



# The Pediatric & Adolescent Type 2 Diabetes Program



**A program to help young people and their families gain the knowledge, skills and confidence to live well with Type 2 Diabetes**



## Welcome to the Pediatric & Adolescent Type 2 Diabetes Program

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## How to reach your health care team

You and your family will work closely with a team of experts in diabetes care and education. Here is a list of the team members and their phone numbers.

Each team member contributes to your care and education, and welcomes your questions and feedback.

McMaster Children's Hospital: 905-521-2100		
Adolescent Type 2 Diabetes (T2D) Program, 2G Child and Youth Clinic: ext 78513 or 78517		
Team member	Name	Phone Ext.
Physician	Dr. M. Constantine Samaan	73716
Registered Nurse	Sarah Mizener	73967
Registered Dietitian	Anne-Marie DiGravio	73211
Registered Social Worker	Leigh Drong	73556
Behavior Therapist	Sue Kelley	74764
Kinesiologist	Sonya Thiessen	74185
Exercise Physiologist	Bogdan Wilk	77232

## **Type 2 Diabetes: The basics**

### **Read this section to learn:**

- What is diabetes?
- How does sugar get into the blood?
- What is insulin?
- What are the types of diabetes?
- What causes Types 2 diabetes?
- What's going on with Type 2 diabetes?
- How do I take care of my diabetes?
- Why control diabetes?
- Will I always have diabetes?

### **What is diabetes?**

- Diabetes is a life-long condition that affects how your body uses glucose, the main type of sugar in the blood. Your body needs sugar for energy.
- With diabetes, the sugar from the food you eat and drink stays in your blood instead of going into your cells.
- There is too much sugar in your blood.
- The cells don't have sugar to use as energy. You may feel run down or tired.

### **How does sugar get into the blood?**

- Sugar comes from foods that contain carbohydrates.
- It is carried to the muscles by insulin.

## What is insulin?

- A hormone made by the pancreas.
- It works like a key to open the cells to let sugar in.

## What are the types of diabetes?

Type 1 Diabetes	Type 2 Diabetes
<ul style="list-style-type: none"><li>• The pancreas does not make any insulin.</li><li>• People with Type 1 diabetes must take insulin to survive.</li></ul>	<ul style="list-style-type: none"><li>• The body cells cannot use the insulin. This is called insulin resistance.</li><li>• The liver sends out too much sugar.</li><li>• The pancreas does not make enough insulin.</li></ul>

## What causes Type 2 diabetes?

- The exact cause of Type 2 diabetes is unknown.
- There may be a gene that makes diabetes more likely to develop. This is why other members of your family may also have diabetes.
- Other things also play a role in developing Type 2 diabetes. One common factor is being overweight.

## What's going on with Type 2 diabetes?

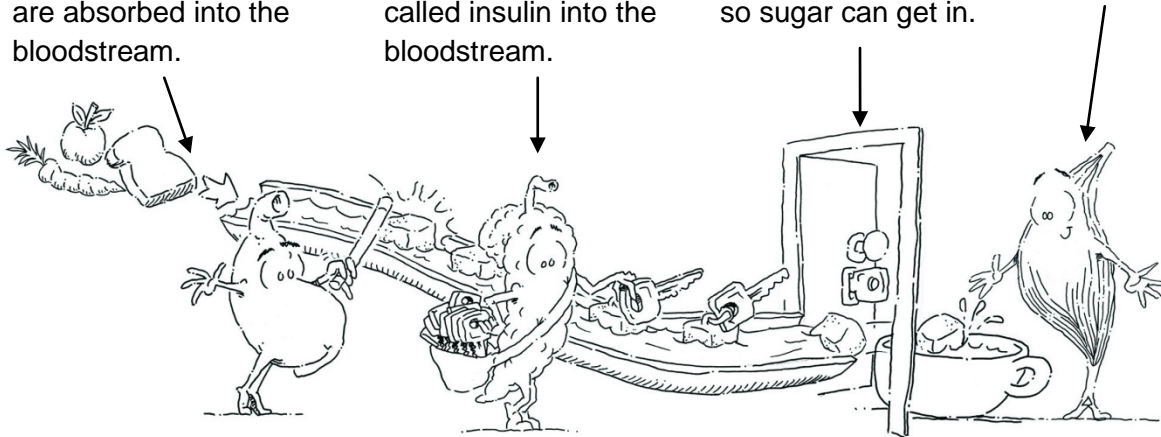
### How the body uses sugar – without diabetes

The foods you eat are broken down into sugar and other nutrients, which are absorbed into the bloodstream.

Sugar in the blood triggers the pancreas to release a hormone called insulin into the bloodstream.

Insulin acts like a key, opening the door to each cell so sugar can get in.

The cells use sugar like fuel, for energy.

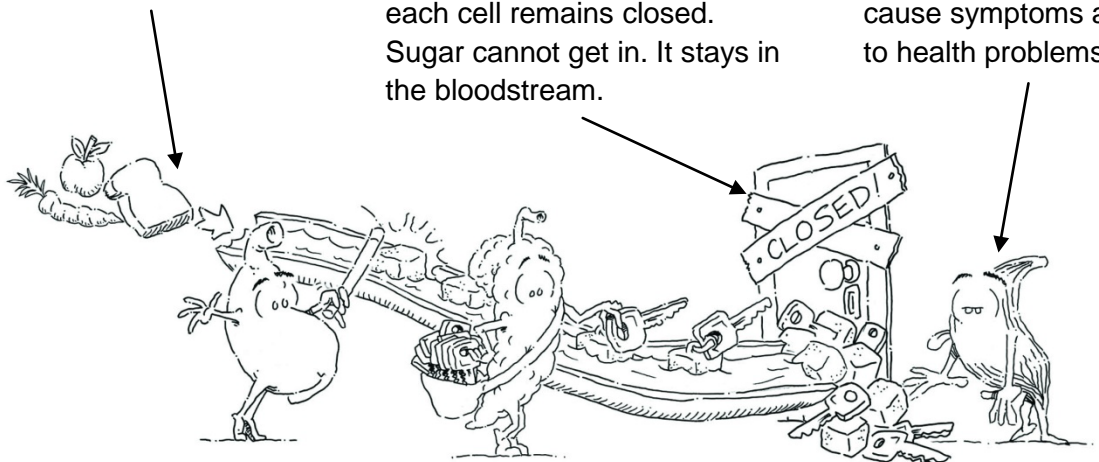


### What happens with Type 2 diabetes

The foods you eat are broken down into sugar and other nutrients, which are absorbed into the bloodstream.

The pancreas can't make enough insulin or your cells can't use the insulin properly. When insulin isn't available or working properly, the door to each cell remains closed. Sugar cannot get in. It stays in the bloodstream.

The cells have no sugar for energy. The amount of sugar in the blood gets too high. High blood sugar can cause symptoms and lead to health problems.



## How do I take care of my diabetes?

Taking care of your diabetes means keeping your blood sugar levels as close to normal as possible. You and your family will work with the Adolescent Type 2 Diabetes Program (T2D) team to make a plan of care that is right for you.

Taking care of your diabetes means:

- Making healthy food choices
- Being active every day
- Getting to a healthy weight
- Checking your blood sugar levels
- Taking medication to lower your blood sugar levels, if needed



The T2D team will help you and your family learn to do this. We will give you lots of information and support. As you go through your teen years, you can gradually take charge of your own diabetes care. This is called self-management.

**Type 2 diabetes won't stop you from doing the things you enjoy, or living a long and healthy life.**

## Why control diabetes?

**By controlling your diabetes and seeing your T2D team regularly, you may:**

- ✓ **Have more energy**
- ✓ **Feel better**
- ✓ **Reduce the risk of complications**



## What health problems are related to type 2 diabetes?

Young people with type 2 diabetes may develop health problems related to insulin resistance. Insulin resistance is a condition in which your body makes insulin, but cannot use it effectively.

Health problem	How this affects your care
<b>Protein in the urine</b> This is called proteinuria.	<ul style="list-style-type: none"><li>• Your urine will be tested for protein.</li><li>• You may visit a kidney specialist if the problem continues.</li></ul>
<b>High blood pressure</b> This is called hypertension.	<ul style="list-style-type: none"><li>• Your blood pressure will be checked at every visit.</li><li>• You may visit a kidney specialist if the problem continues.</li></ul>
<b>High levels of fats (lipids) in the blood</b> This is called hyperlipidemia.	<ul style="list-style-type: none"><li>• Your blood will be tested for lipids such as cholesterol.</li><li>• You may visit a lipid specialist if the problem continues.</li></ul>
<b>Fat deposits in the liver</b> This is called non-alcoholic fatty liver disease.	<ul style="list-style-type: none"><li>• Your blood will be tested to check how well your liver is working.</li><li>• You may have an ultrasound scan of your liver.</li></ul>
<b>While sleeping, breathing stops for a few seconds</b> This is called obstructive sleep apnea.	<ul style="list-style-type: none"><li>• Your doctor will ask you questions about your sleep.</li><li>• You may have a sleep study to find out if you have apnea.</li></ul>
<b>A hormone condition in girls</b> This is called Polycystic ovary syndrome. It involves having irregular or no periods, excess body hair, high levels of some hormones in the blood, and small cysts on the ovaries.	<ul style="list-style-type: none"><li>• Your doctor will ask you questions about your periods.</li><li>• Your blood may be tested for hormone levels.</li><li>• You may have an ultrasound scan of your ovaries and uterus.</li></ul>



If diabetes is not well-controlled, some long-term complications are possible, including:

- Heart attack
- Stroke
- Eye disease
- Kidney disease
- Nerve damage

**Read “How to stay healthy with diabetes” on page 40 to learn how to delay or prevent health problems caused by diabetes.**

## **Will I always have diabetes?**

Yes, diabetes is a life-long (chronic) condition. The good news is that you can live well, by learning to take care of your diabetes.

This won't always be easy. Living with a chronic condition is a challenge for anyone, but teens have special concerns.

- It can be hard to understand why you have diabetes and have different needs than other teens.
- It can be hard to take care of diabetes every day. There is a lot to do: following a meal plan, testing blood sugars and taking medication if needed. You may wonder why you need to do this when you feel well. You may wish your daily life could be more spontaneous.
- It can be hard to care for diabetes when you are growing. As your body changes you have to change how you take care of your diabetes. How you feel about diabetes changes over time too. It may not seem to get easier.

Having diabetes may seem overwhelming. At times you may feel frustrated, sad, angry or afraid. You may get fed up with taking care of your diabetes. All these feelings are normal.

### **Remember that you are not alone**

Your family and the T2D team can help you cope and live with diabetes. You can also get information and support online and from other teens with diabetes.

**This can help you feel more in control.**

### **Important things to remember:**

- ✓ Everyone's body is different.
- ✓ Diabetes is just a part of who you are.
- ✓ Be willing to learn and take charge of your health.
- ✓ Let your parents be involved. Family may be your best source of support.
- ✓ Talking to people you trust can be helpful.
- ✓ If your diabetes is not well controlled, don't blame yourself. Focus on what got in the way of your goals and how you can get around it.
- ✓ Don't hesitate to ask for help. The T2D team is here to help you.

## **Taking care of diabetes: Checking blood sugars**

### **Read this section to learn:**

- Why do I need to test my blood sugar?
- How do I check my blood sugar?
- How do I get a meter?
- How often should the meter be checked?
- How often should I test my blood sugar?
- What are my blood sugar targets?
- What do I do with my blood sugar results?
- How do I know that my diabetes control is good?
- What is A1C?

### **Why do I need to test my blood sugar?**

It is important to test your blood sugar regularly. This helps you see the patterns of your blood sugars. You will know if there are certain times of day when your blood sugar goes up or down.

This information helps you and your T2D team adjust your diabetes care.

## How do I check my blood sugar?

We will teach you how to test your blood sugar. You will use a special device called a blood glucose meter.

One type of meter is shown in this picture.

Follow the company's directions on how to use your meter. Ask your T2D nurse for help when needed.



## How do I get a meter?

You can get a meter at your diabetes clinic or buy one at a pharmacy. Prices vary. Some insurance companies will pay for the cost of the meter and/or the strips.

Most people test blood sugar from their fingers. If you have a meter that tests blood sugars from your arms, make sure you use your fingertips for testing when:

- You think you may be having a low blood sugar
- You are testing less than 2 hours after eating

**Finger testing is more accurate.**

## How often should the meter be checked?

- Have your meter checked with your finger blood at a lab each year.
- When you are having your blood tested at a laboratory, bring your meter and test your blood sugar with your meter while you are there.
- Your results should be within 20% of the lab results.

## How often should I test my blood sugar?

How often you test depends on the way you take care of your diabetes. There are different types of diabetes care:

- Meal planning alone
- Meal planning and pills
- Meal planning and insulin
- Meal planning, pills and insulin

Here are some testing guidelines:

- Test at least once a day
- Vary the times during the day that you test
- Keep a record
- Show your record to members of your diabetes team

**If you take insulin and your blood sugars are unstable, your T2D team may ask you to check your blood sugar more often.**

## What are my blood sugar targets?



Your blood sugar targets	
<b>Before meals</b>	<b>4 to 7 mmol/L</b>
<b>2 hours after meals</b>	<b>5 to 10 mmol/L</b>

## What do I do with my blood sugar results?

Write all your blood sugars in a log book along with the time of day.  
Write them down even though your meter has a memory.

### Sample blood sugar record

Date	Before breakfast	2 hours after	Before lunch	2 hours after	Before supper	2 hours after	Bedtime
May 1	8 am <b>7.2</b>				5:30 pm <b>13.3</b>		
May 2	8:30 am <b>5.2</b>	10:30 am <b>12.3</b>					
May 3			12 noon <b>6.4</b>				9:30 pm <b>8.4</b>
May 4					6 pm <b>6.1</b>	8 pm <b>7.9</b>	

## How do I know that my diabetes control is good?

By testing your blood sugar regularly, you can see if your diabetes is in good control.

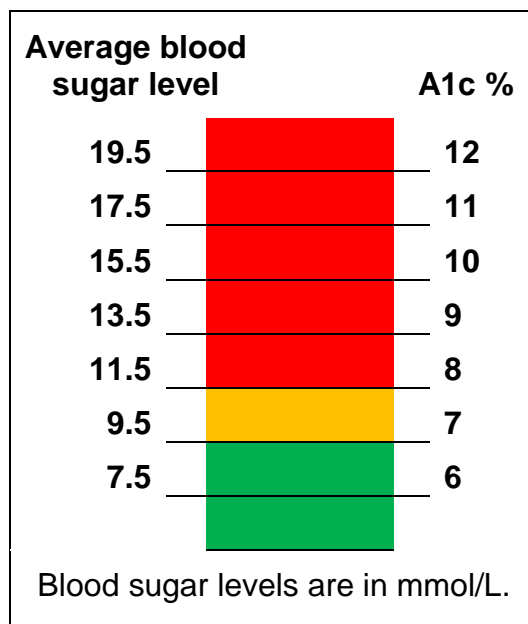
- Review your log book with your T2D team. Look for patterns in your blood sugar levels.
- If you see a pattern of blood sugars higher or lower than your targets, call a member of your T2D team. You may need to review your meal plan, activity, or have your medication changed.

Your T2D team will also do a test called “Hemoglobin A1c”.

## What is Hemoglobin A1c?

- A1c is the short form of glycosolated hemoglobin. It is the name of a blood test. You do not have to fast (go without eating) before this test.
- This blood test shows your average blood sugar level over the past 3 months. It is not the same as your blood sugar results.
- When your A1c result is less than 7%, you have a lower chance of having complications from diabetes.

This chart explains what your A1c results mean.



### For example:

If your A1c result was 9%,  
your average blood sugar  
on your meter is 13.5.

As this is an average,  
some blood sugar readings  
will be higher.



## **Taking care of diabetes: Treating HIGH blood sugar**

### **Read this section to learn:**

- What is high blood sugar?
- What causes high blood sugar?
- What are the signs of high blood sugar?
- What do I do if I have high blood sugar?
- What can happen with high blood sugar?
- When should I test for ketones?
- How do I test for ketones?

### **What is high blood sugar?**

- A high blood sugar level is when the amount of sugar in your blood is higher than your target level.
- High blood sugar is also called **hyperglycemia**.

### **What causes high blood sugar?**

High blood sugar may be caused by:

- Missing your diabetes medication
- Your dose of diabetes medication is not right for you
- Eating too much, especially foods high in carbohydrates
- Being sick or under stress
- Side effects from other medications

## What are the signs of high blood sugar?

When your blood sugar level is high, you may:

- Be thirsty, have a dry mouth and skin
- Pass urine (pee) more often
- Feel tired or weak
- Feel hungry or sick
- Have stomach pains or cramps

## What do I do if I have high blood sugar?

- Test your blood sugar level every 4 hours.
- Drink sugar free fluids such as water or diet pop.
- An exercise such as walking may help to lower your blood sugar.
- Make sure you are following your meal plan.

### **If your blood sugar remains high, call your T2D team.**

A member of the team may tell you to:

- Adjust your meal plan
- Adjust your diabetes pills, insulin or both

## What can happen with high blood sugar?

- It is important to recognize signs of high blood sugar early.
- If hyperglycemia goes unnoticed, ketones may develop in the blood.
- Ketones are poisonous waste products that come from the breakdown of fat for energy.
- The kidneys filter the blood and try to get rid of the ketones in the urine.

**Ketones are made when the body uses fat for energy.  
Ketones mean there is not enough insulin.**

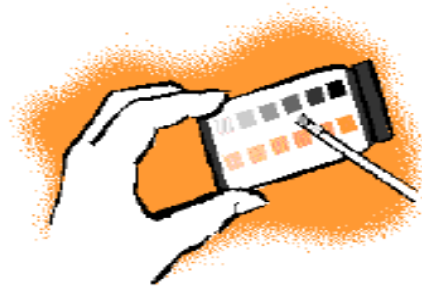
## When should I test for ketones?

Test your urine for ketones:

- If your blood sugar is higher than 13 mmol/L two times in a row
- If you are sick (because illness can raise or drop your blood sugar)

## How do I test for ketones?

1. Collect some of your urine in a cup.  
Dip a test strip in the urine.  
(Or you can pee on the test strip.)
2. Shake off any extra drops of urine.
3. Wait a few seconds – following the directions of the test kit.
4. Match the colour on the strip pad to the colour on the bottle. The reading will be negative, trace, small, moderate or large.
5. Record the results in your log book.



**If you have ketones, call your doctor or go to the nearest hospital Emergency Department.**

## **Taking care of diabetes: Treating LOW blood sugar**

### **Read this section to learn:**

- What is low blood sugar?
- What causes low blood sugar?
- What are the signs of low blood sugar?
- How do I treat low blood sugar?

### **What is low blood sugar?**

- A low blood sugar level is when the amount of sugar in your blood is lower than your target level.
- Low blood sugar is also called **hypoglycemia**.

### **What causes low blood sugar?**

Low blood sugar may be caused by:

- Meals or snacks that are too small, delayed or missed
- Using insulin but not eating enough
- Increased physical activity

### **What are the signs of low blood sugar?**

The signs of low blood sugar include:

- |             |              |                                  |
|-------------|--------------|----------------------------------|
| • Trembling | • Headache   | • Fast heart beat (palpitations) |
| • Sweating  | • Dizziness  | • Difficulty concentrating       |
| • Anxiety   | • Tingling   | • Confusion                      |
| • Hunger    | • Weakness   | • Vision changes                 |
| • Nausea    | • Drowsiness | • Difficulty speaking            |

## How do I treat low blood sugar?

### Step 1

1. Stop what you are doing and check your blood sugar.
2. Eat or drink 15 grams of fast acting carbohydrate.  
Choose one of these:
  - 15 grams of glucose in the form of glucose tablets  
(for example: 4 gram glucose tablet = 4 tablets)
  - 15 ml (3 teaspoons) or 3 packages of table sugar dissolved in water
  - 125 ml (1/2 cup) of juice or regular soft drink (**NOT sugar-free or diet pop**)
  - 15 ml (1 tablespoon) of honey

### Step 2

1. Sit down and rest for 10 to 15 minutes. Then, check your blood sugar again.
2. If your blood sugar is still less than 4 mmol/L, repeat Step 1.

### Important!

**If you have a low blood sugar just before a meal or snack**, treat it as described in Step 1 and 2. Then have your regularly planned meal or snack and medication.

**If your next meal or snack is more than an hour away**, also have a snack with a starch and protein such as:

- ½ cup (125 ml) of milk plus 2 plain cookies
- ½ cup (125 ml) milk with ½ cup (125 ml) cereal
- 6 crackers with 1 oz (30 g) of cheese
- 1 slice bread with 1 tablespoon (15 ml) peanut butter or 1 oz (30 g) of meat or cheese.

## **Taking care of diabetes: Active living**

### **Read this section to learn:**

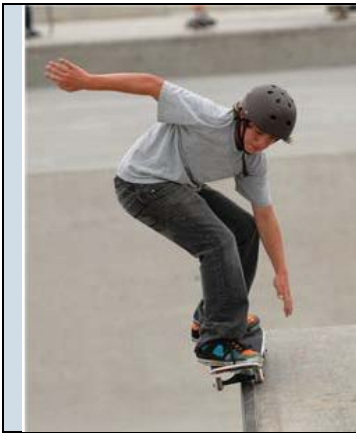
- What are the benefits of active living?
- How can I do this?
- What kinds of activity are best?
- How much activity is good?
- How does activity affect diabetes?
- How can I exercise safely?
- What should I watch for?
- What should I have with me when I am active?
- How much 'screen time' can I have?

### **What are the benefits of active living?**

By making exercise and activity a part of your daily life, you will benefit in so many ways!

Regular physical activity:

- ✓ Strengthens your muscles and bones
- ✓ Relieves stress
- ✓ Boosts your energy, self-esteem and confidence
- ✓ Increases your concentration and learning
- ✓ Helps you maintain a healthy weight
- ✓ Helps insulin work better, keeping blood sugar levels in a healthy range
- ✓ Helps you sleep better



**Active living helps you feel good, have fun and stay healthy.**

**Diabetes does not limit what you can do.**

**It's so important to start now!**

## **How can I do this?**

- Start by making small and realistic changes.
- Make this a priority in your life.
- Learn how activity affects your diabetes and learn how to exercise safely.

## **What kinds of activity are best?**

- All types of exercise and activity are good. Try a variety of activities to see which ones would be great to continue.
- Involve family and friends. It can be more fun doing activities together.
- Make activity part of daily life. You may enjoy sports, martial arts, skating or dancing. You may like biking, playing tag, skateboarding or using playground equipment. These activities are free and don't need to be scheduled. Plan activities indoors and outdoors, even in colder weather.
- Most activities are safe for teens with diabetes. However, it's a good idea to talk with the health care team if you have not been active before, or you want to do adventure activities or extreme sports.



## How much activity is good?

### **F** Frequency      How often? Every day.

- Be active seven days a week for the greatest health benefits.
- This may sound excessive at first. If you haven't been active at all, start slowly and work up to it.

### **I** Intensity      How much effort? Enough to work hard.

- Move your muscles long enough to see these healthy responses: your heart beats faster, you begin to sweat and your cheeks get pink or darker.
- This kind of vigorous activity is good for your heart.

### **T** Time      How long? At least 30 minutes.

- Make at least 30 minutes of moderate to high intensity activity a part of your daily routine.
- Aim for 60 minutes each day if you can. You don't have to do this all at once! You can break up one hour of activity into shorter times throughout the day.
- Don't get discouraged. Being active for any amount of time is better than not being active at all!
- Reduce your 'screen time' too (see page 26).



## How does activity affect diabetes?

When you are active, your muscles use sugar from your blood for energy. This usually lowers your blood sugar level.

The effect will vary depending on:

- When you are active
- How long you are active
- The type of activity and how much effort is required
- When you last ate and what you ate
- When you took insulin, how much was given and when it peaks

**Activity can affect blood sugar for 12 to 24 hours.**

**Each person is different. The best way to learn how activity affects you is to check and record your blood sugar often.**

## How can I exercise safely?

**The most important thing to do is to test your blood sugar before, during and after activity.**



- Activity can affect your blood sugar for 12 to 24 hours.
- Activity usually lowers blood sugar, so watch for signs of low blood sugar (**hypoglycemia**).



## What should I watch for?

Watch out for the signs of low blood sugar:

- Trembling
- Sweating
- Anxiety
- Hunger
- Nausea
- Headache
- Dizziness
- Tingling
- Weakness
- Drowsiness
- Fast heart beat (palpitations)
- Difficulty concentrating
- Confusion
- Vision changes
- Difficulty speaking

If you have one or more of these symptoms, test your blood sugar.

**If your blood sugar is less than 4 mmol/L, you have low blood sugar (hypoglycemia) and need to treat it right away.**

If left untreated, your symptoms could get worse and you could pass out.



**If you are not able to test your blood sugar, treat your symptoms right away.**

## What should I have with me when I'm active?

For activities away from home, always carry:

- Water
- Liquids that contain sugar to treat low blood sugar (such as fruit juice or regular pop).
- Supplies to test and record your blood sugar.
- Insulin and other medications.
- Identification and emergency contact information. We recommend that you wear medical alert identification.
- A snack for after the activity



### **The Exercise Specialist on the T2D team is available to help you**

The Exercise Specialist can:

- ✓ Help you choose activities that are right for you
- ✓ Help you learn to do a variety of exercises and activities
- ✓ Help you plan to increase physical activity gradually and safely
- ✓ Give you support
- ✓ Refer you to other resources, such as websites

## How much 'screen time' can I have?

Screen time is the time you spend using any screen. This includes:

- Phone
- TV
- Computer
- Video games
- DSD
- Wii
- PS3
- X-box
- iPOD
- iPAD

**We recommend that you spend no more than **2** hours a day using a screen.**



**This does not include the time you use a screen for your homework or job.**

## Taking care of diabetes: Healthy eating

### Read this section to learn:

- What is healthy eating for Type 2 diabetes?
- When do I need to eat?
- What should I eat?
- How does food affect blood sugar?
- How much should I eat?
- What are some tips for success?
- Eating out: What, how much and when am I going to eat?

### What is healthy eating for Type 2 diabetes?

Healthy eating is a matter of balance. There are no “good” or “bad” foods. In moderation, all foods can fit into a healthy meal.

It is also important to choose a variety of foods and to understand that the amount you eat is very important. Your dietitian will help you to understand what a proper portion size is for you.

### Healthy eating helps you:

- ✓ Get better control of your blood sugars
- ✓ Use insulin better
- ✓ Keep a healthy weight
- ✓ Have more energy



## When do I need to eat?

- Eat 3 meals a day, at regular times. This will help control your blood sugar levels.
- Space meals 4 to 6 hours apart.
- Some people may benefit from including healthy snacks.  
Your dietitian will discuss the benefits of snacking with you and give you some suggestions.

## What should I eat?

When you eat food, it breaks down into 3 main nutrients:  
protein, fat and carbohydrate.

### Protein:

- ✓ Builds your muscles and helps you grow.

Found mainly in foods like:

- Meat, fish and poultry
- Eggs and cheese
- Lentils and legumes, such as chick peas, kidney beans

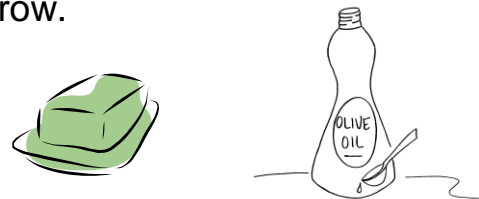


### Fat:

- ✓ Develops your brain and helps you grow.

Found mainly in foods like:

- Butter and margarine
- Oil and mayonnaise





## Carbohydrate:

✓ Gives you energy.

Found mainly in foods like:

- Rice and pasta
- Grains, breads and cereals
- Fruits and milk
- Potatoes and some vegetables
- Sweets



**To stay healthy, eat a mixture of foods that have these nutrients – every day!**

## How does food affect blood sugar?

**Foods that contain carbohydrate affect your blood sugar.**

Your body breaks down the **carbohydrates** in food into sugar. The sugar enters your blood so it can be used for energy.

- ✓ You need energy to think, move, work and play.
- ✓ Carbohydrates are important to keep the other parts of your body working properly.

Your body needs **insulin** to convert the carbohydrates in our food into energy. When you have Type 2 diabetes your insulin may not be working properly or you may not have enough insulin to convert the blood sugar into energy.

## How much should I eat?

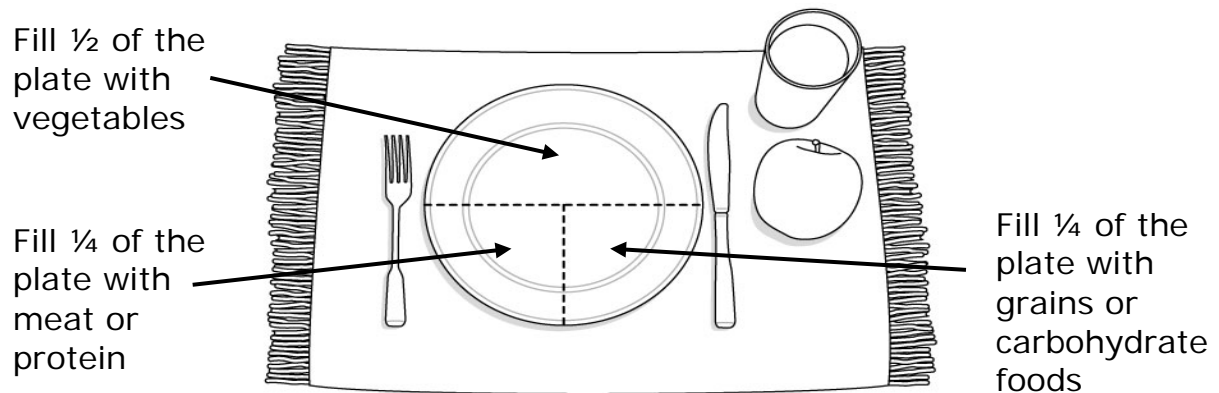
The dietitian will help you develop a meal plan that meets your specific needs.

### **Your meal plan is not a 'diet'.**

It is a guide that will help you to eat healthy so you can control your blood sugar levels and keep a healthy weight.



**Use this picture as a guide to help plan healthy servings.**



## What are some tips for success?

### **Eat together as a family.**

- Research shows that families who eat together on a regular basis often eat healthier.
- Every family member can get involved in meal planning, shopping and preparing meals.



### **Eat at a slower pace.**

- It takes about 20 to 30 minutes after eating for your brain to get the signal that you are feeling full.
- People who eat fast often eat too much and find it difficult to maintain a healthy weight.

### **Include fibre rich foods in your meals.**

- Fibre helps to slow the digestion of food. It keeps you feeling full longer and may help to control blood sugar levels.
- Fibre can be found mainly in foods like whole grain breads and pasta, brown rice, kidney beans, lentils, fruits and vegetables.

### **Eat fresh, canned or frozen fruits and vegetables.**

- Canned or frozen fruit and vegetables have the same nutritional value (such as fibre, vitamins and minerals) as fresh ones.

### **Choose low fat foods most of the time.**

- This helps you achieve and maintain a healthy body weight and keep blood fats (cholesterol) in a normal range.
- Some examples are: white chicken meat without the skin, lean ground beef, low fat cheese and yogurt, low fat popcorn, and baked potato chips or tortilla chips.

### **Eat fast foods less often.**

- Eating fast foods more than once a week can make it very difficult to maintain a healthy weight.

### **Drink water when you are thirsty.**

- Avoid juice and pop. Have them only as a very occasional treat.

## Eating out

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Here are some tips for making healthy choices when eating away from home. Consider what, how much and when you are going to eat.

### WHAT am I going to eat?

<b>Foods to CHOOSE most of the time</b>	<b>Foods to AVOID most of the time</b>
Baked, grilled, steamed or roasted meats and vegetables	Fried, battered and breaded food items (for example: French fries, hash browns, onion rings, chips) Food with cream sauces or sweet, thick sauces
Lean meats, poultry, fish, low fat cheese Legumes (for example: chick peas, lentils)	Ribs, wings, sausages, wieners, hotdogs, poultry with skin on, luncheon meats
Mini low fat subs, plain hamburgers, wraps and sandwiches with vegetables	Hamburgers, wraps and sandwiches with bacon, cheese and sauces
Vegetarian pizza (try whole wheat crust)	Pepperoni, bacon, sausage or bacon pizza Extra cheese on the pizza
Salads with oil & vinegar dressing on the side (for example: Garden or Spinach salad)	Salads with creamy, high fat dressings, bacon bits, extra cheese (for example: Caesar salad)
Water, skim or 1% milk	Milkshakes, fruit drinks, regular pop
Fresh fruit and vegetables	Cakes, pies, cheesecake, nuts
Fill up on vegetables at a buffet or "all you can eat" restaurant	Be VERY careful at buffets and "all you can eat restaurants" - it can be hard to resist!

It is OK to have a dessert. You can share it, reduce the amount of carbohydrate from another food in your meal, or do some type of activity when you get home.

## **HOW MUCH am I going to eat?**

- Get to know healthy portions at home. Then, try to eat the same amount when you are out.
- Ask for a “lunch sized” meal if available.
- Stop eating when full. Take the extra food home for another meal on another day or share the meal with someone else.

## **WHEN am I going to eat?**

- Remember to eat every 4 to 6 hours. This will help keep your blood sugars more “balanced” throughout the day.
- Try to eat at the same time that you would at home. If this is not possible, you may need a small, healthy snack before you go so that you do not overeat when you are out (for example: fruit or vegetable).
- Note how often you eat out. A special treat once in a while is a healthy approach.

## Taking care of diabetes: Medications

### Read this section to learn:

- About the two medications used in young people with Type 2 diabetes: Metformin and Insulin

### **Metformin** (Met – for – minn)

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#### **What are the names of this medication?**

- Metformin is the generic name for this medication.
- Glucophage<sup>®</sup> is one of the brand names.
- Glumetza<sup>®</sup> is a long-acting version of Metformin.

#### **How is this medication used?**

This medication is used to treat Type 2 diabetes. It lowers the amount of sugar in your blood by helping your own insulin work better.

**This medication is not insulin.**

## How do I take this medication?

- Take this medication exactly as directed by your doctor.
- It is best to take this medication with food or right after a meal.
- If you miss a dose of this medication, take it as soon as possible. However, if it is almost time for your next dose, skip the missed dose and go back to your regular time. Do not take 2 doses at one time.
- This medication works better when you follow a diet and exercise program.
- You will need to test your blood sugar while you are taking this medication.
- Check with your doctor or pharmacist before you take over-the-counter medications, as they may interact with Metformin.

## What should I watch for while taking this medication?

While taking Metformin you may notice:

- Diarrhea
- Loss of appetite
- Nausea and vomiting
- Heartburn
- Headache
- Dizziness
- Metallic taste in your mouth

**Not everybody who takes Metformin will have these side effects.**

Even if you have them, they may go away when your body gets used to Metformin.

**If these problems do not go away, contact your doctor.**



## What should I do when I am sick?

Keep taking Metformin. If you are on insulin as well, make sure you continue to take it.

Blood sugars can:

- Go **UP** on sick days because of the stress of illness, or
- Go **DOWN** if you are not taking enough carbohydrates.

Follow the sick day guidelines from the type 2 diabetes team.

Test your blood sugar **every 4 hours** while feeling ill. For example, before meals, at bedtime and 3 am.

If you are not able to eat solid food, take sugary fluid every 1 to 2 hours:

- 1/3 cup (75 ml) ginger ale, apple juice, or Kool-Aid
- 1/2 popsicle
- 1/4 (60 ml) cup regular Jell-O (not sugar free)

Check your urine for ketones each time you pass urine (pee).



**If you vomit more than 2 times in 6 to 8 hours,  
go to the nearest hospital Emergency Department.**

**You need to receive intravenous fluids.**

# Insulin

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You may need insulin to help you achieve your blood sugar targets. Insulin can be taken alone or with diabetes pills such as Metformin.

There are many types of insulin.

**Learn about the types of insulin on page 39.**

The types are different in:

- How long they work (duration of action)
- How quickly they start working (onset of action)
- When they are most effective (peak of action)

By understanding how your insulin works, you can time your meals, snacks and exercise. If you take insulin, you need to check your blood sugar regularly.

The insulin plan your doctor prescribes will depend on:

- Age
- Your treatment goals
- Diet and lifestyle
- General health
- Risk of low blood sugar
- Your preferences

**The goal of any insulin plan is to match, as closely as possible, insulin secretion in people without diabetes.**

Just like a person without diabetes:

- You may need a constant supply of insulin at all times (**basal insulin**).
- You may also need extra insulin when you eat (**bolus or meal insulin**).

**Your diabetes team will explain what insulin plan will work best for you.**

The diabetes educators will help you learn about:

- **How to prevent, recognize and treat low blood sugar (hypoglycemia)**
- Injection options (pens and syringes)
- How to adjust your insulin dose based on your blood glucose monitoring results
- How to time your meals and snacks
- How to match your carbohydrate intake to your insulin dose
- The effects of exercise
- How to care for and store your insulin

## **Adjusting to the need for insulin**

Many people with type 2 diabetes resist taking insulin. They feel that taking insulin means that they are sick or have somehow ‘failed’ to manage their diabetes.

**Needing insulin does not mean that you have failed in any way.**

Your insulin is simply replacing a natural hormone because:

- Your body no longer makes enough of it, or
- Your body does not respond to the insulin it makes as well as it used to.

Some people are afraid of needles or feel embarrassed about giving themselves injections in public.

- **If you have a problem with needles**, please tell a member of your T2D team. We can connect you with a Child Life Specialist, who can help you find ways to deal with this.

## Types of insulin

Type and action	Brand name (and generic)	Dosing
<b>Rapid acting</b> (clear) Onset: 10 to 15 minutes Peak: 1 to 2 hours Duration: 3 to 5 hours	<ul style="list-style-type: none"><li>• Humalog (insulin lispro)</li><li>• NovoRapid (insulin aspart)</li><li>• Apidra (insulin glulisine)</li></ul>	<ul style="list-style-type: none"><li>• Bolus insulin.</li><li>• Usually taken right before eating, or to lower high blood sugar levels.</li></ul>
<b>Intermediate acting</b> (cloudy) Onset: 1 to 3 hours Peak: 5 to 8 hours Duration: Up to 18 hours	<ul style="list-style-type: none"><li>• Humulin-N</li><li>• Novolin ge NPH</li></ul>	<ul style="list-style-type: none"><li>• Basal insulin.</li><li>• Often taken at bedtime, or twice a day (morning and bedtime).</li></ul>
<b>Extended long-acting</b> (clear and colourless) Onset: 90 minutes Peak: none Duration: Up to 24 hours	<ul style="list-style-type: none"><li>• Lantus (insulin glargine)</li><li>• Levemir (insulin detemir)</li></ul>	<ul style="list-style-type: none"><li>• Basal insulin.</li><li>• Usually taken once or twice a day.</li></ul>

This information is adapted from the Canadian Diabetes Association's 2013 Clinical Practice Guidelines and their publication "Your Guide to Diabetes Medications".

Both are available online at [www.diabetes.ca](http://www.diabetes.ca)

**If you have any questions about insulin,  
please ask your T2D team members.**

## Other medications

Your doctor may decide to use another type of pills called Glimepiride to control your diabetes better. Your doctor will discuss this medication or other medications with you if you need them.

## How to stay healthy with diabetes

### Read this section to learn:

- Why is sleep important for my health?
- Why is having less sleep a problem?
- How can I get better sleep?
- How can I delay or prevent health problems related to diabetes?

### Why is sleep important for my health?

- Your body needs rest to work properly. Sleep helps your body freshen up and 'be ready to go' the next morning.
- Good sleep helps you eat better and deal with the stress of being a teen.
- You need about 9 hours of sleep to be able to learn, play, do homework and have fun.

**Most teens do not  
get enough sleep.**

**Try to get about 9  
hours of sleep a night.**

### Why is having less sleep a problem?

Reduced sleep time may make:

- Your body less able to respond to insulin.
- You crave certain foods high in fat and sugar.
- You less able to concentrate and learn at school.
- You less patient and more irritable.

Some teenagers get poor sleep due to a condition called obstructive sleep apnea. For more information, go to page 7.

## How can I get better sleep?

- Try and get about 9 hours of sleep each night.
- It helps to go to sleep and wake up at the same time every day. Try to stick to this time on weekdays, and weekends if you can.
- Make your bedroom a comfortable place to sleep. Keep it quiet, dark and cool.
- Do not watch TV or use the computer about 1 hour before you go to bed.
- Do not have a TV or computer in your bedroom. If you do have a computer, switch it off before you go to bed.
- Caffeine can keep you awake. Do not have drinks that contain caffeine before bed (for example: cola such as Coke<sup>®</sup> and Pepsi<sup>®</sup>, and energy drinks such as Redbull<sup>®</sup>)

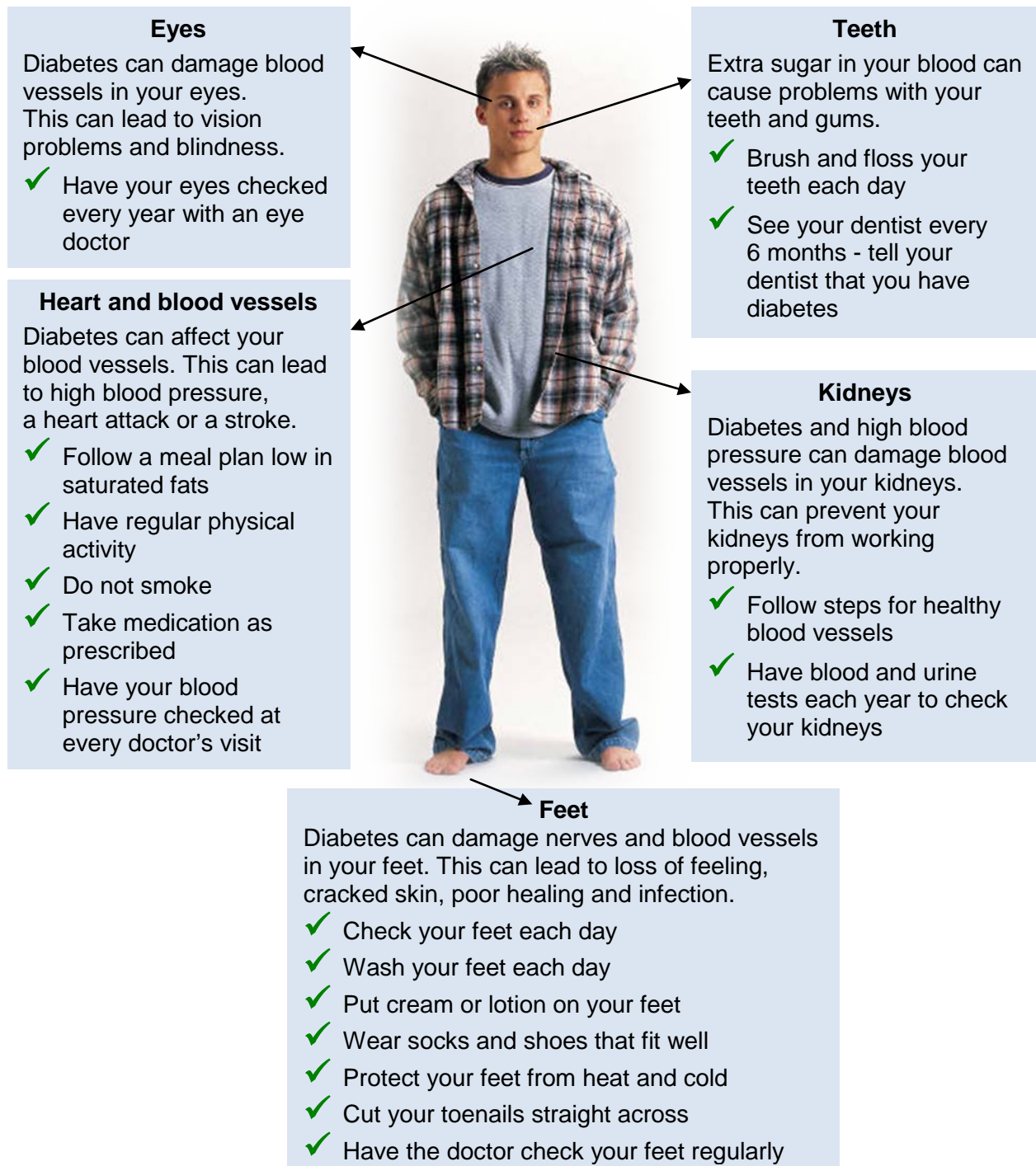


**Aim for about 9 hours of sleep each night.**

**Sleeping well will help you control your diabetes better.**

## How can I delay or prevent health problems related to diabetes?

Controlling your diabetes can delay or prevent health problems caused by diabetes. Here's what to do.



## Team members that offer support

### Read this section to learn:

- About the members of your T2D team that can help you adjust to living with diabetes: the Social Worker and the Behaviour Therapist

## How a Social Worker can help

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Learning that your child has diabetes can be stressful. Your family and your child will be taught how to manage diabetes. This will require learning new skills and making some changes in your day-to-day lives. After diagnosis, it is normal to feel many emotions, such as sadness, fear, worry, anger, frustration, and guilt. At times you may feel overwhelmed.

Please remember that you are not alone. The members of your child's health care team are here to help.

### The Social Worker on your health care team can:

- ✓ Help your child and family develop healthy coping skills.
- ✓ Help your family find solutions to day-to-day diabetes concerns and improve communication.
- ✓ Connect your child and family with helpful community resources.
- ✓ Help your family find ways to manage the cost of diabetes.
- ✓ Provide counseling and therapy to your child or family when facing a crisis, mental health or relationship problems.

**If at any time you feel that you or your family need the Social Worker's support, please call 905-521-2100, ext. 73556.**



## How a Behaviour Therapist can help

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Learning that you have diabetes affects you and the people close to you.

You and your family may:

- Feel stressed or overwhelmed as you learn new skills and make changes in your day-to-day life to manage diabetes.
- Experience many emotions and situations that can make managing your diabetes a challenge.

Please remember that you are not alone. The Behaviour Therapist on the Adolescent Type 2 Diabetes Program team can help you and your family in many ways.

### Behaviour Therapy is:

- ✓ **A way of acting:** Trying out new ways of doing things.
- ✓ **A way of feeling:** Dealing with the tough stuff! Talking about feelings and situations in positive ways.
- ✓ **A way of thinking:** Discover new ways to look at things. Learn to solve problems and avoid negative thinking.
- ✓ **A way of dealing with physical or medical problems:** Avoid overreacting and search for ideas to help stick to your team's suggestions.
- ✓ **A way of coping:** Managing stress, supportive care giving and connecting you with helpful community resources.

**If at any time you feel that you or your family need the Behaviour Therapist's support, please call 905-521-2100, ext. 74764.**

## **Tips for parents: How to help your teen to be active**

**Physical activity is good for your teen's health and well-being,  
and an important part of managing type 2 diabetes.**

**Help your teen to be active by making activity  
a part of your family's daily routine.**

### **How do you do this?**

- ✓ Start by making small and realistic changes.
- ✓ Make active living a priority in your family's life.
- ✓ Ask your teen to check with the T2D team to see if there are any limits to physical activity.
- ✓ Follow the tips on the next page to get started.

### **Get moving any way you can!**



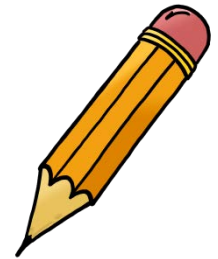
**Walk, climb, run, throw, build, dance, toss, hit,  
kick, hop, jump, roll, dig.....**

## Help your teen have an active, healthy lifestyle



<input type="checkbox"/> <b>Make activity part of your family's everyday routine</b>	<ul style="list-style-type: none"> <li>• Try to find activities that everyone enjoys, and are suitable to all ages and abilities.</li> </ul>
<input type="checkbox"/> <b>Be a role model</b>	<ul style="list-style-type: none"> <li>• Take time to be active together.</li> <li>• If your teen sees you are interested, it will catch on!</li> </ul>
<input type="checkbox"/> <b>Limit screen time</b>	<ul style="list-style-type: none"> <li>• We recommend no more than 2 hours of 'screen time' a day. This includes TV, video games and computer time.</li> </ul>
<input type="checkbox"/> <b>Shop at used equipment stores</b>	<ul style="list-style-type: none"> <li>• Many stores sell used sports equipment that is in excellent shape. This is an inexpensive way to start a new sport or activity.</li> </ul>
<input type="checkbox"/> <b>Be active in all places</b>	<ul style="list-style-type: none"> <li>• You can be active inside and outside your home, as well as in your community. For example, go to your local recreation centre for swimming or skating.</li> </ul>
<input type="checkbox"/> <b>Involve others</b>	<ul style="list-style-type: none"> <li>• Encourage other caregivers to try activities with your teen as well. It is great to establish a routine - even when you are not there.</li> </ul>
<input type="checkbox"/> <b>Encourage activity breaks</b>	<ul style="list-style-type: none"> <li>• Teens benefit from regular activity breaks.</li> <li>• Encourage daily physical activity at school, lunch, and in the middle of doing homework if possible.</li> <li>• Everyone's mind needs a break from mental challenge once in a while!</li> </ul>

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. In the top right corner, there is a small, stylized illustration of a yellow pencil with a pink eraser and a sharpened lead tip. The pencil is oriented diagonally, pointing towards the bottom left.



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dpc/ptd/lrgbk/AdolescentType2DiabetesProgram-lw.doc  
dt/September 25, 2013