

A Guide for Families: Diabetes Care for Children and Teens with Type 1 Diabetes



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Overwaitea Food Group banners including Save-On-Foods, PriceSmart Foods, Overwaitea Foods, Urban Fare, Cooper's Foods and Bulkley Valley Foods provide funding for Child Health BC activities and programs.

In 2007, the Overwaitea Food Group made a \$20 million pledge towards Child Health BC.



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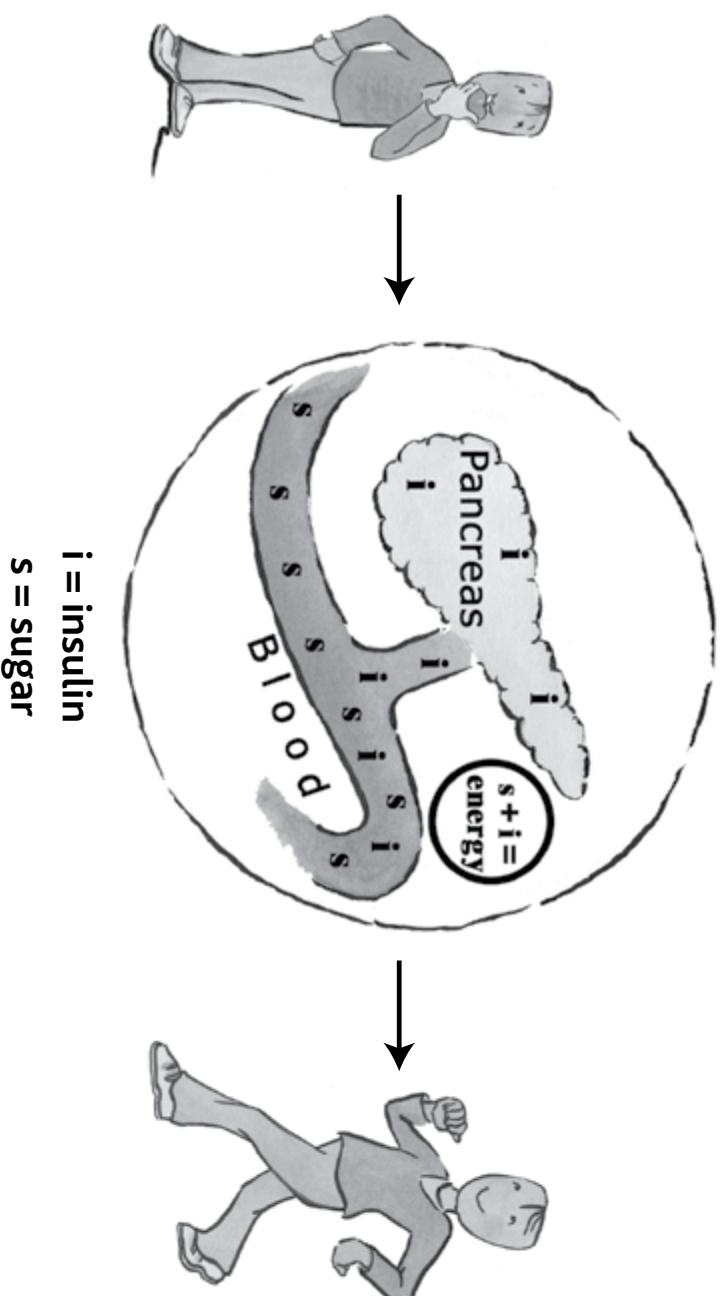
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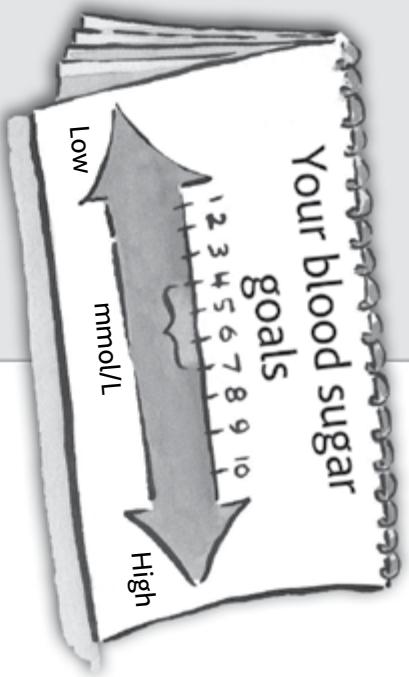
Your body needs sugar (glucose) for energy

- ◆ Much of the food you eat becomes a type of sugar called glucose.
- ◆ The blood takes the glucose to all parts of your body.
- ◆ The pancreas makes a hormone called insulin.
- ◆ Insulin carries the glucose from your blood to the rest of your body.
- ◆ Your body uses glucose for energy.

Notes



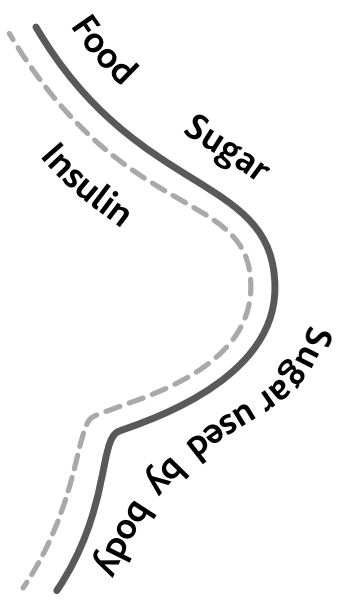
Your blood sugar levels



Food and activity affect your blood sugars.

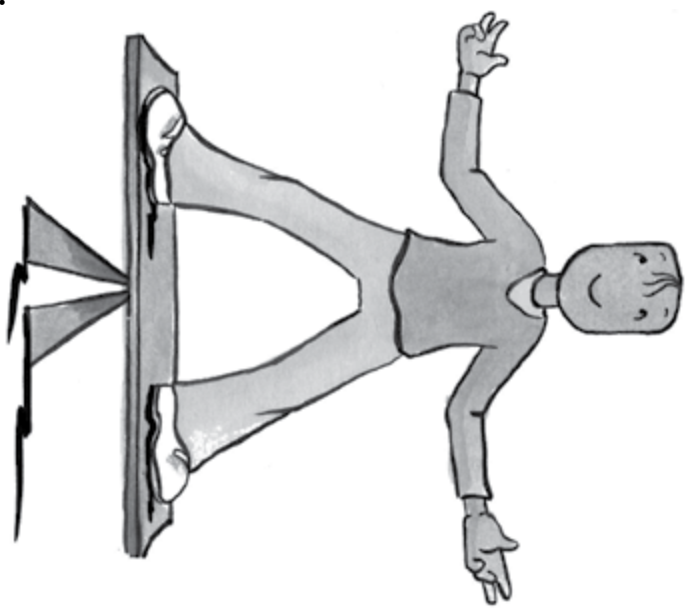
Notes

Blood sugar before eating
4–7 mmol/L



Blood sugar 2 hours after eating
5–10 mmol/L

“Feeling good”



Across the country, the Canadian Diabetes Association is leading the fight against diabetes by helping people with diabetes live healthy lives while we work to find a cure. We are supported in our efforts by a community-based network of volunteers, employees, healthcare professionals, researchers and partners. By providing education and services, advocating on behalf of people with diabetes, supporting research and translating research into practical applications – we are delivering on our mission.

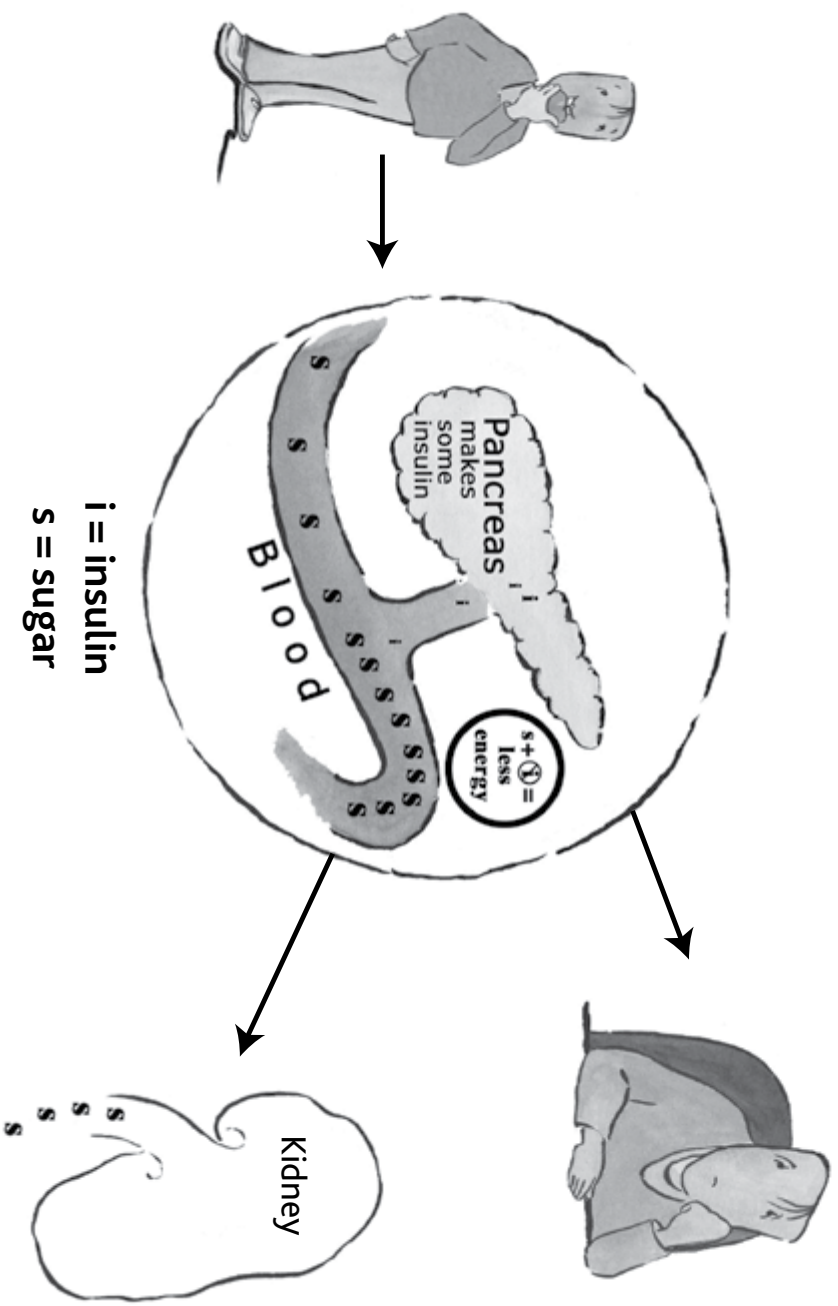
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What is type 2 diabetes?

- ◆ Much of the food you eat becomes a type of sugar called glucose.
- ◆ Pancreas makes some insulin.
- ◆ Insulin works poorly.
- ◆ Much of the glucose stays in the blood.
- ◆ Your body cannot use all of the glucose for energy.
- ◆ Your body tries to get rid of the extra glucose through the urine.

Notes

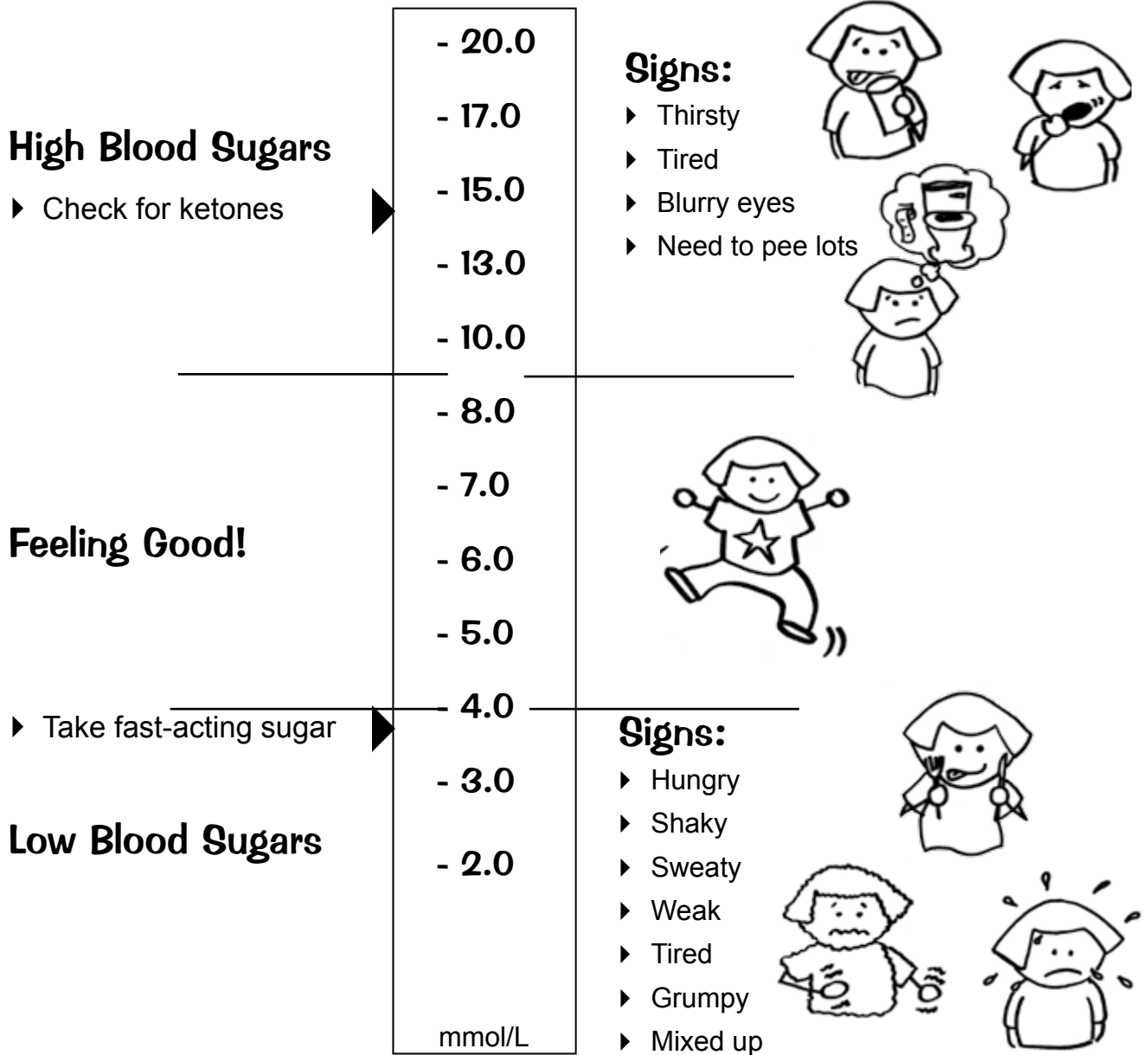


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Checking Blood Sugar

Blood Sugar = Blood Glucose	Blood Sugar Goals
<ul style="list-style-type: none"> ▶ Check blood sugars at least 4 times a day: before breakfast, lunch, supper, bed and when you feel low. ▶ Check blood sugars more often when you are sick. ▶ Write down blood sugars and review often. ▶ Checking blood sugars helps you learn about the balance between food, activity, and insulin. 	<p>Before meals: 4 - 8 mmol/L</p> <p>Bedtime: 6.7 - 10 mmol/L</p> <p>Write your blood sugar goals here: _____</p>



Notes:

Low Blood Sugar: Hypoglycemia

Any blood sugar less than 4 is too low. It must be treated right away.
Hypoglycemia is another word for blood sugar that is too low.

Always take supplies with you to treat low blood sugar.

- ▶ Fast acting sugar such as fruit juice or glucose tablets

and

- ▶ Extra food such as cheese and crackers or half a sandwich.



What are the signs of low blood sugar?



- ▶ Sweaty
- ▶ Pale



- ▶ Shaky



- ▶ Hungry



- ▶ Mood changes
- ▶ Acting strange



- ▶ Dizzy
- ▶ Weak



- ▶ Trouble focusing or thinking
- ▶ Feeling or acting confused



- ▶ Feeling sleepy or tired.

Some children get other signs too such as tingling in their lips or nausea.

What should you do?

- ▶ **Treat right away! Do not wait.**
- ▶ All young children and some older kids need help to treat low blood sugar. Help anyone who is confused or not able to treat a low on their own.

1. Take fast-acting sugar.

- **5 grams** for children under 15 kilos (under 33 pounds).
- **10 grams** for children 15 to 30 kilos (33 to 66 pounds).
- **15 grams** for children more than 30 kilos (more than 66 pounds)

Any of these choices have about 15 grams of fast-acting sugar:

- 1/2 - 3/4 cup of fruit juice (125-175 ml)
- 4 Dex 4 tablets™
- 5 DextroEnergy tablets
- 1 tablespoon of maple or pancake syrup (not diet)

Infants may be given sugar water.

1 ½ teaspoons of sugar added to 1/4 cup of water = 6 grams of fast-acting sugar. Follow with breast milk or formula.

2. **Wait 15 minutes.** This gives the fast acting sugar time to work. Eating other food too soon slows down the fast acting sugar.
3. **Recheck blood sugar.** If it is still less than 4, give more fast-acting sugar.
4. **When the blood sugar is above 4, eat your meal or snack.** If it will be more than 45 minutes to the next meal or snack, add an extra snack such as crackers and cheese, cookies, or a granola bar.

What causes low blood sugar?

- ▶ Too much insulin or diabetes medication
- ▶ Not eating enough food
- ▶ Missed or delayed food
- ▶ Extra physical activity
- ▶ Drinking alcohol

Can low blood sugar be prevented?

Most children with diabetes have some lows. They can usually be treated quickly and easily.

To help prevent problems with low blood sugars:

- ▶ Always carry fast-acting sugar and food with you.
- ▶ Treat right away. Do not wait!
- ▶ Eat all meals and snacks on time.
- ▶ Measure insulin carefully. Supervise children's injections.
- ▶ Only give mealtime rapid or short acting insulin when there is also food to eat.
- ▶ Eat extra food or give less insulin for extra physical activity.
- ▶ Teach family and friends when and how to treat low blood sugar.
- ▶ Tell your doctor or nurse if the blood sugar is low often or there does not seem to be a reason for the lows.
- ▶ Wear diabetes medical ID at all times.



Severe low blood sugar can cause someone to pass out or have a seizure. Emergency help is needed. Give Glucagon. Call 911 if you cannot give Glucagon.

To learn more about Glucagon read: *Glucagon for Severe Low Blood Sugar*.



I can treat low blood sugar with:



Glucose tabs are a good choice for older kids. They work faster than juice and are easy to carry.

Notes:

Glucagon for Severe Low Blood Sugar (Hypoglycemia)

What is glucagon?

Glucagon is a hormone made by the pancreas. It is used to treat severe low blood sugar. It raises the blood sugar by sending a signal to the liver to release stored sugar.

You can get glucagon from your pharmacy. Your pharmacy may need to order it. This can take a few days.

When should I give glucagon?

Use glucagon when your child is having a severe low blood sugar. Your child may be:

- ▶ unconscious
- ▶ having a seizure
- ▶ so uncooperative that you cannot give juice or sugar by mouth

If unconscious or having a seizure, turn your child on his/her side.

How do I give glucagon?

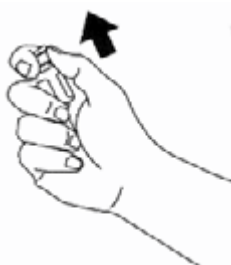
- ▶ You must inject it. You cannot give glucagon by mouth.
- ▶ Glucagon is injected the same way as insulin.

Glucagon comes in a kit. The kit includes:

- ▶ A small bottle that has 1 milligram (mg) of glucagon. The glucagon is a dry powder.
- ▶ A syringe that is filled with 1 ml of sterile liquid.

Follow the steps below:

1. Remove the cap from the bottle.
2. Inject the liquid from the syringe into the dry powder bottle.
3. Roll the bottle gently to dissolve the powder. Do not shake the bottle.
4. Draw the fluid back into the syringe.



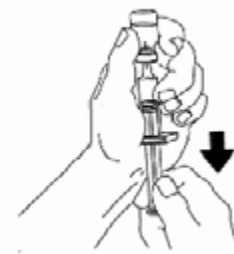
(1)



(2)



(3)



(4)

5. Inject glucagon into the middle outer thigh.
6. Your child may take 10–20 minutes to respond fully.
7. Once your child is alert, give juice or other fast-acting sugar.
8. After the fast-acting sugar, give some longer-acting carbohydrate. This is to stop the blood sugar from dropping too low again.
9. If your child is not alert and able to swallow after 15 minutes, give another dose of glucagon or call 911.
10. Contact your family doctor or your diabetes team before giving the next dose of insulin. Your child's insulin dose may need to be changed.

How much glucagon should I give my child?

If your child is:	Give this much glucagon:
Under 2 years of age	Your doctor will tell you how much to give. Write this down here: _____
2 to 5 years of age	½ bottle (½ ml or ½ mg)
6 years of age or older	1 bottle (1 ml or 1 mg)

Are there any side effects of using glucagon?

Your child may have an upset stomach or vomit after getting glucagon. This can last up to 24 hours.



- ▶ Check the expiry date on your supply of glucagon. Make sure your supply is never out of date.
- ▶ Use the glucagon solution as soon as it is mixed.
- ▶ Keep this handout with your glucagon kit.

For more information from Eli Lilly showing how to mix up and give glucagon, go to:

<http://www.lillyglucagon.com/low-blood-sugar>

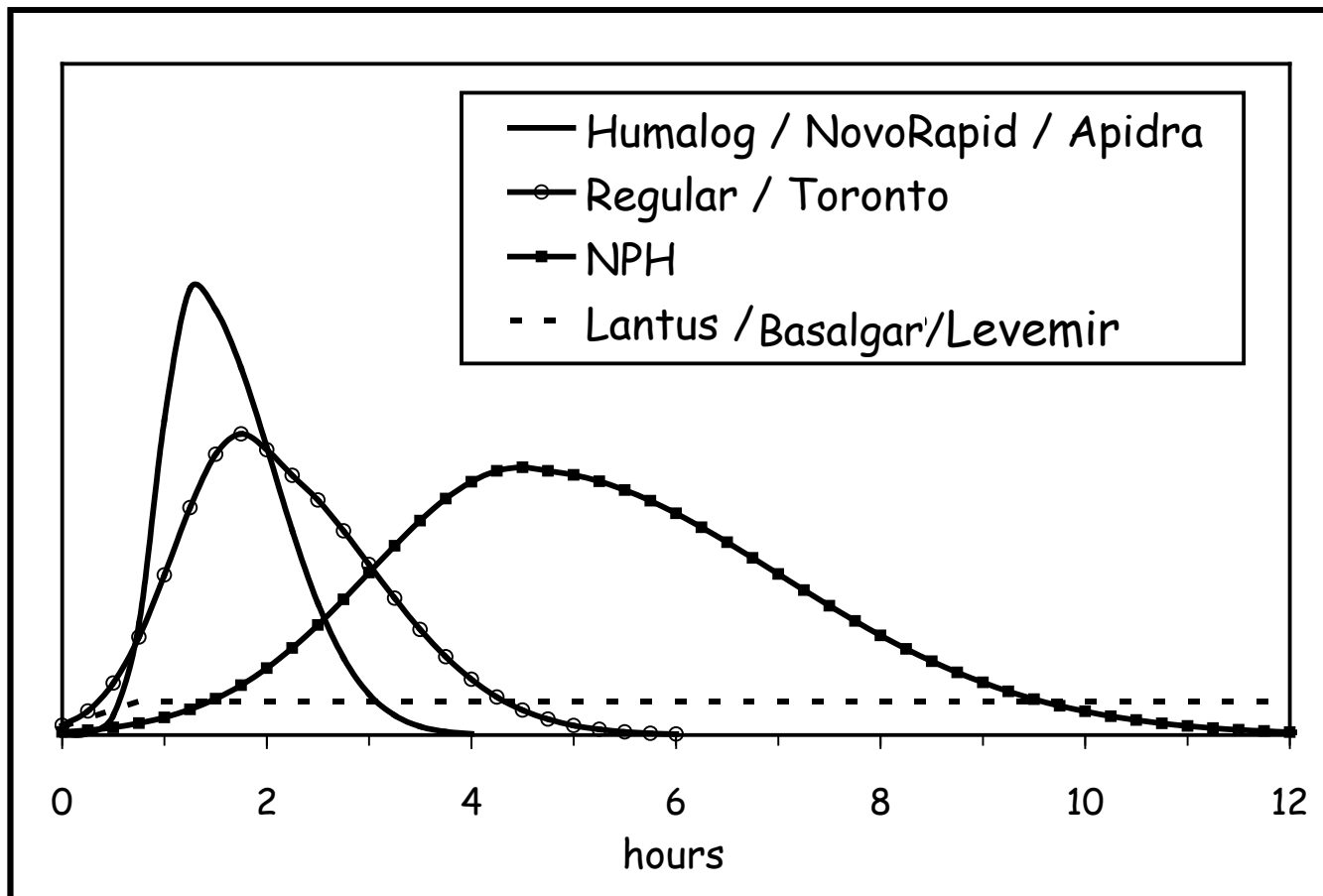
APP: <http://www.lillyglucagon.com/on-the-go>

To learn more about other uses of glucagon, read:

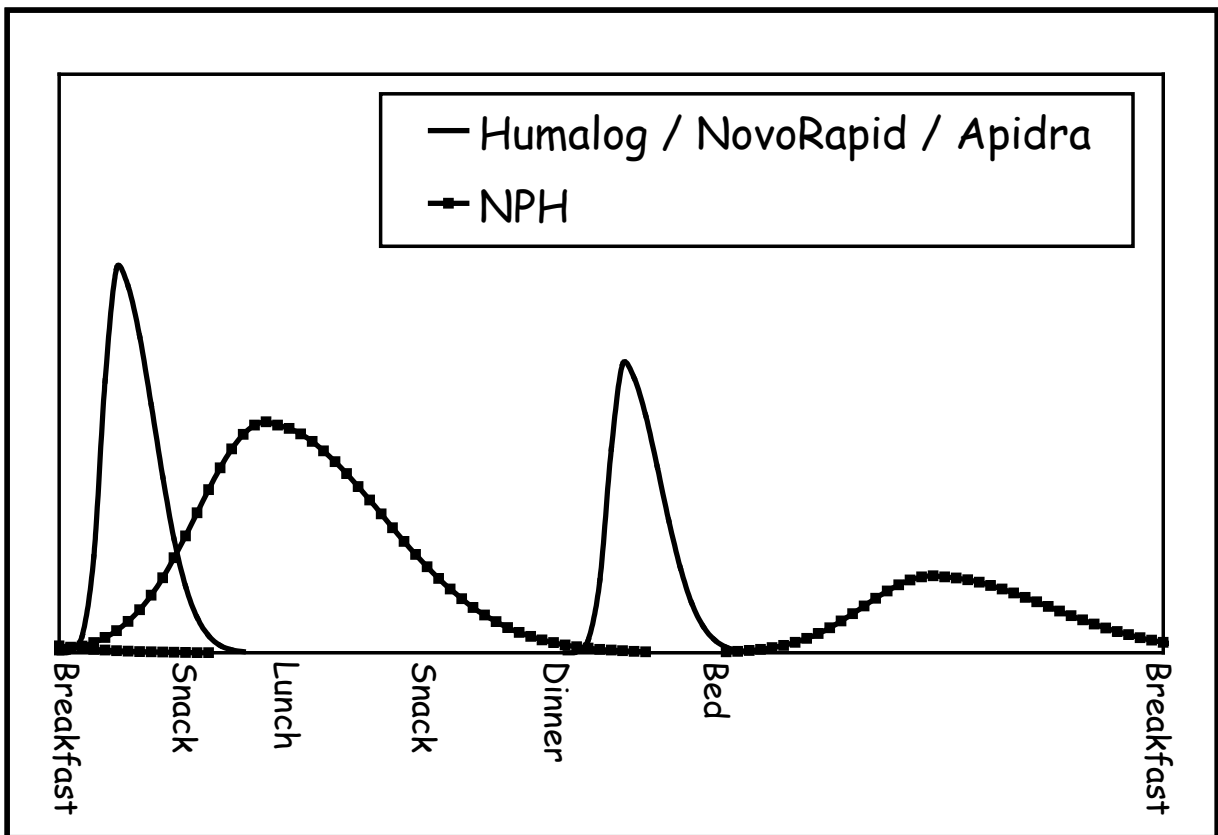
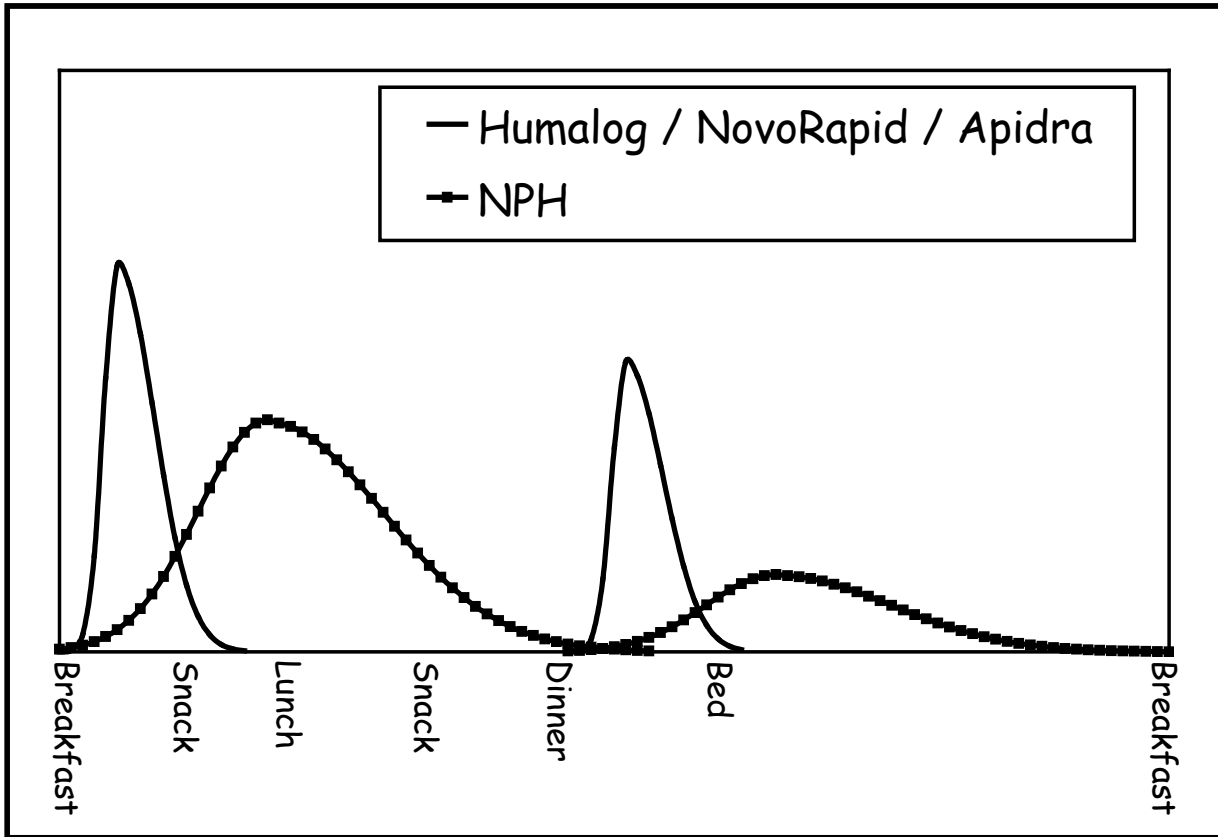
Mini-Dose Glucagon to Prevent Serious Hypoglycemia

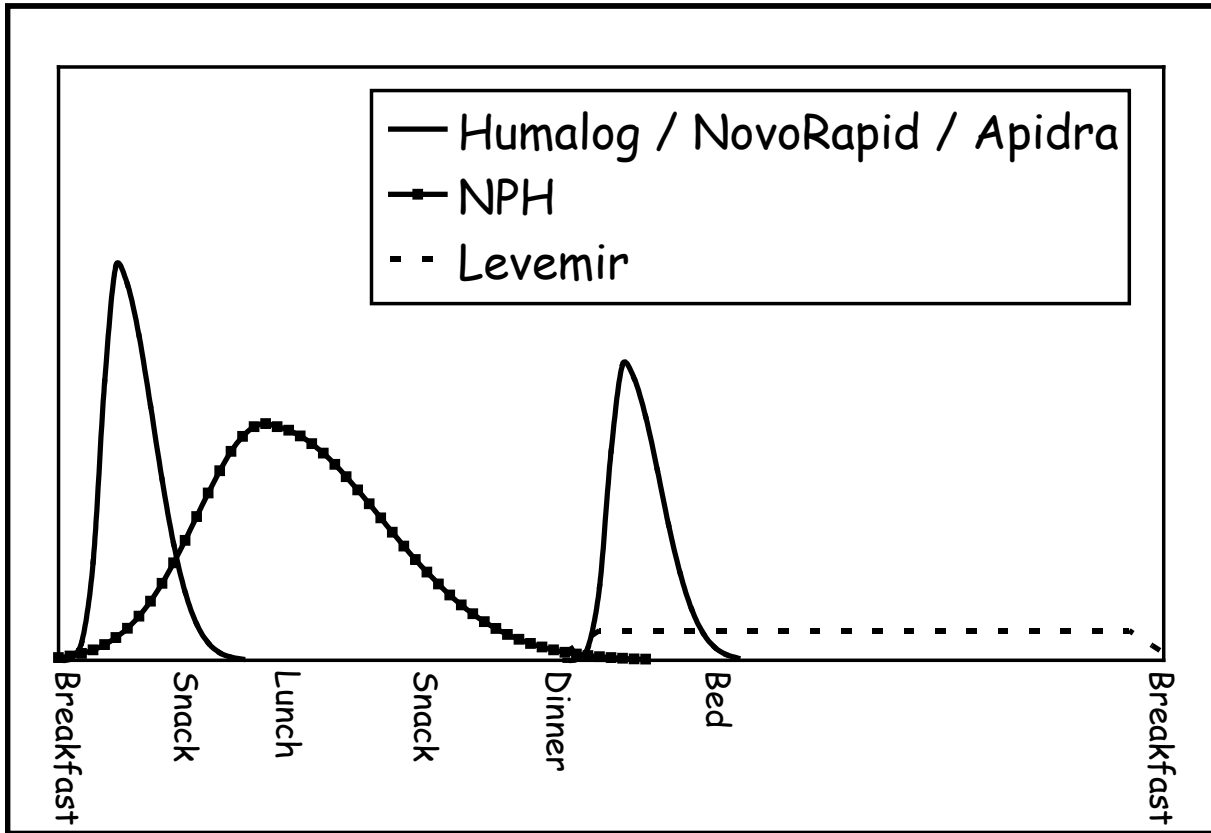
<http://www.bcchildrens.ca/endocrinology-diabetes-site/documents/minigluc.pdf>

Insulin Action Times

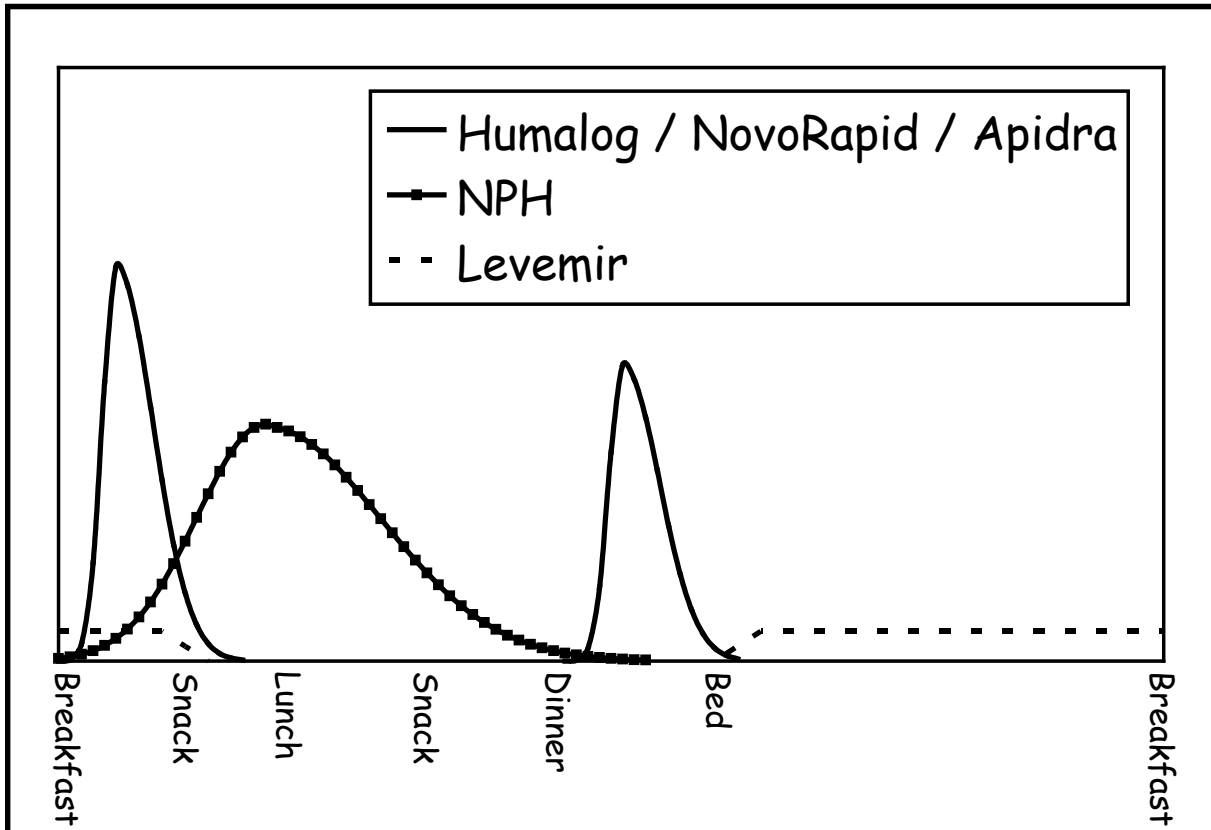


Insulin Name	Starts	Strongest	Lasts
Humalog / NovoRapid / Apidra (Rapid)	10–15 min	60–90 min	4–5 h
Regular / Toronto (Fast)	30–60 min	2–4 h	5–8 h
NPH (Intermediate)	1–3 h	5–8 h	up to 18 h
Levemir (Long)	1–1½ h	—	16–24 h
Lantus/Basaglar (Long)	1–1½ h	—	up to 24 h

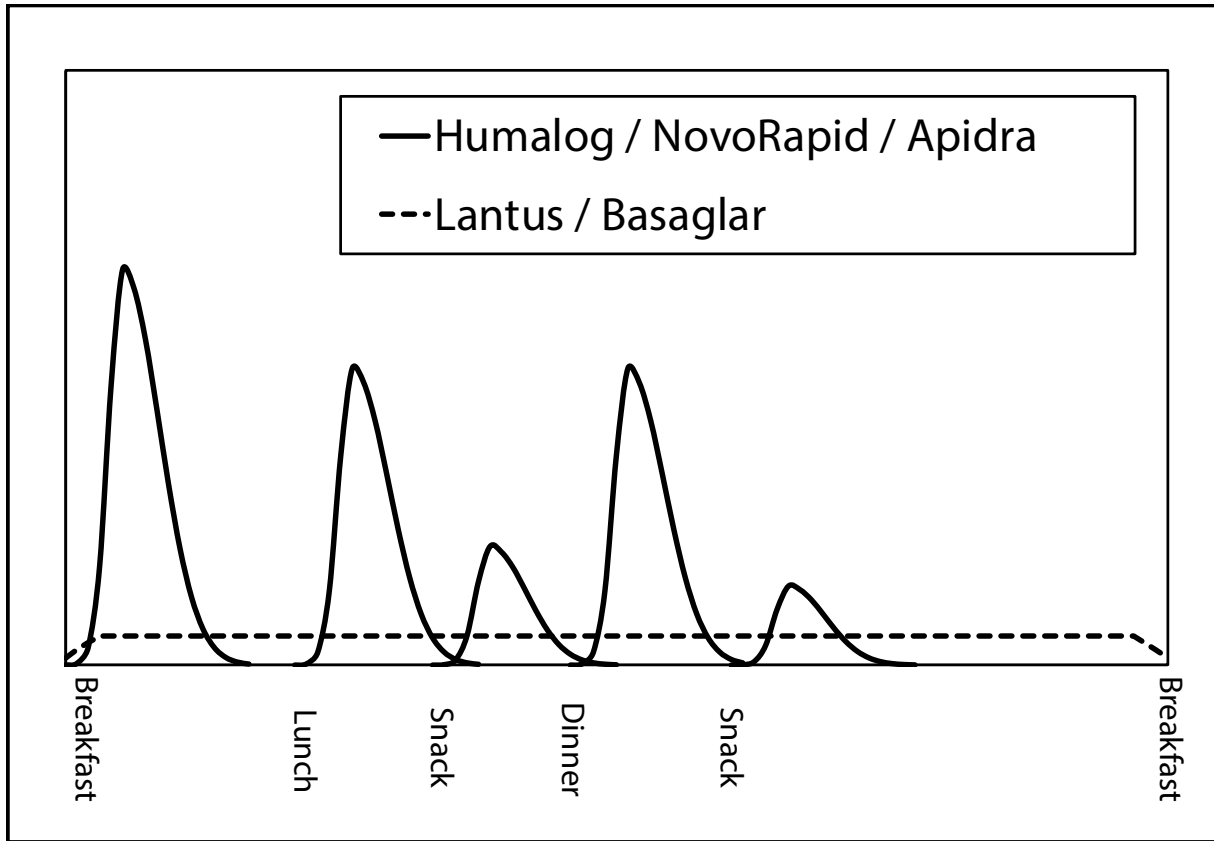




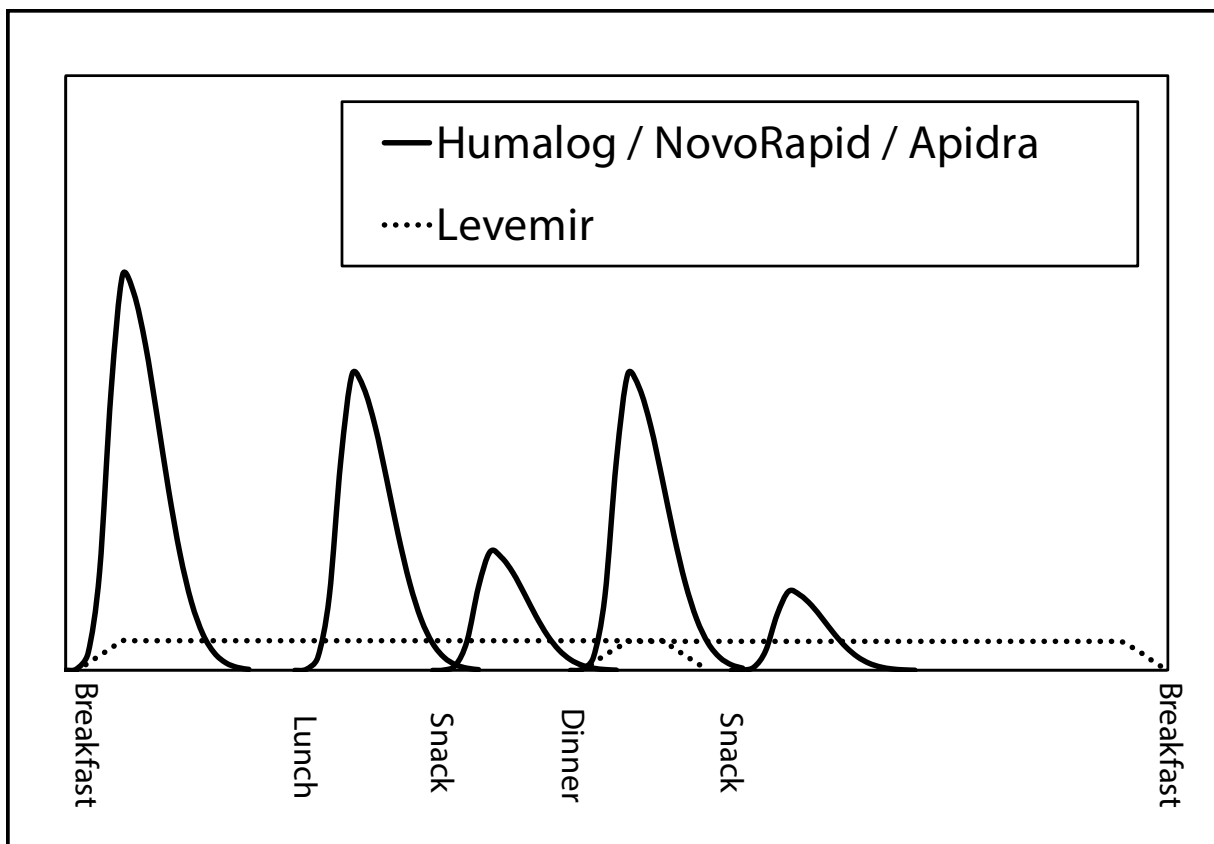
Dinnertime Levemir



Bedtime Levemir



Basal-Bolus with Lantus or Basaglar



Basal-Bolus with Levemir

How do I give insulin?

You can give insulin with a syringe or an insulin pen. Talk to your diabetes educator about these choices.

The steps below explain how to give insulin. These steps are the same if you use a syringe or an insulin pen.

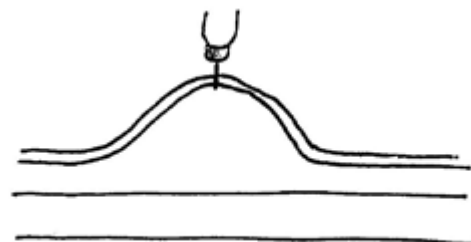
1. Choose a site to give the insulin.



2. Gently lift up some skin. If you are using a 4 mm needle you do not need to lift up the skin.



3. Hold the syringe or pen straight up and down. Push the needle into the skin.



4. Push down on the plunger or the top of the insulin pen. Make sure all the insulin has been given.

5. Count to 10 slowly before you pull out the needle.
6. Pull out the needle.
7. Put the used needle in a sharps box.



- ▶ Use your thumb and index finger to lift up the skin.
- ▶ Use a 4 or 5 mm needle to stay away from the muscle.
- ▶ There are many types of insulin pens. For details on how to use your insulin pen, see the instructions that come with your pen.

Where Can I Give Insulin?

You can give insulin in the:

- ▶ arms
- ▶ legs
- ▶ tummy (abdomen)
- ▶ backside (bum)



Give your insulin in a new spot every time.

What happens if you use the same area too often?

A hard lump will form under the skin. This can affect your blood sugar.

Which area is the best?

For small children, it is good to use all the areas - arms, legs, tummy and backside. Bigger kids and teens should use the tummy area most often.

Choose legs or the backside for the evening NPH. This helps lower the chance of low blood sugars during the night.

Choose the tummy area if you plan to do any exercises that use the arms or legs. Exercise can change how smoothly and quickly insulin works. Your insulin may work too quickly if you give it in the arm and then go for a swim or play tennis.

Think about this...

Question: Where should you give your morning insulin if you are going for a bike ride after breakfast?

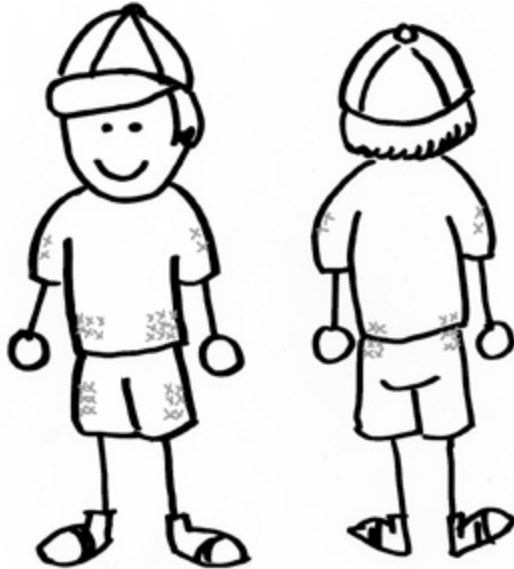
Answer: Tummy

Where Can I Give Insulin?

Bigger Kids and Teens

Use the Tummy most often.

- ▶ easy to reach
- ▶ insulin works at a smoother rate
- ▶ good to use if exercise is planned



Arms and legs are OK but...

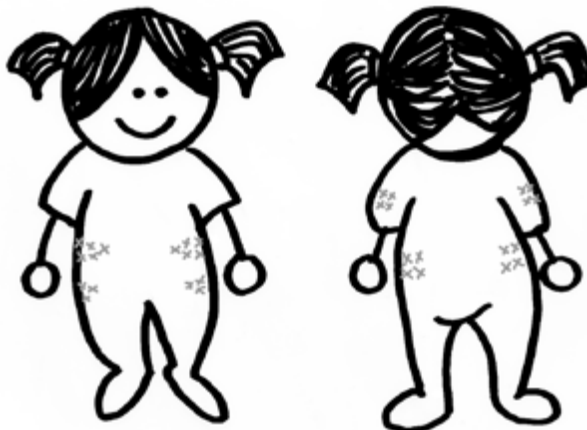
- ▶ arms are hard to do by yourself - someone else needs to do skin lift
- ▶ exercise with arms or legs can cause insulin to work too fast

Babies and Little Kids

Use all the areas: arms, legs, tummy and bum

Tummy

- ▶ not too close to the belly button



Bum

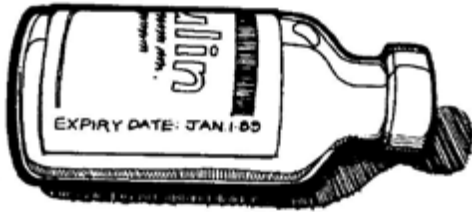
- ▶ not the part you sit on



- ▶ space insulin about 1 finger apart each time
- ▶ stay away from muscle by lifting up the skin

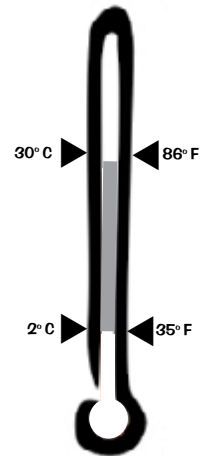
Taking Care with Insulin and Sharps

- ▶ Check the expiry date of your insulin.



- ▶ Make sure your insulin does not get too warm or too cold.

- Most insulin is okay for about 1 month at room temperature.
- Levemir insulin is okay at room temperature for 6 weeks.
- Extra insulin should be kept in the fridge.
- Do not freeze.



- ▶ Put used needles and syringes in a sharps box. Do not put them in the garbage.

- ▶ Sharps boxes are also called sharps containers.

Keep sharps out of reach of children and pets.

Many pharmacies provide them for free or a small charge.



- Ask your pharmacy for a sharps box.
- Ask if you can bring the box back to the pharmacy when it is full.
- If your pharmacy will not take back a full sharps box, ask where else you can take it.

You can also ask your nurse or public health unit about this.

Notes:

Mixing Insulin from Vials

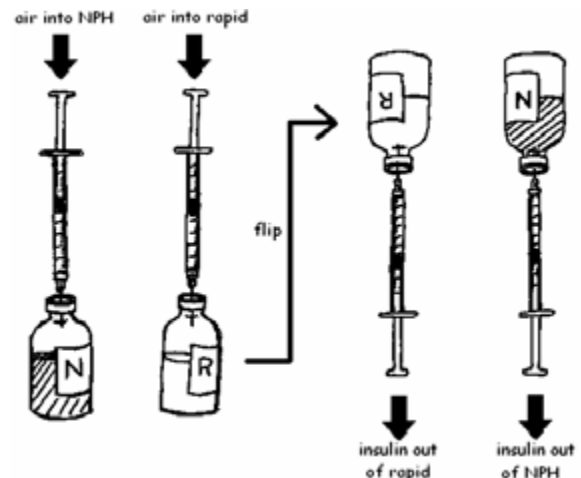
You can mix short- or rapid-acting insulin in the same syringe as NPH intermediate-acting insulin.

Short-acting = Regular or Toronto.

Rapid-acting = Humalog, NovoRapid or Apidra.

Follow these steps if you are mixing insulin from vials:

- 1) Read labels to make sure you have the right insulin. Check expiry dates.
- 2) Roll the NPH insulin back and forth 20 times. Do not shake.
- 3) Pull air into the syringe. Use the same amount of air as the amount of NPH insulin to be given.
- 4) Push the air into the vial of NPH insulin.
- 5) Remove the syringe and pull air into it. Use the same amount of air as the amount of short- or rapid-acting insulin to be given.
- 6) Push the air into the vial of short- or rapid-acting insulin.
- 7) Keep the needle in the vial and turn it upside down. Measure the short- or rapid-acting dose.
- 8) Remove air bubbles from the syringe.
- 9) Remove the needle from the vial of short or rapid-acting insulin.
- 10) Put the needle into the vial of NPH insulin and turn it upside down.
- 11) Measure the NPH dose. Make sure none of the insulin goes back into the vial.
- 12) Check the total insulin dose to make sure it is right.



Notes:

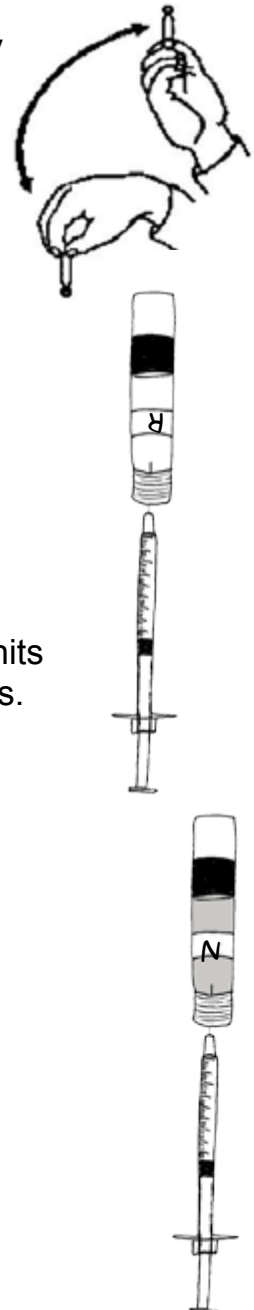
Mixing Insulin from Insulin Pen Cartridges

Can I use insulin cartridges to mix two types of insulin in a syringe?

Yes. Regular or rapid acting insulin and NPH insulin can be mixed in the same syringe.

Follow these steps if you are mixing insulin from cartridges:

- 1) Read labels to make sure you have the right insulin. Check expiry dates.
- 2) Roll the NPH cartridge back and forth 10 times. Then tip it up and down 10 times (up and then down = 1 tip). There is a small bead in the NPH cartridge. It will move up and down when you tip the cartridge. This helps mix the insulin.
- 3) Put the needle into your **regular or rapid**-insulin cartridge. Do not push any air into the cartridge.
- 4) Turn the cartridge upside down.
- 5) Pull the plunger back to measure your insulin.
- 6) Remove air bubbles from the syringe. Do this by pushing a few units of insulin back into the regular or rapid-insulin cartridge a few times.
- 7) Check the dose of your regular or rapid insulin.
- 8) Remove the needle from the regular or rapid insulin cartridge.
- 9) Put the needle into the **NPH** insulin. Make sure none of the rapid or regular insulin goes into the NPH cartridge.
- 10) Turn the NPH cartridge upside down.
- 11) Pull the plunger back to measure your insulin.
- 12) Remove the needle from the insulin cartridge.
- 13) Check the total insulin dose to make sure it is right.



Notes:

Food Choices for Children and Teens with Type 1 Diabetes

Beyond the Basics is a poster about food choices and diabetes. It was made by the **Canadian Diabetes Association**.

- ▶ Use the poster to help plan meals and snacks.
- ▶ Eating this way can be good for the whole family.

Foods on the left side of the poster contain carbohydrate.

- ▶ Many foods contain carbohydrate. We need them for energy.
- ▶ Carbohydrate and insulin work together to help keep blood sugar in balance. This means blood sugar that is not too high or too low.
 - Carbohydrate raises blood sugar.
 - Insulin lowers blood sugar.
- ▶ Eating the same amount of carbohydrate at meals and snacks each day helps keep blood sugar in balance.
- ▶ Talk to your dietitian about how much carbohydrate to eat with each meal and snack.

The left side of the poster shows many foods in amounts equal to about 15 grams of carbohydrate. Some of these are:

- ▶ 1 slice of bread
- ▶ 1 roti
- ▶ 1/3 cup of cooked rice
- ▶ 1/2 cup cooked pasta
- ▶ 1 medium sized fruit



Here are some more foods that contain about 15 grams of carbohydrate:

- ▶ 1/2 - 2/3 cup cooked beans or lentils
- ▶ Pancakes: 1/4 cup batter
- ▶ Pizza: a thin crust about the same size as a slice of bread
- ▶ Sushi such as a California roll: about 1/2 roll
- ▶ 1/2 cup of ice cream
- ▶ 1/2 cup of fruit yogurt
- ▶ 1 cup of milk
- ▶ 1 or 2 cups of berries



Foods on the right side of the poster do not contain carbohydrate.

- ▶ These foods are meats and proteins, fats and many vegetables. They are needed for normal growth and good health.
- ▶ Most of these foods do not raise the blood sugar. Some may raise the blood sugar a bit.

Keep these points in mind when planning meals and snacks.



Grains & Starches

- ▶ Contain carbohydrate.
- ▶ Good source of fuel for the body.
- ▶ Good source of vitamins, minerals and fibre.



Fruits

- ▶ Contain carbohydrate.
- ▶ Good source of vitamins, minerals and fibre. Fruit is a better choice than fruit juice.
- ▶ Fruit juice is a type of liquid sugar. It raises the blood sugar quickly. Limit the amount you drink.



Milk & Alternatives

- ▶ Contain carbohydrate.
- ▶ Good source of calcium.
- ▶ Milk is a good source of Vitamin D.
- ▶ Lower the amount of sugar in chocolate milk by mixing it with white milk.



Vegetables

- ▶ Most vegetables do not raise blood sugar.
- ▶ No need to measure.
- ▶ Good source of vitamins, minerals, fibre and water.



Meat & Proteins

- ▶ Do not raise blood sugar very much.
- ▶ No need to measure.
- ▶ Need for normal growth and good health.



Fats



- ▶ Do not raise blood sugar.
- ▶ No need to measure.
- ▶ Need for normal growth and good health.

Sweet foods and snacks:

- ▶ Small amounts of jam, sugar, honey, ketchup and BBQ sauce do not raise the blood sugar much.
- ▶ 1 teaspoon of sugar contains only 4 or 5 grams of carbohydrate.
- ▶ Too many sweet foods or drinks will make your blood sugar high. You may choose to use small amounts of artificially sweetened foods and drinks.



- ▶ Eat 3 meals each day at about the same time. Start with breakfast. Include carbohydrate and protein with each meal. This will help food last longer.
- ▶ Include starches and protein in the bedtime snack. This will help keep the blood sugars steady during the night.
- ▶ Herbs and spices can be used in meals as desired.
- ▶ Drink water when thirsty.



Question: What snacks do you like to eat? List them here. Your dietitian can tell you how much carbohydrate is in them. Add these to your poster.

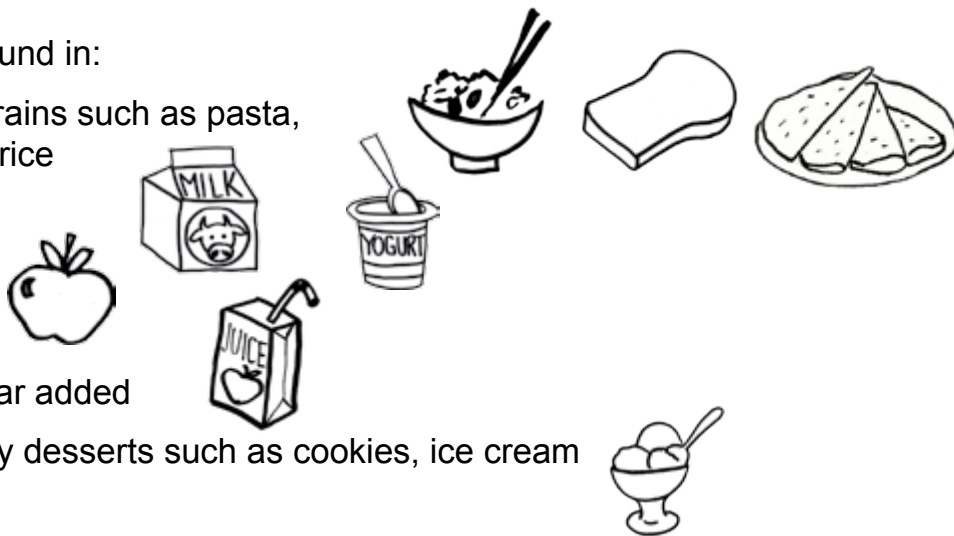
Notes:

Which foods and drinks raise blood sugar?

- ▶ **Foods and drinks that contain carbohydrate raise blood sugar.**
Carbohydrates are a source of fuel for your body.

- ▶ Carbohydrates are found in:

- starches and grains such as pasta, bread, roti and rice
- milk and yogurt
- fruit
- fruit juices
- drinks with sugar added
- sugar and many desserts such as cookies, ice cream and cake.

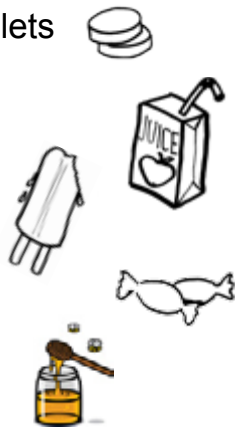


How fast does carbohydrate raise blood sugar?

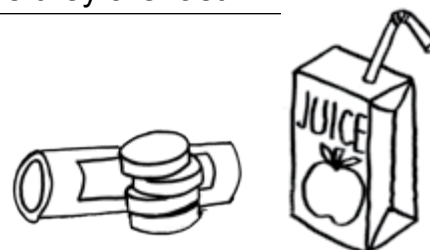
- ▶ **Some carbohydrate foods and drinks raise the blood sugar very quickly.**
They contain fast acting sugars.

Fast acting sugars are found in:

- glucose tablets
- regular pop
- fruit juices
- fruit drinks
- Slurpees
- candies
- jam
- honey
- syrup
- sugar
- sugar syrups used in sweet coffees



Note: Glucose tablets and fruit juice are often used to treat low blood sugar because they are fast.



► **Other carbohydrate foods and drinks raise blood sugar more slowly. They are better choices for snacks and meals.**

- Many grains and starches take longer to turn into sugar after they are eaten. They are a good source of fuel.
- Fruit raises blood sugar more slowly than fruit juice. Here are two reasons:
 1. It takes longer to eat a piece of fruit than to drink juice.
 2. Fruit contains fibre. Fibre helps slow down the rise in blood sugar.



- Milk contains sugar, protein and fat. The protein and fat slow down the sugar in milk.



Do proteins and fats raise blood sugar?

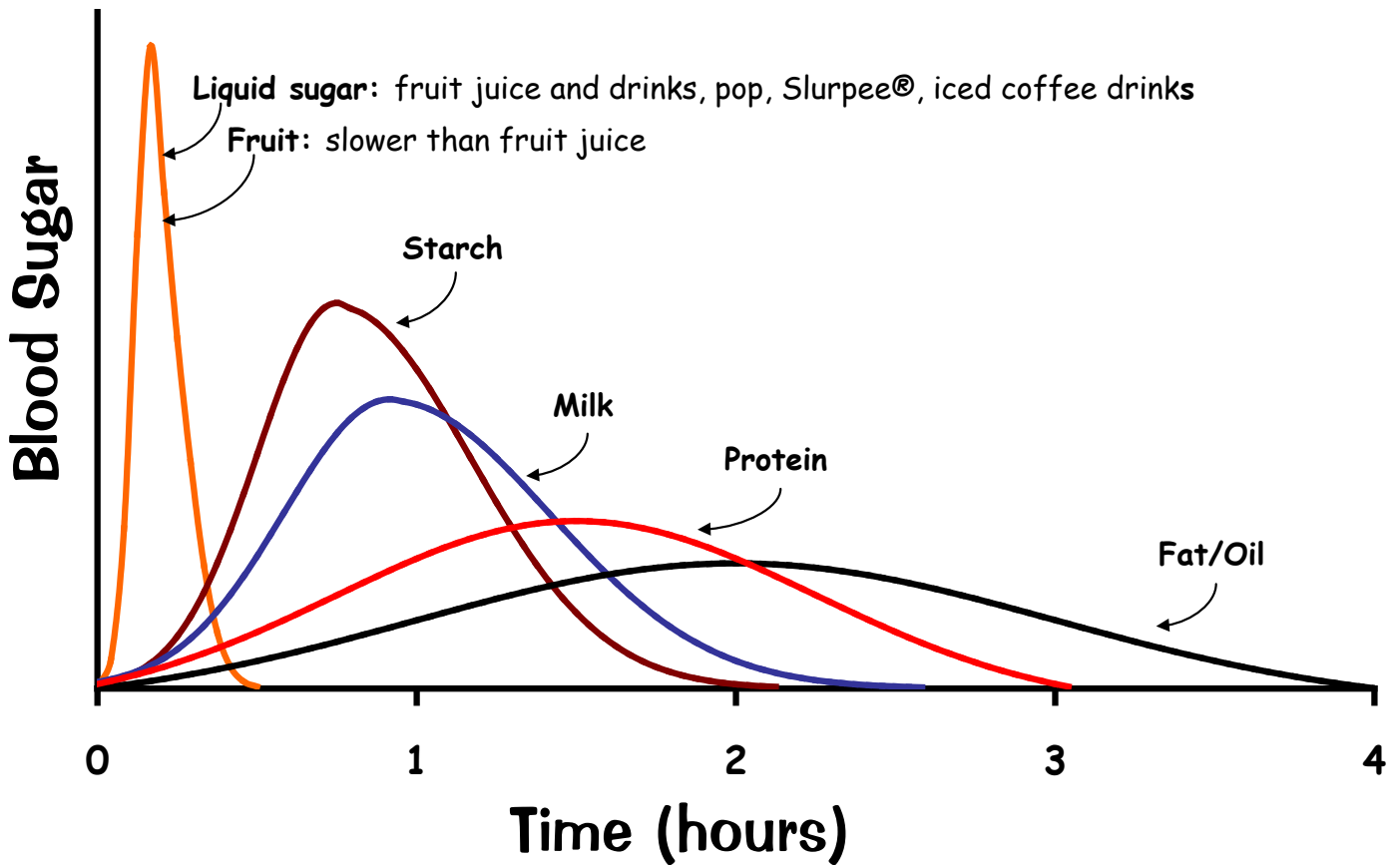
- Proteins and fats do not raise blood sugar much and they do so very slowly. They can help slow down the speed of faster acting foods.
- Some foods that contain protein and fat are meats, cheese and nuts.



What can I do to help prevent high blood sugar after eating?

- Mix carbohydrates with foods that do not contain carbohydrate. For example, when you eat foods from the starch group, eat some protein too.
- Eat fruit instead of drinking fruit juice.
- If you drink fruit juice, make it part of a meal instead of drinking it on its own.
- Limit the amount of sugars and sweets you eat or drink.

How Quickly Do Foods and Drinks Raise Blood Sugar?



Notes:



Be active!
Have fun!



How does physical activity affect blood sugar?

- ▶ Physical activity lowers blood sugar.
- ▶ If you plan to be more active than usual, eat extra carbohydrate before you start.
- ▶ Always keep fast-acting carbohydrate and a snack with you. You will need them if your blood sugar gets low. Glucose tablets and fruit juice are both fast acting.



How much should I eat before extra activity?

- ▶ Eat about 15 grams of **extra** carbohydrate for every hour of **extra** activity. This could be jumping, walking, shopping, dancing, sports, or just playing longer than usual. Starchy foods like granola bars or cookies will last longer than fruit or juice.
- ▶ Eat more than 15 grams of carbohydrate if you will be active for more than one hour.
- ▶ Physical activity can lower your blood sugar quickly. It can also lower it many hours later. If you are active after dinner, eat extra carbohydrate at bedtime. This will help prevent low blood sugar during the night. If you are active for a long time late in the day, you may need to eat more at bedtime.

Should my insulin be changed for physical activity?

- ▶ You may need **less** insulin when extra activity is planned. This is common for activities that last a long time. Talk to your doctor or diabetes educator about how to change your insulin. With practice, you will learn to change it on your own.



- ▶ Check your blood sugar **before** and **after** being active. This will help you learn how much extra food you need 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 before swimming. Use the tummy area instead.
- ▶ Wear medical ID.



Are there times when I should not be active?

- ▶ You should not be active if:
 - your blood sugar is higher than 14mmol/L and you have ketones or
 - you are sick.

Why be active?

- ▶ Being active helps:
 - build strong bones and muscles
 - keep a healthy weight
 - reduce stress
 - improve mood.



- ▶ Sports are a good way to:
 - learn team skills
 - make friends
 - build confidence.

For more information about physical activity and diabetes, read:

Adjusting Guidelines for Activity

<http://www.bcchildrens.ca/endocrinology-diabetes-site/documents/activity.pdf>

High Blood Sugar and Ketones

Some high blood sugars can be expected in type 1 diabetes, even with the best care. Another word for high blood sugar is hyperglycemia.

High blood sugar can be caused by:

- ▶ Not enough insulin
- ▶ Too much food
- ▶ Less activity than usual
- ▶ Growth, illness, infection, stress, hormone changes in the menstrual cycle



Signs of high blood sugar include:



Thirst and drinking lots



Peeing lots



Blurry vision



Feeling tired

What should I do if the blood sugar is high?

- ▶ **Check for ketones when a blood sugar is 15 mmol/L or higher.** **If your child has high blood sugar and ketones, extra rapid-acting insulin is needed.** Your doctor or diabetes nurse can tell you how much insulin to give. They can also tell you if any other action is needed.



- ▶ **If your child feels well and there are no ketones, you don't usually need to do anything right away.** Keep watching the blood sugars though to see if they stay high. If there is a pattern of high blood sugar, it likely means that your child needs more insulin. A pattern of high blood sugar is when the blood sugar is high at the same time of day for at least 2-3 days in a row.

What are ketones?

- ▶ In type 1 diabetes, **ketones can be a sign that extra insulin is needed right away**. Ketones are strong acids that the body makes when there is a severe lack of insulin. This can cause a serious medical problem called DKA or diabetic ketoacidosis.
- ▶ You can check for ketones in the urine or blood.
- ▶ Contact your doctor or diabetes team immediately if your child has high blood sugar and ketones.

What are the warning signs of DKA?



- ▶ High blood sugar and high ketones in the urine or blood
- ▶ Feeling very tired and other signs of high blood sugar
- ▶ Dry mouth



- ▶ Flushed face (reddish colour)
- ▶ Breath that smells fruity or like nail polish remover
- ▶ Stomach pain



- ▶ Vomiting
- ▶ Shortness of breath
- ▶ Difficulty breathing

DKA is a medical emergency! It must be treated in a hospital.

What causes DKA and how can it be prevented?

- ▶ DKA is caused by a severe shortage of insulin. This can happen when type 1 diabetes is first diagnosed and has not yet been treated. People with type 1 diabetes need to take insulin every day.
- ▶ DKA can also happen if insulin is not given or if sick days are not managed well.
- ▶ DKA is a serious medical emergency but it can be prevented.



There are many things you can do to prevent DKA:

- ▶ Do not miss any insulin.
- ▶ Keep up with changing insulin needs as your child grows. Your child will need more insulin when going through growth spurts.
- ▶ Check for ketones when blood sugars are 15 mmol/l or higher and during illness. High blood sugar with ketones is a warning sign that extra insulin is needed. Giving rapid-acting insulin quickly can help clear ketones and prevent DKA.
- ▶ Learn what to do when your child is ill. Illness can cause high blood sugar and ketones. Your diabetes educator can teach you about the 5-10-15-20 rule for giving extra insulin during illness. <http://www.bcchildrens.ca/endocrinology-diabetes-site/documents/sickdays.pdf>.



Call your diabetes emergency contact number if you do not know what to do.



Blood Sugar:

- ▶ When you are new to diabetes, your diabetes team will help you with insulin doses. It will take a while to bring your child's sugars into the goal range.
- ▶ Later, you can learn to adjust insulin doses. This will help keep blood sugars in a healthy range most of the time. To learn more about adjusting insulin see: <http://www.bcchildrens.ca/endocrinology-diabetes-site/documents/insadjgl.pdf>

Ketones:

- ▶ Learn how to check for ketones. Your nurse, doctor or pharmacist can show you how.
- ▶ Don't exercise when you have ketones. Exercise can make ketones worse.
- ▶ Ketones are not caused by eating too much. Eating more food than usual can cause high blood sugar but this will not cause ketones. Lack of insulin causes ketones in type 1 diabetes.

Notes:

Type 1 Diabetes and Sick Days

- ▶ Children with diabetes do not get sick more often than other children.
- ▶ When they do get sick, it can upset blood sugar control.
 - Blood sugars can be **high** during illness, even if a child is not eating.
 - Blood sugars can be **low** if there is vomiting or diarrhea.
- ▶ **Always give some insulin during illness. Without insulin, the blood sugar goes up and the body makes ketones.**
 - **Ketones** are strong acids.
 - Too many ketones can lead to a serious medical problem called **ketoacidosis (DKA)**.
 - Even though DKA is very serious, it can be prevented.



What do I need to do when my child is sick?

1. **Supervise your child during illness.** Even teens need help.
2. **Check blood sugars and ketones every 2-3 hours.** This will help warn you early of possible problems. Check more often if your child is vomiting.

3.



Call your *diabetes emergency number* if your child has ketones: _____

- ▶ High sugar with ketones is a sign that more insulin is urgently needed.

4. **Never miss an insulin dose.** Always give some insulin even if your child is not eating as much as usual.
 - ▶ You may need to give less insulin than usual if the blood sugar is below 6 mmol/L and your child is vomiting or has diarrhea.
 - ▶ Call for advice on how much insulin to give.



5. **Give your child plenty of fluids to prevent dehydration.**

What should I give my child to eat and drink during illness?

- ▶ If your child is not having trouble eating, follow the usual meal plan.
- ▶ If your child does not feel like eating:

1. Start with fluids. Give fluids every hour.

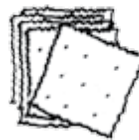
- If blood sugars are **higher** than 10, give sugar free fluids such as water, diet pop, diet jello, broth, diet popsicles.
- If blood sugars are **ok**, give fluids that contain sugar such as apple juice, regular pop, jello or a popsicle.



These should be sipped slowly over an hour. It is better to offer small amounts of fluid often than to give a large amount at one time.

2. Try adding semi-solid or solid food if your child can take fluids well and is not vomiting.

- Start with food that your child feels like eating.
- Semi-solids are foods like flavored yogurt, ice cream, sherbet, pudding, milkshakes or chicken noodle soup.
- Solids are foods like bread, roti, crackers, rice, noodles or dry cereal.



- ▶ If the blood sugar is **low** you must give 15 grams of fast acting sugar right away. Try sips of juice or regular ginger ale. Or, try some maple syrup. You only need 1 tablespoon of syrup to get 15 grams of fast acting sugar.



- ▶ **Get plenty of rest.** Do not exercise during illness or if ketones are present.

Your diabetes emergency phone number is _____

Ask for _____



Call your diabetes emergency number if:

- your child has high blood sugar and ketones
- your child is vomiting and cannot keep fluids down
- your child's blood sugar is low even after you try to treat it with fast acting sugar
- you need advice on how much insulin to give.

Go to the Hospital if:

- you cannot keep the blood sugars above 4 mmol/L
- your child has signs of DKA such as vomiting, stomach pain, sunken eyes, trouble breathing.

For non-urgent questions phone:

More teaching about sick days will be done at your diabetes follow-up appointment.

- You will learn how much insulin to give during illness (the "5-10-15-20 rule"). You will also learn how to use mini-dose glucagon to prevent severe hypoglycemia.
- To read more about sick day management see:
Managing Sick Days and Preventing Ketoacidosis handout
<http://www.bcchildrens.ca/endocrinology-diabetes-site/documents/sickdays.pdf>

Question: What causes ketones in type 1 diabetes?

Answer: Not enough insulin. Ketones are not caused by eating too much food.

Notes:

Going to School with Type 1 Diabetes

Children with diabetes can take part in all classes and school programs. Some children with diabetes, like younger ones, need help with diabetes care at school. Tell school staff about your child's diabetes. They may have questions and ideas about how they can help.

Your Diabetes Nurse can arrange for a nurse from Nursing Support Services or the Community Health Unit to contact you. They can help teach school staff about diabetes. Nursing Support Services also has a diabetes care plan for children in BC.

Here are some things to do **before** your child goes back to school.

Meet with the principal and your child's teacher:

- Give the school a copy of the *Guidelines for the Care of Students Living with Diabetes at School*:
<http://www.diabetes.ca/getmedia/173678f6-1a4a-4237-bd55-aa7ba469a602/guidelines-for-students-in-school.pdf.aspx>
- Ask if the school has an Education Assistant or someone who can help young children check blood sugars.
- Ask how the school can help your child check blood sugars, treat low blood sugars, and make sure lunch and snacks are eaten.
- Find out the times of meals and snacks at school. Some schools have early or reverse lunches.
- Ask the teacher to tell you in advance about any planned events such as field trips, hot lunch days, sports day, and birthday parties.
- If your child changes schools, meet with the new teacher. Also make sure the care plan goes to the new school.



Teach staff about low blood sugar:

- Meet with your child's teachers and other staff such as gym teachers, school monitors, playground supervisors and bus drivers.
- Explain what happens when your child's blood sugar is low and how to treat it. Give them short, written instructions.
- Explain that your child needs to eat all meals and snacks on time. Late or missed food can cause low blood sugar. Your child may need to eat on field trips, on the bus, or during some school events.
- Explain that a low blood sugar must be treated right away so it does not become an emergency! Young children and some older kids need help to treat low blood sugars.
- Keep glucose tablets or juice, and extra snacks in the classroom, gym and the office. Older kids need to keep supplies with them, rather than in their lockers.
- Tell the teacher that an adult must stay with your child until all signs of low blood sugar have gone away. Your child can get back to school activities when feeling better.
- Make sure your child wears medical ID at school.



Talk about high blood sugars too:

- Explain that if the blood sugar is high, your child may feel tired and thirsty, and may need to go to the bathroom more often.

Parents and teens can go to the school together to teach staff about diabetes. If you are a teen:

- Tell your teachers and principal about your diabetes. Let them know about things you need to do at school such as checking blood sugar, eating snacks, and using insulin pens or a pump. Tell them about low blood sugars, where you keep your treatment supplies and how they can help if needed.
- Give them an information sheet that states what you need to do at school each day, and what they can do to help.
- Find out if there is a trained adult in the school who can help in an emergency.
- It helps if your close friends know you have diabetes and understand your diabetes routine. They can offer support, or get food or help if needed.

Provide Contact Information:

- Give emergency contact numbers to the teacher. Include home and work numbers, cell or pager numbers, and how you can be reached during the day. Tell the teacher when you want to be called for high or low blood sugar readings.

Go to these websites for more information:

Canadian Diabetes Association: Guidelines for the Care of Students Living with Diabetes at School:

<http://www.diabetes.ca/getmedia/173678f6-1a4a-4237-bd55-aa7ba469a602/guidelines-for-students-in-school.pdf.aspx>

BC Children's Hospital diabetes handouts:

<http://www.bcchildrens.ca/health-info/coping-support/diabetes>

BC Nursing Support Services: <http://www.bcchildrens.ca/our-services/sunny-hill-health-centre/our-services/nursing-support>

Children with Diabetes Website: www.childrenwithdiabetes.com

Juvenile Diabetes Research Foundation (JDRF): www.jdrf.ca



Many schools in BC take part in the **No Child Without Program**: <http://www.nochildwithout.ca/>. It helps families in need get a MedicAlert® ID.

Things to Do When You Are Home: Diabetes Discharge Instructions



Name: _____ Date: _____

Insulin

Insulin Name	Breakfast Dose	Lunch Dose	Dinner Dose	Bedtime Dose

Note: These insulin doses will be changed as needed.

For new insulin doses, please phone _____ at _____

- Please phone:
- daily before breakfast
 - daily before dinner
 - other: _____

Food

Beyond the Basics meal planning

	Breakfast	Morning Snack	Lunch	Afternoon Snack	Dinner	Bedtime Snack
Grains						
Fruit/Veg						
Milk						
Protein						
Fat						

Carbohydrate Amounts

	Breakfast	Morning Snack	Lunch	Afternoon Snack	Dinner	Bedtime Snack
Amount						

Other: _____

Blood Sugar

- ▶ Check blood sugar at least 4 times a day: **before** breakfast, lunch, dinner and **before** bedtime snack.
- ▶ Also check if you think the blood sugar is low or your child is not feeling well.
- ▶ Write blood sugars in your logbook.

Return Visits:

	Name	Phone #	Date and Time
Pediatrician/Doctor			
Diabetes Education Centre			

Please bring your meter, logbook, meal plan and insulin dose to every visit with your diabetes team.



Call your diabetes emergency phone number if you see:

- ▶ Two low blood sugars in a row without a clear reason. A low blood sugar is less than 4 mmol/L.
- ▶ Ketones in urine or blood.
- ▶ Vomiting and / or diarrhea that is difficult to manage.

If your child is sick:

1. Follow the directions on the handout *Type 1 Diabetes and Sick Days*.
2. If you need **urgent** medical advice, **phone your diabetes emergency number**.
 - ▶ Check your child's blood sugar and ketones before calling.

Phone numbers:

Diabetes Emergency Phone Number:

Name: _____ Phone Number: _____

Non-urgent questions:

Diabetes Nurse: Phone Number: _____

Dietitian: Phone Number: _____

Other: _____ Phone Number: _____

Diabetes Review

Answer these questions to check what you know about diabetes.
The right answers are listed at the end.

Circle your answers.

1) Does insulin make blood sugar go up or down?

Up Down

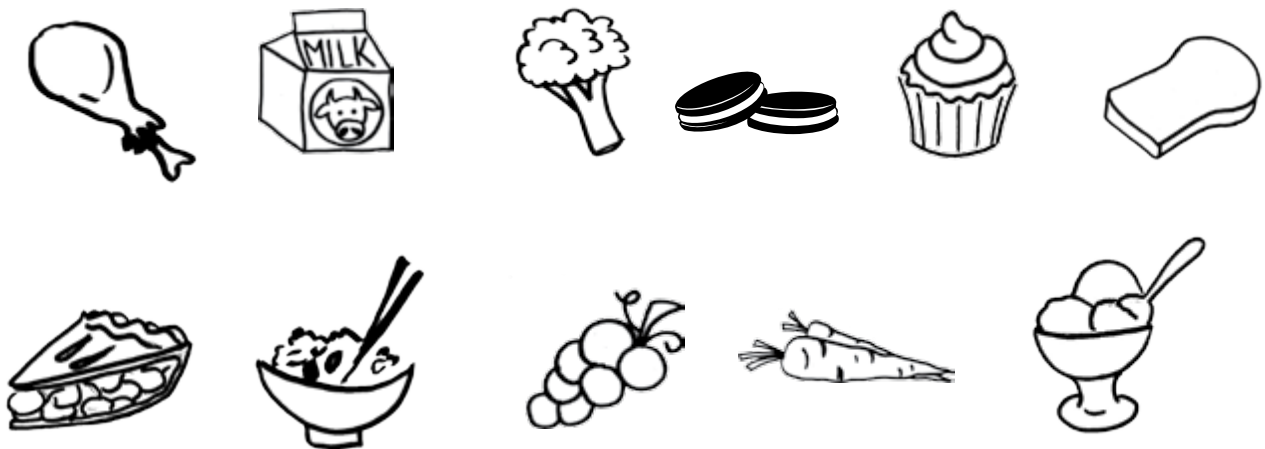
2) Can insulin pills be used to treat diabetes?

Yes No

3) What is another word for blood sugar? *Circle one answer.*

sucrose glucose ketones

4) Circle the foods that are ok to eat if you have diabetes.



5) What is another word for **low** blood sugar? *Circle one answer.*

carbohydrate hyperglycemia hypoglycemia

6) Circle all the blood sugars that are too low and need to be treated with fast acting sugar.

3.0

3.9

4.1

5.6

7) Circle the pictures showing signs of low blood sugar.



8) Circle at least one thing that you can carry with you at all times to treat a low blood sugar.



9) Circle one thing that is important to wear when you have diabetes:



10) Before Tina knew she had diabetes, she was very thirsty and peeing a lot. She also felt tired all the time. Everything got better when she started taking insulin. Why? *Circle one right answer.*

- ▶ Insulin helps the body use food for energy.
- ▶ Insulin stops people from peeing.
- ▶ Insulin causes high blood sugar.

- 11) Sandy always uses her arms for her insulin. What problem can this cause?
Circle the right answer:

Bruising

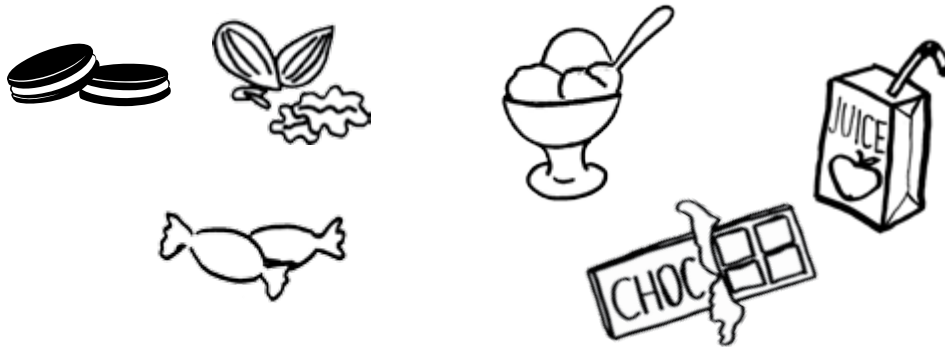
A hard lump

No problem

- 12) Mary's blood sugar has been low before lunch for the past 2 days.
Circle all the things that can be causing the low blood sugars.

- ▶ She didn't finish her recess snack.
- ▶ She ran around more than usual at recess.
- ▶ She needs more insulin in the morning.
- ▶ She ate an extra snack on the way to school.

- 13) Circle all the things that are **not** fast acting sugars.



- 14) John's blood sugar is 3.2 mmol/L after school today. He is very hungry and wants to eat his snack now. Is this OK?

Yes

No

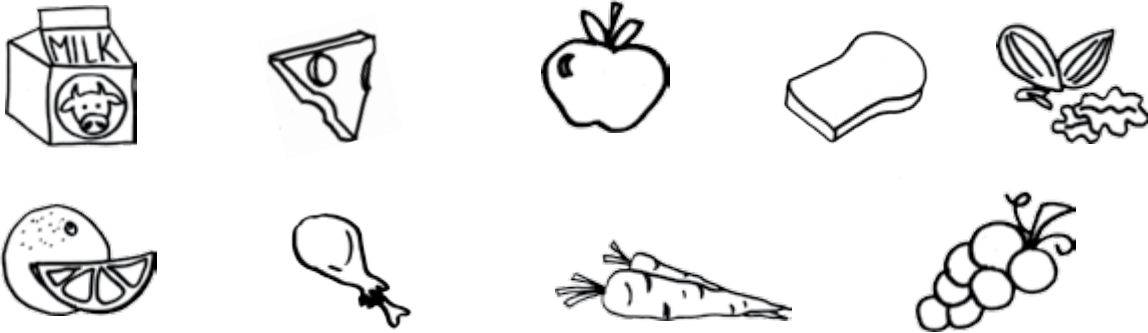
- 15) Robbie is going to play hockey for the first time since finding out he has diabetes. What should he do? Circle all the right answers.

- ▶ Check his blood sugar before hockey.
- ▶ Eat an extra snack with 15 grams of carbohydrate before hockey.
- ▶ Check his blood sugar as usual and eat normal meals and snacks.
- ▶ Check his blood sugar after hockey and again that night.

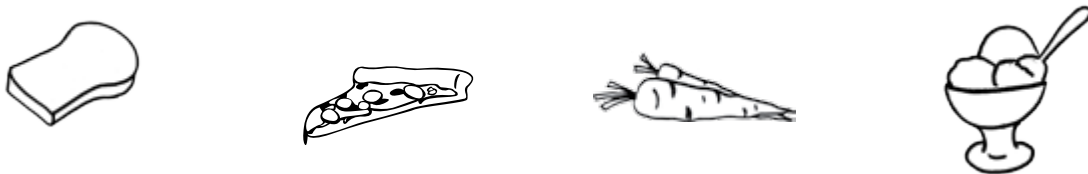
16) Circle the best area to give insulin if you plan to go for a swim after breakfast.



17) Circle all the foods that do not raise the blood sugar much.



18) Which of these foods will raise blood sugar the fastest? *Circle one answer.*



19) Joe wakes up at 3 o'clock in the morning. His blood sugar is low. He treats it right away with fast acting sugar. 15 minutes later his blood sugar is ok. Before he goes back to bed he needs to eat a snack. *Circle the snack that would be the best choice.*



20) Circle 3 signs of high blood sugar.

feeling thirsty peeing lots feeling tired gaining weight

21) Jack's blood sugar is high and he has ketones. What does he need?
Circle one right answer.

insulin food juice

22) When should you check for ketones? Circle all the right answers.

- ▶ On sick days.
- ▶ If the blood sugar is 15 or more.
- ▶ If you ever forget to give your insulin.
- ▶ After physical activity.

23) Janice is sick with the flu. Her blood sugar is 16.9 and she does not feel like eating breakfast. Should she take her morning insulin?

Yes No

24) Circle 3 things that affect blood sugar.

insulin food toothpaste physical activity

25) Last week, Luke and his family found out he has diabetes. He is in grade 2 and ready to go back to school. Circle all the things his mom or dad should do to make sure he is safe at school.

- ▶ Tell his teachers and other school staff that Luke has diabetes.
- ▶ Supply the school with fast acting sugar and snacks.
- ▶ Explain that Luke needs to have all his snacks and meals on time.
- ▶ Meet with his teacher every day.

Bonus Question:

Blood sugar meters are so cool. They keep all the readings in the memory, so you don't need to write them down in a logbook.

True False

- 1) Insulin makes the blood sugar go **down**. It lets your body use the sugar from your food for energy.
- 2) **No**. Insulin pills cannot be used to treat diabetes. Some people with type 2 diabetes take pills for diabetes. These pills are not insulin.
- 3) Another word for sugar is **glucose**.
- 4) All of these foods are OK to eat if you have diabetes.
- 5) Another word for low blood sugar is **hypoglycemia**.
- 6) A blood sugar lower than 4.0 needs to be treated with fast-acting sugar. 3.0 and 3.9 are too low.
- 7) Sweating, shaking, feeling dizzy or weak are signs of low blood sugar.
- 8) Glucose tablets, juice or pop can all be used to treat low blood sugar. Glucose tablets and juice are smaller and easier to carry with you. A chocolate bar is not fast acting and cannot be used to treat low blood sugar.
- 9) It is important to wear medical I.D. when you have diabetes.
- 10) Insulin helps the body use food for energy. Before Tina started taking insulin, her body was not able to use food for energy.
- 11) Using the same spot too often for insulin can cause a **hard lump** under the skin. The insulin is not able to work as well if there are lumps.
- 12) If Mary did not finish her recess snack, or ran around more than usual at recess, she could have a low blood sugar before lunch.
- 13) Cookies, nuts, ice cream and chocolate are not fast-acting.
- 14) **No**, it is not OK for John to eat his snack right away. His blood sugar is low. He needs to bring it up with fast-acting sugar before he eats his snack.
- 15) Robbie needs to check his blood sugar before and after he plays hockey and again that night. He also needs to have an extra snack with at least 15g carbohydrate before hockey.
- 16) The best area to give insulin if you plan to go for a swim after breakfast is the **tummy or the backside**.
- 17) Cheese, nuts, chicken and carrots do not raise the blood sugar much.
- 18) A slice of white bread will raise blood sugar the fastest.
- 19) Half a sandwich would be the best snack for Joe.
- 20) Feeling thirsty, peeing lots and feeling tired are signs of high blood sugar.
- 21) Jack's blood sugar is high and he has ketones. He needs insulin.
- 22) You should check for ketones if the blood sugar is 15 or more, if you forget to give your insulin, and when you are sick.
- 23) **Yes**, Janice should take her morning insulin.
- 24) Insulin, food and physical activity affect blood sugar.
- 25) To make sure Luke is safe at school, his parents need to let the school know he has diabetes. They also need to supply the school with fast-acting sugar and snacks and explain that he needs to eat on time. They do not need to meet with the teacher every day.

Bonus question:

This is **false**. You need to be able to see the blood sugar pattern. You can only do this if you write them down or download the meter. Review your blood sugars often.

Parents: You just found out your child has type 1 diabetes. How are you doing?

Finding out that your child or teen has type 1 diabetes can be stressful for you and your family. It may help to know that children and youth are resilient. With support, they can adjust to life with diabetes and do very well. They can still follow their dreams, achieve their goals, and do the things they like to do.

You and others in your family may have different feelings about diabetes and what it means to you. We all cope with feelings and emotions in our own ways. There is no right or wrong way to react. But there are many ways to move forward through difficult times. For example, some people need to talk about their feelings, while others cope in a private way. Learning that your child has type 1 diabetes can lead to many questions and worry. This is understandable. If it turns into more than just worry, asking for help is ok and can make you stronger. Staying strong mentally can help equip you to handle the ups and downs of life as well as blood sugars.

As a parent, it can be difficult to guide your child or teen if you are feeling exhausted, worried or unsure. While you are learning and adjusting to life with diabetes, it is important to take care of yourself too. The diabetes team is here to help you learn about diabetes and life with diabetes. Friends and family members often want to help too. Sometimes, the most helpful thing they can do is support you with other things in your life so you can focus on learning. Perhaps they can help with caring for other children, taking care of your pets, cooking, shopping or running errands. Don't be afraid to ask for help. If you are struggling and don't say anything, people may think you are doing fine and may not offer to help. You may also find it helpful to talk to other parents who have a child or teen with diabetes. They have learned a lot and know what it is like to face a new diagnosis of diabetes. Sharing feelings and experiences with someone who understands at a personal level can be helpful for many people.

Some parents and families find it helpful to connect through the [Juvenile Diabetes Research Foundation \(JDRF\)](#) or the [Canadian Diabetes Association \(CDA\)](#). JDRF offers a program for connecting parents and the Canadian Diabetes Association offers summer camps for families, children and teens. You can find out more about these programs at:

- JDRF: <http://www.jdrf.ca>
- CDA: <http://www.diabetes.ca>
- D-Camps: <http://www.dcamp.ca>

It is easy to feel overwhelmed, so remember - you don't need to learn everything at once. Your diabetes team will guide you through the things that are most important to learn when your child or teen is first diagnosed. You will have phone numbers and further appointments to help you learn more when you are rested and ready. As you get experience with diabetes, you will gain knowledge and confidence. You may be amazed at how much you learn and what you are able to do after just a few days of diabetes education! It is important to take care of yourself while you are learning, ask for help when you need it, and know that children and teens can lead healthy, happy lives with diabetes.

CHILDREN/TEENS: Your child/teen has just found out he/she has type 1 diabetes. How is she/he doing?

Children and teens may experience a wide range of feelings and emotions when they are diagnosed with type 1 diabetes. Depending on your child's age, personality, your own reaction as a parent, and your unique family situation, your child may react in many different ways (for example: anger, sadness, or not talking are some possible reactions). Remember— you know your child best. Keep communication open, simple, and supportive. Your child needs your reassurance that although there will be some changes to everyday life, most things will stay the same.

For more information about feelings/emotions and type 1 diabetes, please refer to these handouts on the BCCH Diabetes website:

- [Common Reactions to a Diagnosis of Type 1 Diabetes](#)
- [Managing Stress Associated with Type 1 Diabetes](#)

Finances

Many parents, as well as older children and teens, worry about family finances with a new diagnosis of type 1 diabetes. There are resources and information you can access to help you decide what will be best for your family's financial situation. A

good start is to ensure your family is registered with the BC Fair Pharmacare Program.

Some families have Extended Health Benefits with different coverage packages for medications, including diabetes supplies.

For more information about finances and type 1 diabetes, please refer to these handouts on the BCCH Diabetes website:

- [Finances and Type 1 Diabetes](#)
- [Disability Tax Credit for Children with Type 1 Diabetes](#)



You may be tempted to use the internet to learn more about diabetes. Some information on the internet is not correct or true. Other information may not apply to children with diabetes. This can cause unneeded worry and stress. If you are worried about what you read on the internet, talk to your diabetes team. If you want to use the internet, ask your diabetes team for some reliable websites.

Notes: