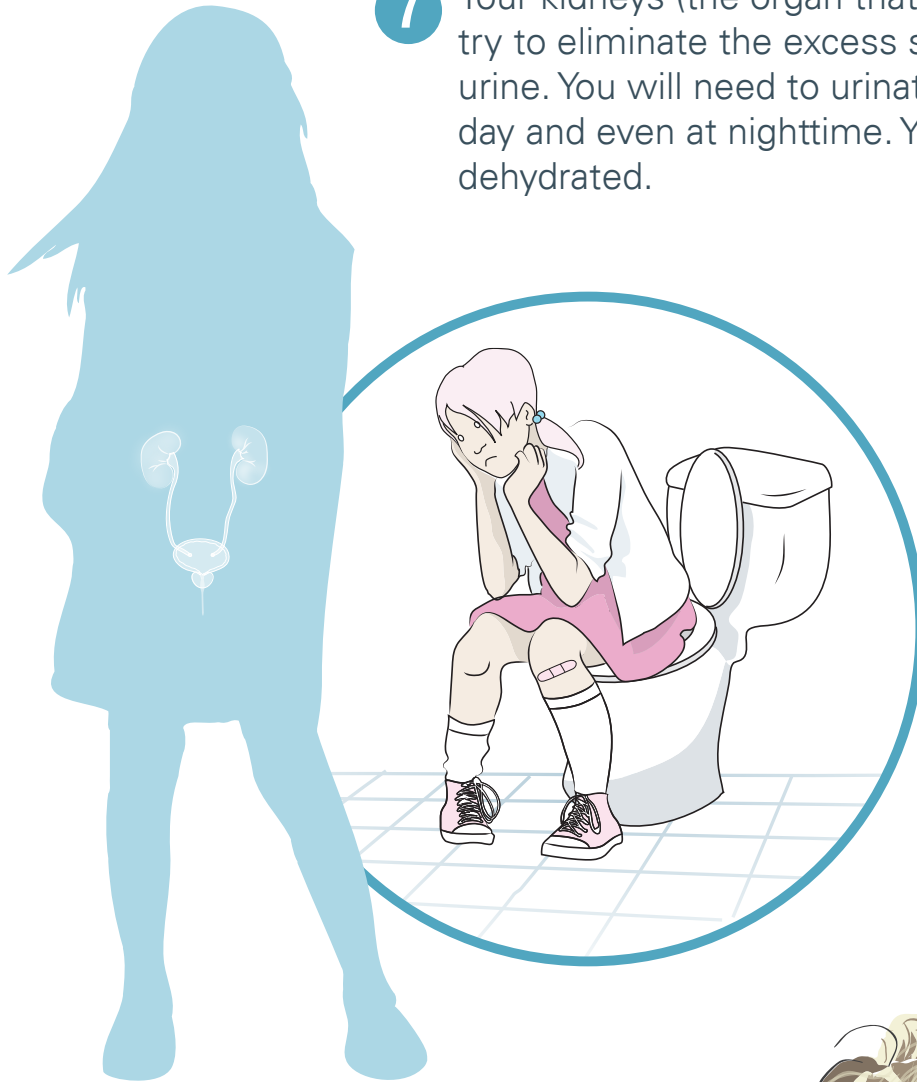
- 5 Your immune system sends a message to destroy the beta cells in your pancreas. Your body's defense system confuses the beta cells with harmful invaders like bacteria and/or viruses.




- 6 Destruction of the beta cells = No more production of insulin = An accumulation of sugar in the bloodstream. Your blood sugar will become elevated. This is what is called **HYPERGLYCEMIA**.



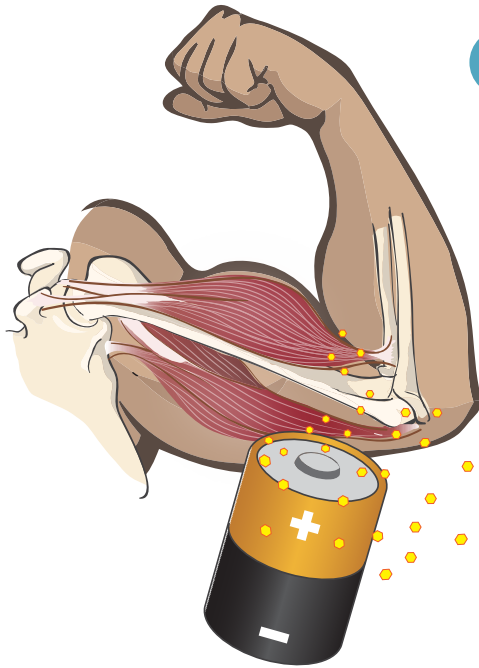
- 7** Your kidneys (the organ that filters the blood) will try to eliminate the excess sugar through the urine. You will need to urinate frequently during the day and even at nighttime. Your body will become dehydrated.



- 8** You will become very thirsty. You will need to drink frequently during the day and even during the night.

 **Excessive urination and thirst are usually the first signs of a high blood sugar.**

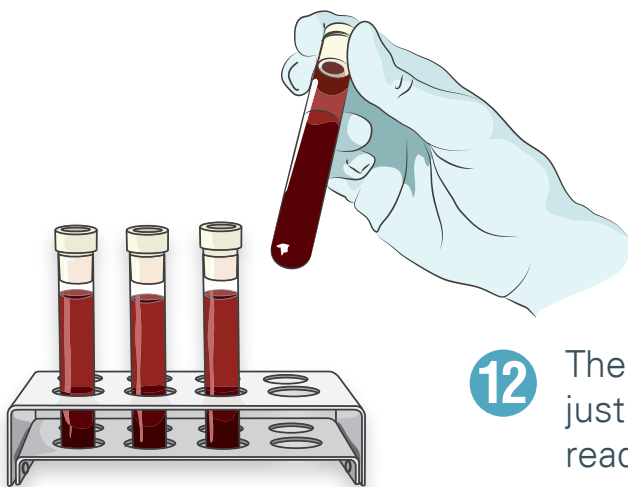




9 Your body cells need sugar to work and remain healthy. When there is no more insulin production, the body uses another type of energy. This other type of energy is found in your muscle and fat tissues. When the body breaks down fat and muscle something called **ketones** are produced.

10 When the body breaks down fat and muscle there can be weight loss.

11 Ketones are an acid. When this acid starts to build up in your body, you will start to have symptoms like stomach aches, nausea and vomiting.



12 The diagnosis of **DIABETES** is given with just one reliable laboratory blood sugar reading.

What will happen now?

The “honeymoon” period

A few weeks after **diagnosis** (when we confirmed that your child has diabetes), your child’s signs of high blood sugar (**hyperglycemia**) will disappear. His or her blood sugar levels will be back on target.

Around this time, your child may start having episodes of low blood sugar (**hypoglycemia**).

He or she may suddenly not need as much insulin. This is because there may still be some beta cells in your child’s pancreas. These beta cells may still be able to make some insulin.

When this happens, you may think that the diabetes is going away. Some parents may wonder if the diabetes diagnosis was a mistake. Others may feel that diabetes has been cured. Unfortunately, this is not the case. This rise of insulin in your child’s body is part of the course of the disease.

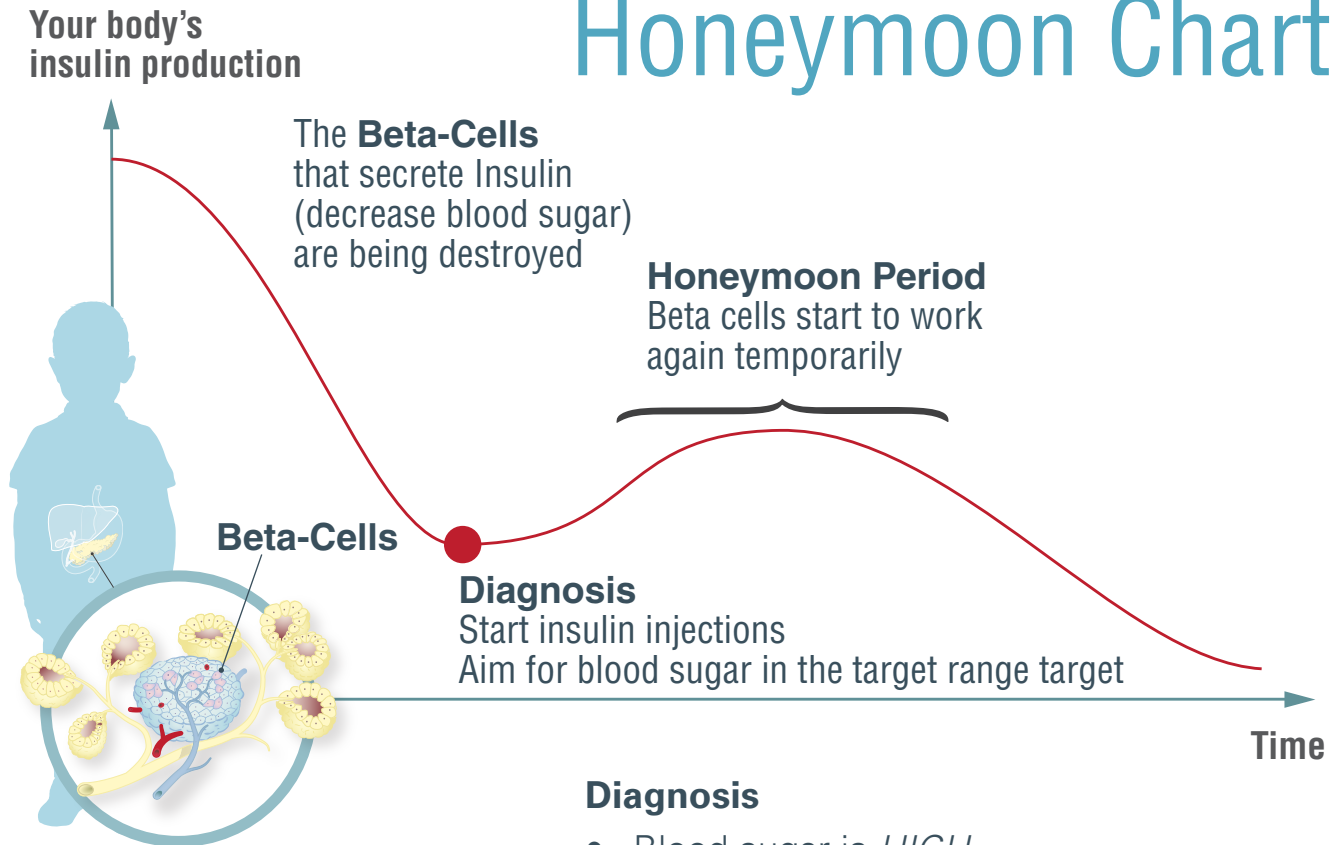
Your child is going through what we call the “honeymoon period”.



Your child’s honeymoon period could last a few weeks, even a few months. For some people, this may even last up to a year.

Over time, your child’s pancreas will continue to lose its insulin-producing beta cells. His or her blood sugar will go up again. In response, we will need to increase the daily doses of insulin that your child takes.

Honeymoon Chart



Diagnosis

- Blood sugar is *HIGH*
- Start insulin injections - aim to bring blood sugar into target range

1st few weeks

- You are calling the nurses daily to adjust the insulin to bring the blood sugars into target range

Honeymoon Period

- Blood sugar into target range
- Beta cell starts to work again temporarily
- *Reduce insulin*

Type 1 Diabetes established

- Beta cells continue to be destroyed
- Blood sugar rises
- *Increase insulin* doses to bring blood sugar back into target range



Target Blood Sugar
is between 4.0 and 8.0 mmol
(see **page 22**)

How will you know if your child is in the honeymoon period?

You will know this by how much insulin your child needs per day. We call this the **total daily insulin dosage (TDD)**.

A child's usual TDD in a day is around: **1 unit/kilogram (weight)/day**

This could drop to: **0.5 units/kilogram (weight)/day**

For example: If your child weighs 25 kg. His or her usual TDD would be **1 unit x 25 kg = 25 units per day**.

During the honeymoon, it may change to **0.5 units x 25 kg = 12.5 units per day**.

What is your child's weight? kg

What is your child's total daily insulin dosage (TDD)?

Try to calculate this.

$$\begin{array}{ccccccc} \dots\dots\dots & \mathbf{1} & \mathbf{X} & \dots\dots\dots & \mathbf{=} & \dots\dots\dots & \\ \mathbf{1 \text{ unit of}} & & & \mathbf{Your \text{ child's}} & & & \mathbf{TDD} \\ \mathbf{insulin} & & & \mathbf{weight} & & & \end{array}$$

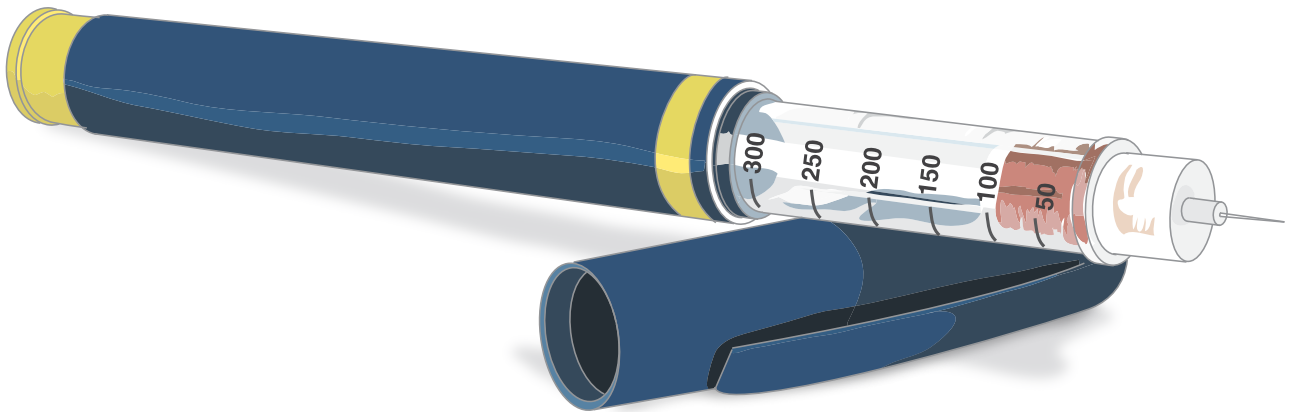
What might your child's TDD be during the honeymoon period?

Try to calculate this

$$\begin{array}{ccccccc} \dots\dots\dots & \mathbf{0.5} & \mathbf{X} & \dots\dots\dots & \mathbf{=} & \dots\dots\dots & \\ \mathbf{1 \text{ unit of}} & & & \mathbf{Your \text{ child's}} & & & \mathbf{TDD} \\ \mathbf{insulin} & & & \mathbf{weight} & & & \end{array}$$

Your treatment

The only treatment for Type 1 Diabetes is insulin. The only way to give insulin is by injection. Insulin is a messenger that talks to the cells of the body. Insulin works by telling the cells in the body that there is sugar (**glucose**) in the blood for the body's cells (e.g. muscle cells) to use for energy.



In the beginning, you will need to call your diabetes nurse every day. She will adjust your child's insulin dose to make sure that blood sugar levels are in the target range.

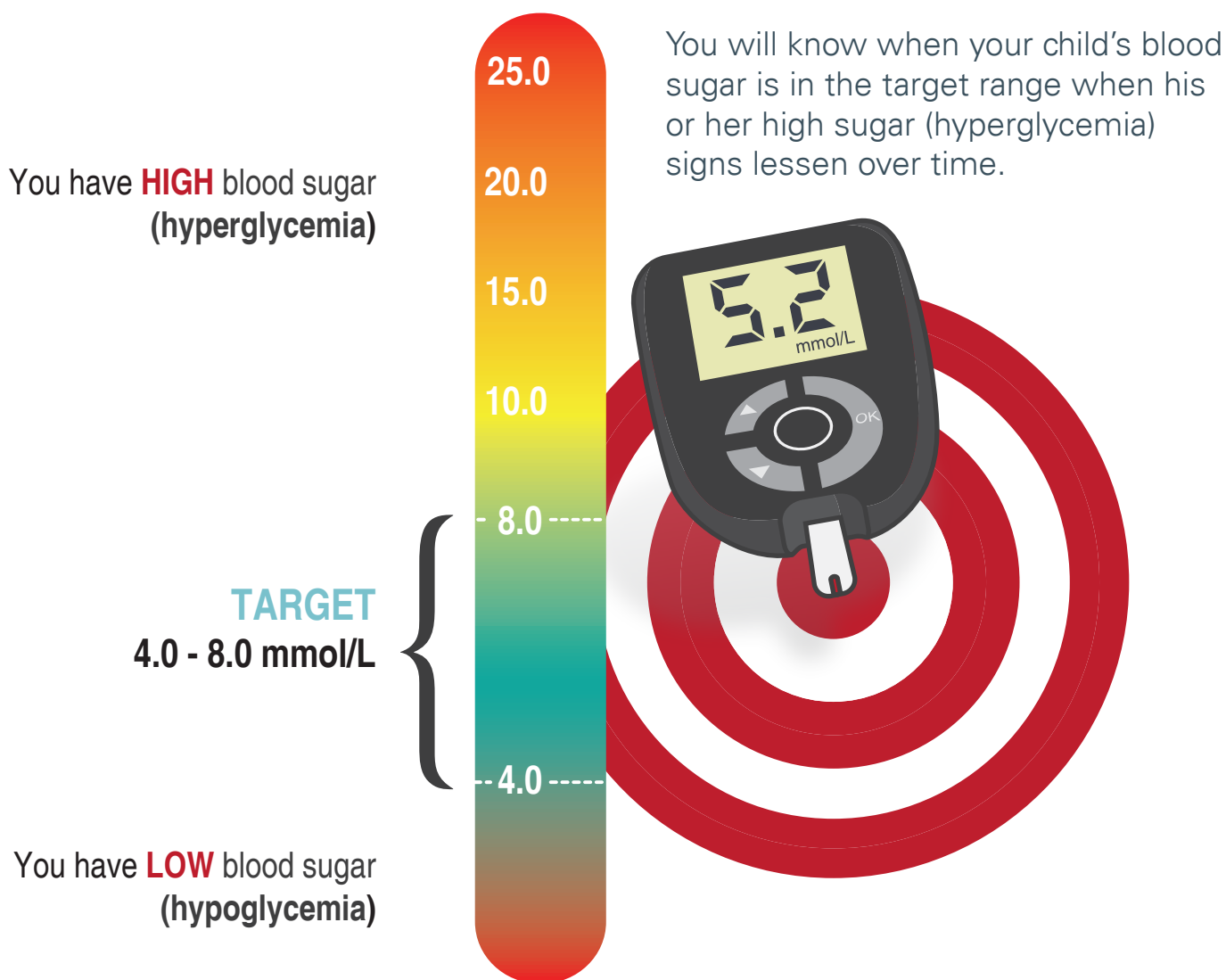
Keep in mind, that every child is unique. The right dose for one child will not work for another.

For this reason, we will need to adjust or change your child's insulin dose daily at the beginning. Finding the balance and the right insulin dose for your child may take time (sometimes weeks). This is normal. It does not mean that your child is getting worse or was incorrectly diagnosed with diabetes.



The target range is between 4-8 mmol/L for all ages.

How will I know when my child's blood sugar is in the target range?



Remember ketones?

Glucose is the fuel that gives the body energy. If your cells do not have glucose, your body will begin to break down its fat and muscle stores for energy. This will form **ketones**. The ketones are dangerous because they

make your blood acidic. (see **page 24** to learn more)

With insulin, your body will be able to use the glucose from your blood and there will be no more ketones.

Could others in my family get Type 1 Diabetes?

Now that you know that your child has this disease, you may wonder what the chances are that other members of your family develop diabetes. The chances are quite low:

- Your child's sibling only has a 5% chance of developing Type 1 Diabetes.
- If your child one day has children of his or her own, the chances your grandchild will have Type 1 Diabetes is between 3 and 5 %.



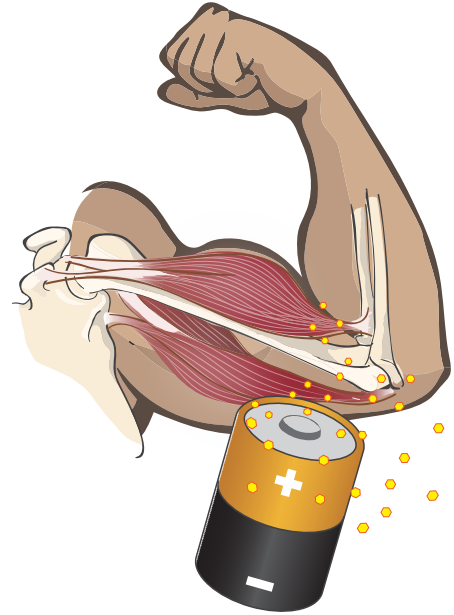
That said, if your child has an identical twin, the possibility of diabetes for his or her twin is much higher (40% for a twin compared to 5% for a brother or sister; it's 0.5 % in the general population.)

Speak to your health care team if you have any concerns or questions. They will explain what the chances might be for you and your family.

Ketones

What are ketones?

Ketones are formed when fat and proteins are used to make energy. The ketones will make your blood become acid which is very dangerous for all the cells in your body.



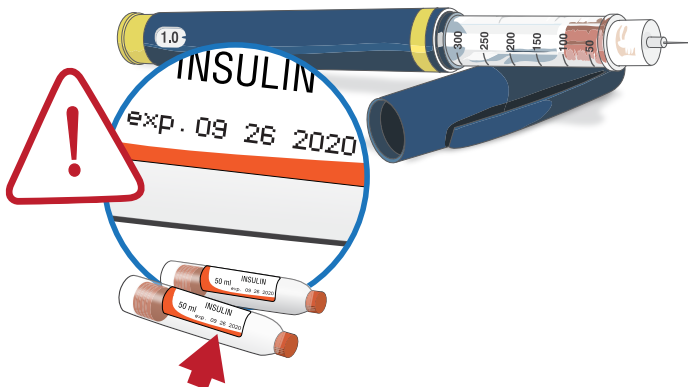
 **Ketones are present only if there is not enough insulin in the body.**

Your child may develop ketones in their body, if:

- You forget or skip some insulin injections.
- You always inject insulin in the same place on your child's body. It is important to not always inject in the same place to avoid lumps in the skin (lipohypertrophy). Insulin that is injected into lumpy skin may not enter your child's body properly.
- Your insulin is spoiled. If it was not stored properly and it freezes or becomes too hot, this will affect how well it works.



- Your child is sick with a cold, fever, or is vomiting.
- Your child is growing. As your child grows, his or her body will need more insulin. We will have to adjust your child's insulin dose to meet these changing needs.
- Your child is going through puberty. A teenager's usual insulin dose per day may rise, up to 2 units/kilogram/day. This is due to **insulin resistance** during puberty.



What is insulin resistance?

During puberty, your child will go through major physical changes. During this time, growth and sex hormones will rise as their body transforms. While this is normal, these hormones will make it more difficult for your child's cells to use sugar (glucose) for energy. When this happens, we call this insulin resistance.



When to check for ketones



Check for ketones when your child:

- Has a blood sugar higher than: 17.0 mmol/l.
- Is not feeling well. That is, he or she has a fever, cold, or is vomiting. You should check for ketones, even if your blood sugar is in the target range. This check is done only at home, not at school.

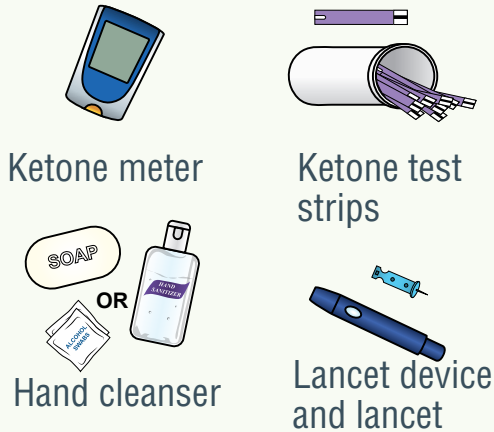
How do we check for ketones?

There are 2 ways that you can check for ketones. You can test it in the blood or urine. The blood test is the more precise measure for ketones. That said, you can do a urine (ketostix) test, if you do not have any more blood ketones strips.

How do I test for blood ketones?

A ketone blood test is the most precise method for measuring ketones.

1. Gather your supplies



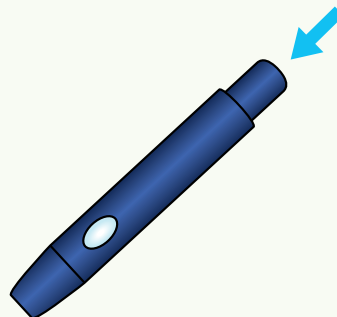
2. Wash hands (adult and child)



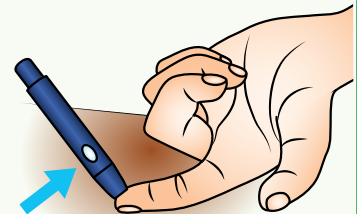
3. Insert ketone test strip to turn meter "ON".



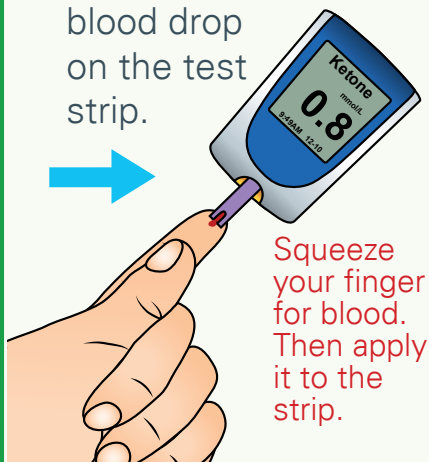
4. Load the lancet device.



Prick the finger.



6. Place the blood drop on the test strip.



Blood ketone level

Advice

More than
3 mmol/L

This is an emergency. Call the diabetes doctor at: 514-412-4400 extension: 53333. Ask for the pediatric diabetes doctor on call.

Between
1.5 - 3 mmol/L

The child may be developing DKA*. Call the diabetes doctor at: 514-412-4400 extension: 53333. Ask for the pediatric diabetes doctor on call.

Between
0.6 - 1.5 mmol/L

Retest blood sugar and blood ketones in 2-4 hours.

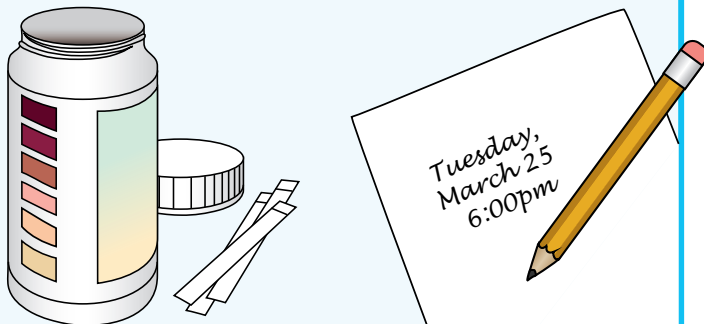
Less than
0.6 mmol/L

Do nothing. Continue blood sugar testing as usual.

How to check for ketones in the urine?

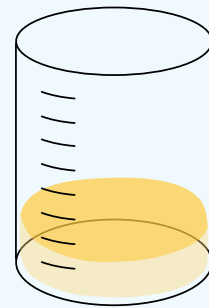
Do the urine ketone test (ketostix).

- 1.** Open the bottle and mark down the date

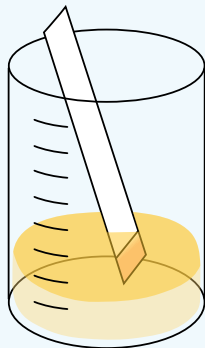


Once the bottle is open, it is good for 6 months. Mark down the date of opening on the bottle.

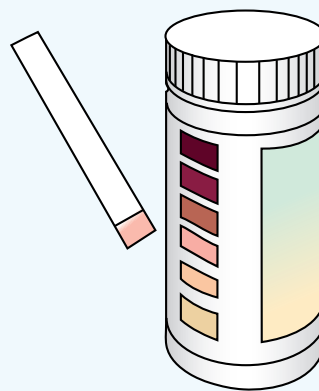
- 2.** Ask your child to urinate (pee) in a container



- 3.** Dip the strip in the urine. Remove it right away.



- 4.** Check the strip color with the colour chart on the bottle chart



How to treat ketones?

Call the doctor on-call if your child's:

- blood ketone result is **1.5 mmol/L or more**
- urine ketone result is one of the 3 darkest colours on the bottle chart.



DO NOT WAIT. If your child has ketones, this is (or can very quickly become) a medical emergency. Call the diabetes doctor “on call” right away. He or she will tell you how much rapid insulin you will need to inject.

Low Blood Sugar (hypoglycemia)

If your child's blood sugar is **below 4.0**, this is called **hypoglycemia**.

What are the causes?

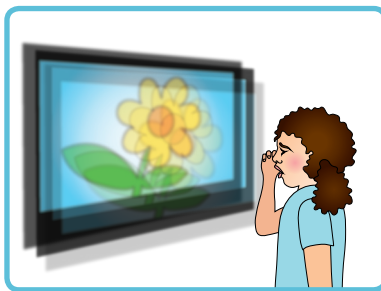
A low blood sugar episode can be caused by any of the following:

- Missed meal or snack
- Physical activity or exercise (when your child had no extra snack)
- Vomiting
- Insulin dose that was too strong

What are the signs?



Trembling



Blurred vision



Extreme tiredness and
paleness



Dizziness



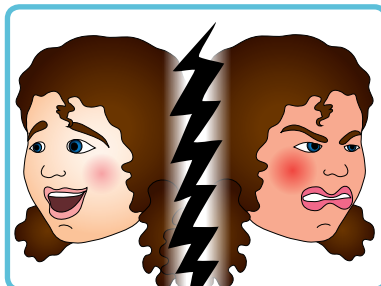
Headaches



Hunger



Sweating

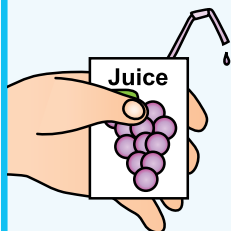


Mood changes

What is the treatment?

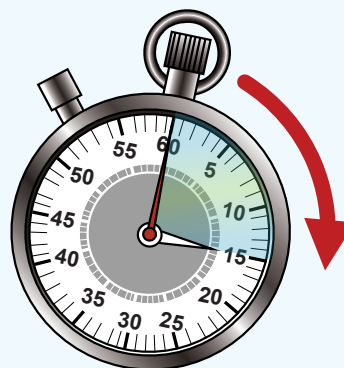
If your child's blood sugar falls **below 4.0**, give your child a juice box to drink. Follow these steps even if they show no signs of low blood sugar.

1. Give a juice box (any kind or brand of juice will do.)

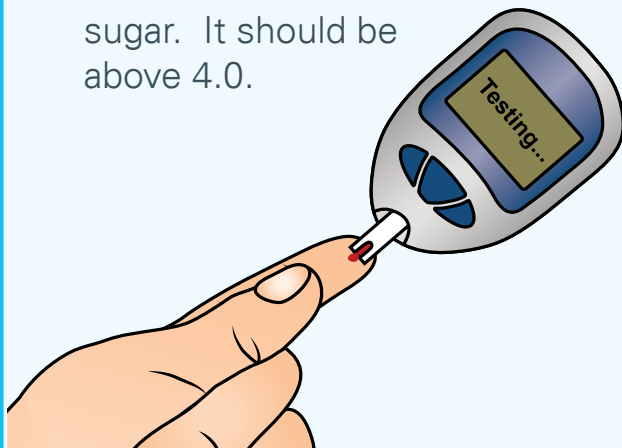


Juice (on its own) is the best way to bring up blood sugar, safely and quickly. Do not give juice with any other food. This will slow down the juice's effect.

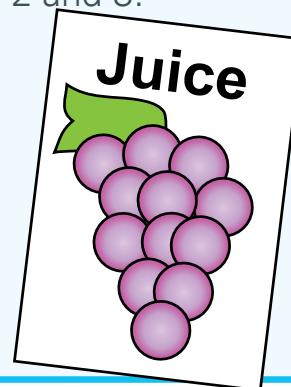
2. Wait 15 minutes. Do not leave the child alone.



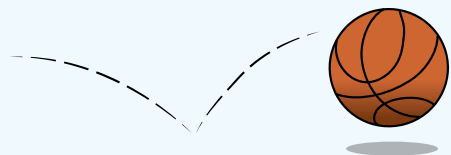
3. Retest the blood sugar. It should be above 4.0.



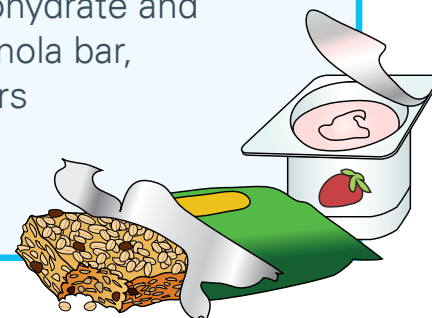
4. If the child's blood sugar is still below 4.0, repeat steps 1, 2 and 3.



5. When the blood sugar has returned to normal (above 4.0), the child may resume his/her activities.



6. If the next meal/snack is more than one hour away, give a snack containing carbohydrate and protein (e.g. granola bar, yogurt or crackers with cheese).



What else can be used to treat low blood sugar?

Now that you have more experience with diabetes, let's review other ways to treat **hypoglycemia episode**.

Rapid carbohydrate treatment is the way to treat low blood sugar. A **rapid carbohydrate** is a food or liquid that has **NO** fiber, **NO** proteins and **NO** fat.

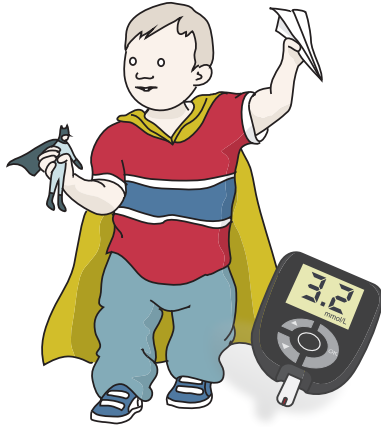
Examples of rapid carbohydrate foods and liquids are:

- juice
- sugar
- maple syrup
- honey
- Skittles
- diabetes sugar tablets (Dex 4)



How much rapid carbohydrate should I give my child during a low blood sugar episode?

How much you give will depend on their age. See below to learn more.

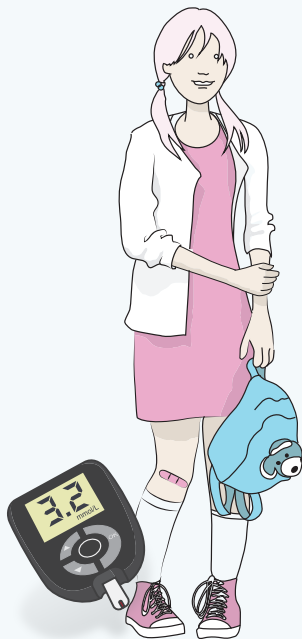


0 to 4 years old

with blood sugar of
3.0 - 3.9 mmol/L

Needs: 5 g of rapid carbohydrate Choose one:

- 40 ml** Juice or regular soft drink
- 1 teaspoon** Sugar, maple syrup or honey (honey only if more than 1 year old)
- 1 tablet** Gluco 5 tablets
- 1 tablet** Dex 4 tablets
- half a roll** Rockets (regular size)
- 1 candy** Rockets (giant size)
- 5 candies** Skittles

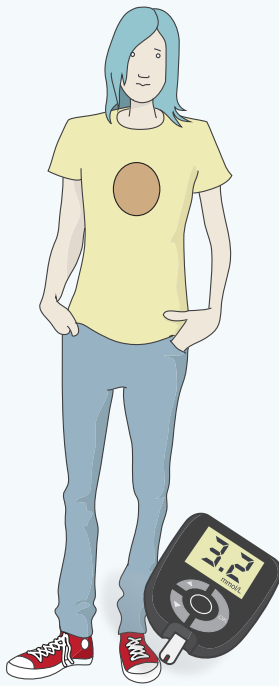


5 to 10 years old

with blood sugar of
3.0 - 3.9 mmol/L

Needs: 10 g of rapid carbohydrate Choose one:

- 85 ml** Juice or regular soft drink
- 2 teaspoons** Sugar, maple syrup or honey
- 2 tablets** Gluco 5 tablets
- 3 tablets** Dex 4 tablets
- 1 and a half rolls** Rockets (regular size)
- 3 candies** Rockets (giant size)
- 10 candies** Skittles



Needs: 15 g of rapid carbohydrate Choose one:

125 ml	Juice or regular soft drink
1 tablespoon	Sugar, maple syrup or honey
4 tablets	Dex 4 tablets
3 tablets	Gluco 5 tablets
2 rolls	Rockets (regular size)
4 candies	Rockets (giant size)
15 candies	Skittles

11 years old or older

with blood sugar of
3.0 - 3.9 mmol/L

All ages with blood sugar *under* 3.0 mmol/L


Need: 5 *more* grams of rapid carbohydrate

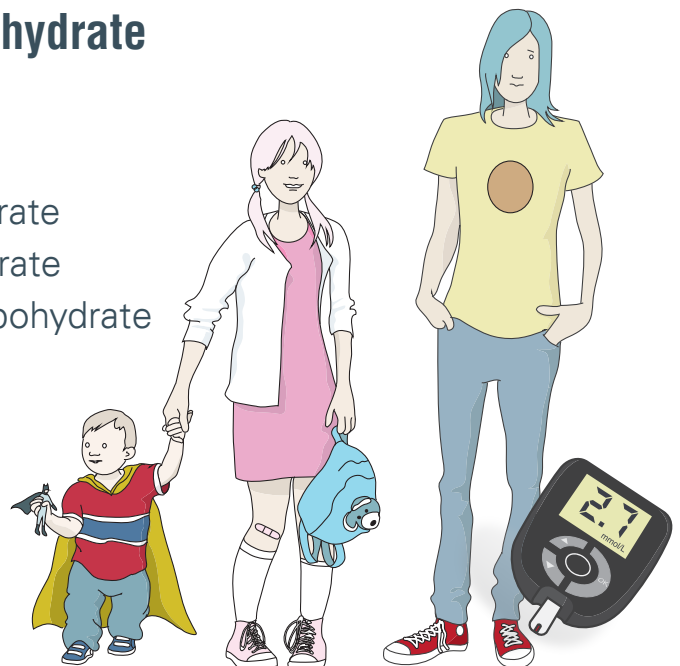
This means you should give the
following **total** amounts:

0 to 4 years old: 10 g of rapid carbohydrate

5 to 10 years old: 15 g of rapid carbohydrate

11 years old and over: 20 g of rapid carbohydrate

 Review with your diabetes
team what is most appropriate
for your child.

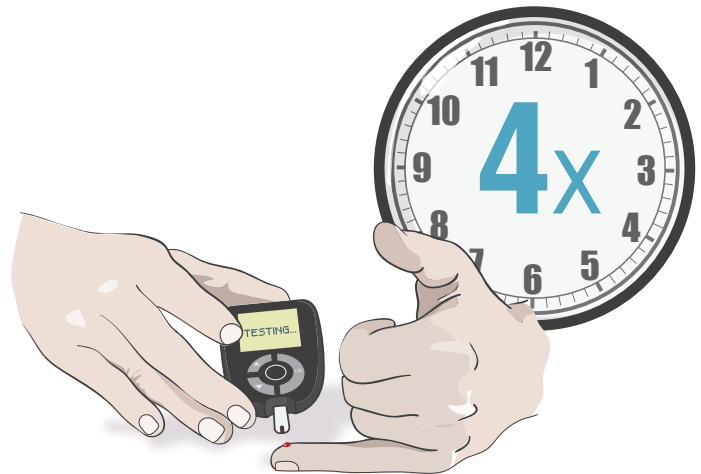


Frequently-asked questions

How can I help my child avoid low blood sugars?

Low blood sugar episodes **DO** and **WILL** happen. Here are a few tips to help you prevent them from happening **often**:

- **Check blood sugar levels regularly.** Test at least **4 times** a day (before breakfast, before lunch, before supper, and before bedtime snack) and anytime you suspect that your child's blood sugar may not be on target (e.g. if he or she seems "off", or shows low or high blood sugar signs).



- **Stay safe when physically active.** Give your child a juice box or an extra snack before gym class, sports or any physical activity.

(See page 45, School Protocol, in Pediatric Diabetes Part 1: A family guidebook)


- **Have a snack after a low blood sugar treatment, if the next meal or snack is more than 1 hour away.** Your snack should include 15 grams of carbohydrates, plus some protein (e.g. granola bar, yogurt, crackers with cheese). This is important, especially if the episode happens at night. This will help you prevent another low blood sugar incident. (See **page 30** for more details, Low Blood Sugar Protocol)

- **Work closely with your diabetes care team.** Always tell us about your child's low blood sugar episodes. We may need to adjust the insulin doses or other aspects of your child's care plan. We can also discuss tips that might work best for you to find the right balance between your child's food plan, insulin, and physical activities.



- **Eat regular meals and snacks. Don't forget your carbs!** Eat 3 meals and snacks, as your health care team has advised you. Avoid skipping and delaying meals. Make sure each meal and snack contains carbohydrates. Foods that are rich in carbohydrates are: bread, cereals, crackers, couscous, pasta, rice, fruits, milk, and yogurt.



 **Always carry your blood glucose meter, rapid carbohydrates and snacks with you.**



How much insulin should I give when my child has low blood sugar at mealtime?

If your child has low blood sugar before a meal, always treat the low blood sugar right away, before you eat or take any insulin.

Give your child a rapid carbohydrate. This will raise his or her blood sugar level to 4.0 mmol/l or above. Treat before eating anything else. Don't

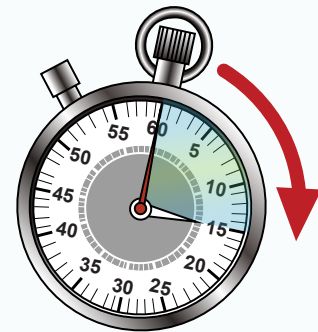
forget to retest after 15 minutes. If your blood sugar is 4.0 mmol/l or above your child can now eat.

For example: If your child's blood sugar is 3.2 mmol/l before breakfast, here is what you should do:

1. Give your child **15 grams** (1tbsp) of rapid carbohydrate.



2. Wait 15 minutes.



3. Retest your child's blood sugar.



If the blood sugar is above 4.0 mmol/L, you can go to step 4.

If the child's blood sugar level is still below 4.0 mmol/L, repeat steps 1, 2 and 3.

4. Now calculate the insulin dose. **Use the first low blood sugar reading of 3.2 mmol/l. After the insulin injection, your child can safely eat.**

DO NOT use the second reading, as this was higher due to the juice (or rapid carbohydrate). This way, you will only give the smallest dose of insulin that your child needs.



Why should I avoid eating during the 15-minute wait?

Imagine that your rapid carbohydrate is a fast car on a highway. When you eat slower carbs, you are adding traffic on the highway. This will only slow down your fast car and take your body longer to bring your blood sugar back into the target range.

How many low blood sugar episodes in a week is acceptable?

You should not have more than 2 low blood sugar episodes a week.



What might happen if I have more than 2 low blood sugar episodes per week?

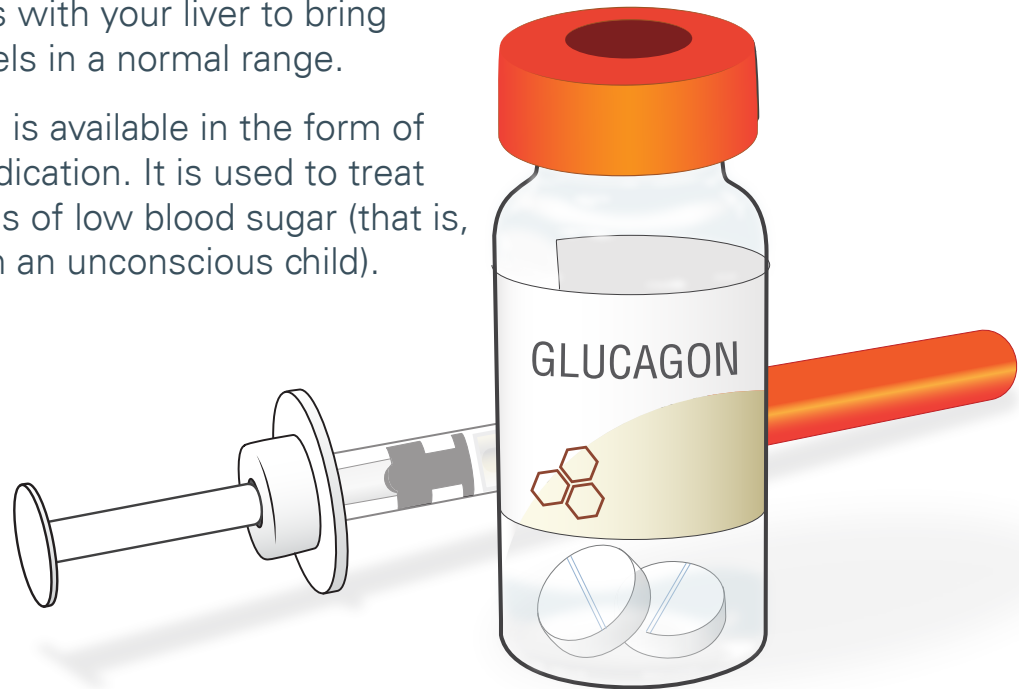
Your child's body will eventually stop showing the signs of low blood sugar. This is because your body understands that it is okay to have a blood sugar of less than 4 mmol/L. This is called **hypoglycemia unawareness**.

If your child does not feel the lows anymore, you will no longer be able to treat low blood sugar episodes early. Your child's blood sugar will drop without you knowing it. This is dangerous because he or she is more at risk to lose consciousness.

What is glucagon?

Glucagon is a hormone that is made by your pancreas. When blood sugar levels are low, glucagon sends a message to your liver to move sugar (glucose) into your blood. Glucagon works with your liver to bring blood sugar levels in a normal range.

Today, glucagon is available in the form of an injection medication. It is used to treat serious episodes of low blood sugar (that is, hypoglycemia in an unconscious child).



When do I inject Glucagon?

Your child needs a glucagon injection if he or she has a serious low blood sugar episode and any of the following:

- Loses consciousness
- Has a seizure
- Is unable to swallow

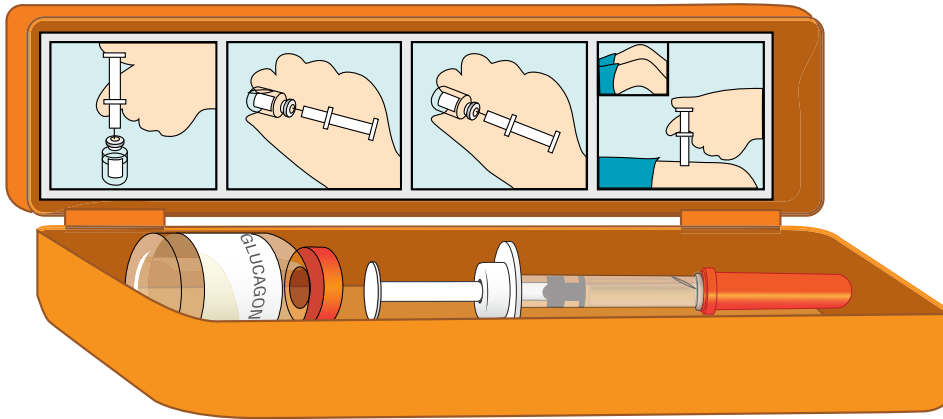
Keep in mind that a serious low blood sugar episode does **not** refer to the value of the reading but instead, to the **state of your child**. For example: if your child has a blood sugar of 2.1, is conscious and still able to drink a juice, you should **not** give them a glucagon injection.



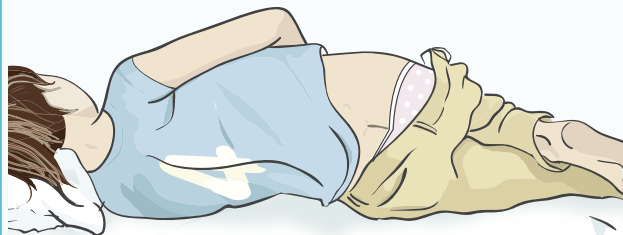
VERY IMPORTANT

As long as your child is unconscious, do not give them any food or drink. Do not put anything into their mouth. This can lead to choking.

How do I give a glucagon injection?



1. Roll your child on his or her side. Keep them in this side-lying position while you are preparing the injection.

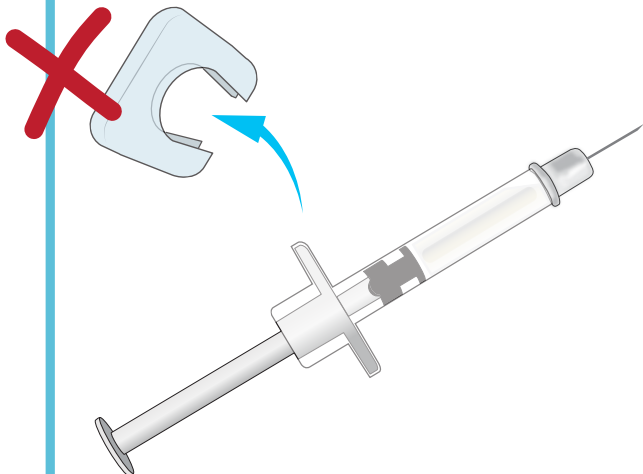


This is a safe position to prevent your child from choking.

2. Take the cap off the syringe that contains the diluting liquid.



Remove the flip-off seal from the glucagon bottle.

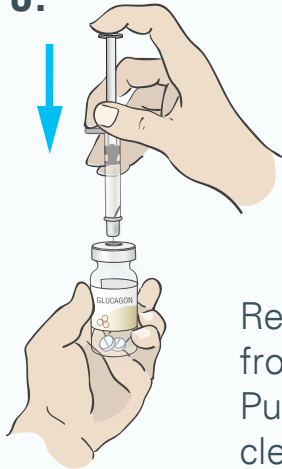


Why is there a plastic clip?

Do not remove the plastic clip from the syringe. This clip is meant to keep the plunger from being pulled out completely from the syringe.

If the plastic plunger does separate, simply place it back on the syringe by turning it in a clockwise direction.

3.



Inject **all** the liquid into the bottle that contains the glucagon pill.

(Keep in mind this is **not** sugar.)

Remove the syringe from the bottle.
Put the syringe on a clean surface

4.

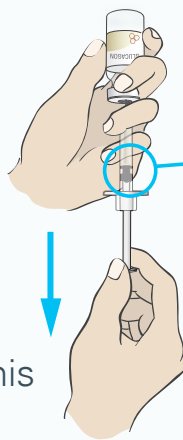
Swirl the bottle gently until the pill is completely dissolved. The liquid should be clear.



Do not use the medication if the liquid is cloudy.

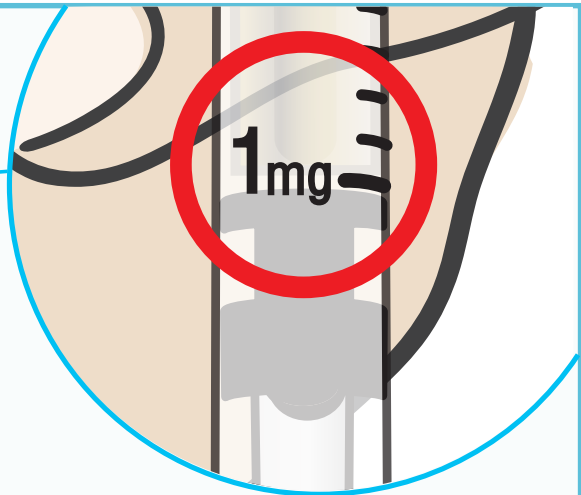
5.

Insert the same syringe into the bottle. Carefully turn the bottle upside down. Make sure the needle tip stays in the liquid.



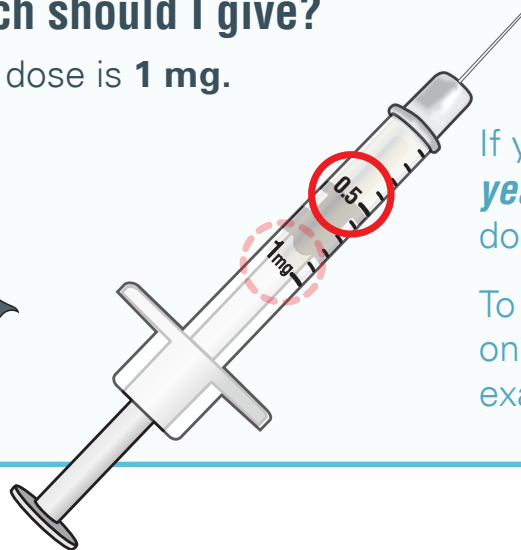
6.

Draw up the glucagon liquid into the syringe. This liquid should reach the **1mg** mark on the syringe.



How much should I give?

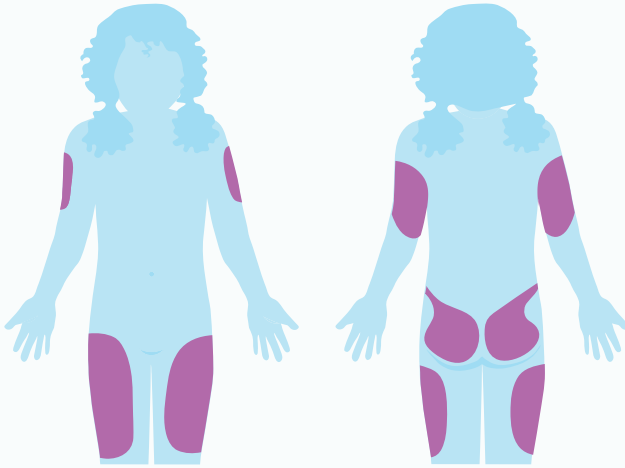
The usual dose is **1 mg**.



If your child is **less than 5 years old**, give only half the dose (0.5mg).

To avoid injecting too much, only draw into the syringe the exact amount you need.

- 7.** Choose your injection site. Glucagon may be injected into the muscle of your child's thigh, arm or buttocks.



There is no danger to giving glucagon.

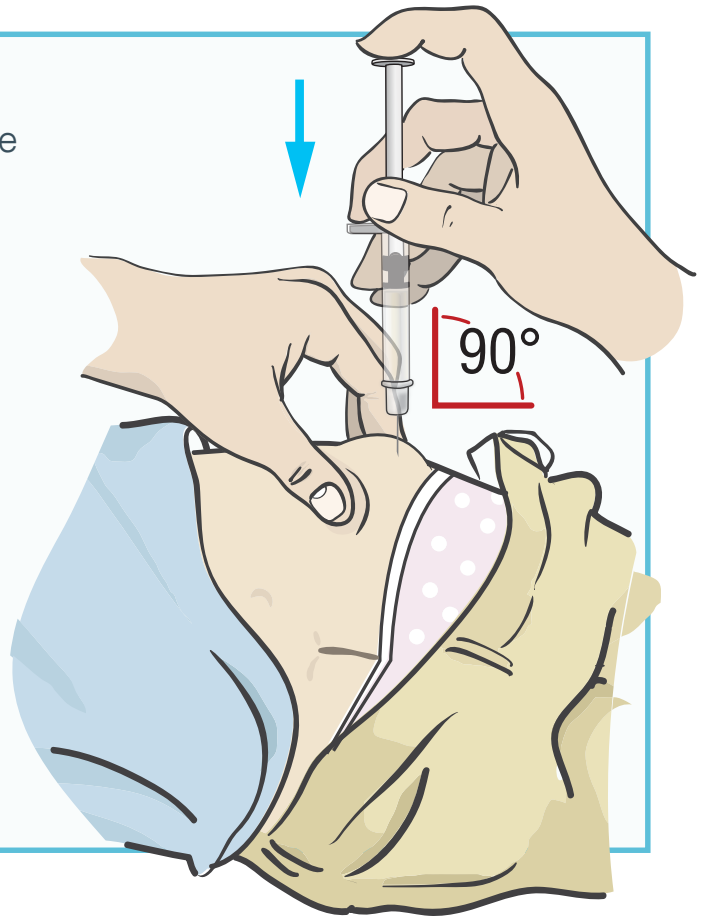
Your child cannot overdose on this medication. Glucagon will simply work to raise the sugar level in the blood.

- 8.** Pinch up the skin. Inject the needle into the skin at a 90° angle

If your child is:

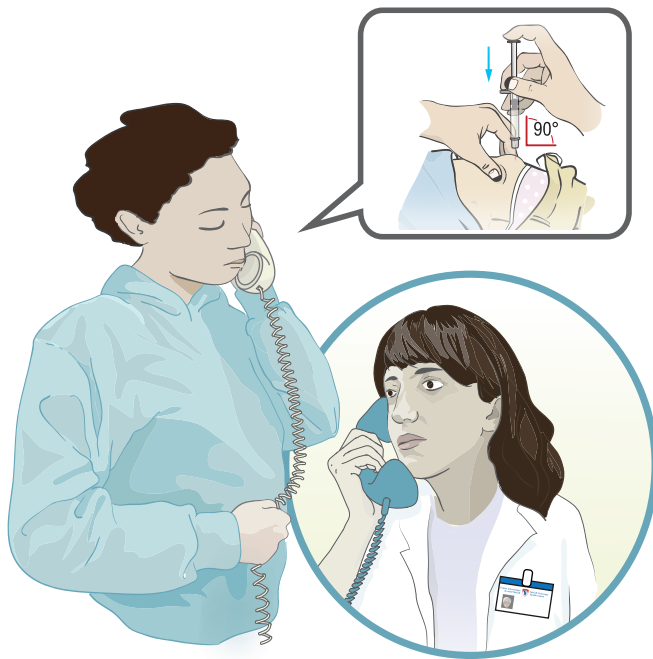
- 5 years old or older, inject all the liquid (the full dose)
- less than 5 years old, inject only half the liquid (half the dose). You will see a line on the syringe. This is where you need to stop.

- 9.** Push down the plunger of the syringe to inject the glucagon into your child's muscle.



- 10.** Once you have given the glucagon, keep your child turned on his or her side. This is to prevent choking.

(When an unconscious child awakens, he or she may vomit.)



- 11.** Call the diabetes doctor on call. Your doctor will review what happened and advise on whether you need to bring your child to the emergency room.



What should I do when my child wakes up?

When your child is awake and able to swallow, give them a rapid carbohydrate (example: juice). Then check their blood sugar level.

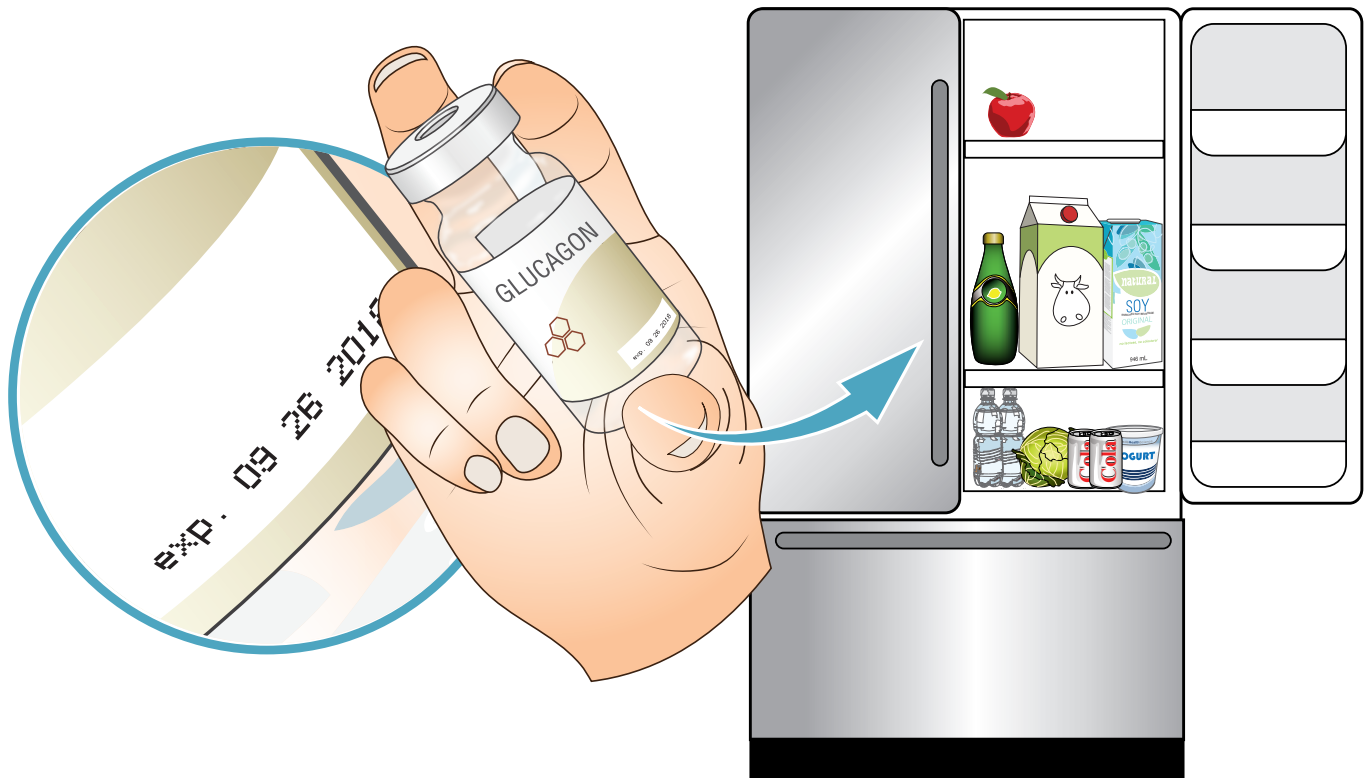


If your child does NOT wake up within 15 minutes of the injection, call 911.

How do we store this medication?

Keep your glucagon at home in a safe place. Make sure that everyone in the house knows where this is. You may keep it in the fridge until the expiry date. You can also keep

it at room temperature for up to 18 months or the expiry date (whichever comes first).

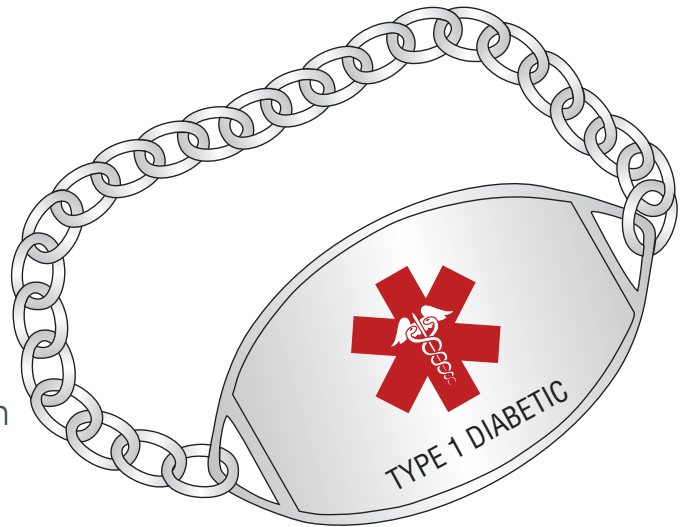


When leaving on vacation, always bring the glucagon emergency kit with you. You do not need to carry glucagon if you are going out locally. However, you should always carry your blood sugar meter, fast carbohydrates and snacks.

Why get a medical bracelet?

There are many models of medical bracelets available today. To find the right bracelet for your child, do a search online and pick the one that you like. Speak to your diabetes nurse, if you have any questions.

Most importantly, your bracelet should say that your child has type 1 diabetes. If your child has any medication or food allergies, you can make note of this as well.



Financial help for children with Type 1 Diabetes

The Quebec government offers some financial support for families whose children have Type 1 Diabetes. This benefit is offered to you until your child turns 18 years of age.

Families may use these funds to help cover the many costs related to caring for their child (e.g. travel to and from hospital, parking, pharmacy costs and more).

To help you claim this benefit, we will give you some forms to fill. You can also find these documents online at: www.retraitequebec.gouv.qc.ca

You will need to complete these and return them to your nurse at your next appointment.

Looking for more information?

For more information on Type 1 Diabetes, visit these websites:

Juvenile Diabetes Research Foundation (JDRF)

www.jdrf.ca

Diabetes Children's Foundation

www.diabetes-children.ca

Diabetes Canada

www.diabetes.ca

International Diabetes Federation (IDF)

(They have a tool kit in different languages to inform schools about diabetes.)

www.idf.org

Diabetes at school

www.diabetesatschool.ca

