On the Road to Diabetes Health

An Information Book for People with Type 1 or Type 2 Diabetes

May 2016

www.fraserhealth.ca
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Introduction

This book was written by Fraser Health Diabetes Educators. It provides information for people with type 1 and type 2 diabetes, their family members and others involved in their care. We know that taking care of diabetes involves the entire community.

This book will start you on the road to diabetes health. While the information applies to most people, make sure that you discuss your individual needs with your doctor or diabetes health care team.

Copies of this book are available from your Diabetes Education Centre and on the Fraser Health website:

www.fraserhealth.ca/health-info/health-topics/diabetes

Note: This book is not intended for women with gestational (during pregnancy) diabetes. If you have been told that you have gestational diabetes, please talk to your doctor.

Your Diabetes Health Care Team

You are the most important member of your diabetes health care team. Team members can include your family doctor, diabetes nurse, dietitian and pharmacist as well as foot care specialist, exercise specialist, psychologist, social worker and eye specialist.

Your Diabetes Education Program is shown below. Its purpose is to provide you with education and current information to help you manage your diabetes and to provide support for you to make lifestyle changes.

Your Diabetes Education Program:

HealthLink BC and the Canadian Diabetes Association are good resources for reliable information about diabetes:

HealthLink BC:  www.healthlinkbc.ca
Phone: 8-1-1 for non-emergency health information. Registered nurses, dietitians and pharmacists are available

Canadian Diabetes Association:  www.diabetes.ca
English/French Information Line: 1-800-BANTING (226-8464)
Mandarin/Cantonese Information Line: 604-732-8187 or toll free 1-888-666-8586
Emotions and Feelings

I Have Diabetes?
Finding out that you have diabetes can come as a shock. It may cause a stress response. It is important for you to know that if you do not take care of your diabetes, it may cause some health problems in the future.

What Does It Mean?
It is natural to feel angry or be frightened. Improving your eating habits and being more physically active will help improve your health, help your diabetes and prevent problems that diabetes can cause.

Well Being and Stress
Our bodies are in a state of well being when our basic needs are taken care of and we are emotionally relaxed. When we become overly excited or upset, the result is stress.

The body responds to stress by putting extra glucose (also called sugar) into the blood. This may occur with a sudden fright, anger, an ongoing problem that is upsetting or an illness, especially if serious. Learning ways to manage stress is important. Talk to your diabetes health care team about tools that can help.

Depression
30% of people with diabetes have symptoms of depression. Depression makes it harder to manage diabetes. Loss of energy can make it harder to eat healthy, exercise and test blood glucose. Spotting depression is the first step. Getting help is the second.

General symptoms of depression
• Loss of interest or pleasure in things you usually like to do
• Feeling sad, down or hopeless
• Loss of energy
• A change in your sleep pattern
• Change in appetite
• Trouble concentrating
• Nervousness and/or worry

If you have 2 or more of the symptoms listed or wonder whether you may have depression, talk to your doctor or diabetes health care team about how you are feeling. Getting help early can help you feel better and make it easier to take care of your health.
What is Diabetes?

When you have diabetes, your body cannot use food properly. This results in your blood glucose (also called blood sugar) going too high. Diabetes can occur at any age.

Why does blood glucose go too high?

When you eat, your body breaks down many foods into glucose. The glucose enters your blood and is carried to the millions of cells in your body. The glucose enters the cells with the help of a hormone produced in the pancreas. This hormone is called insulin.

Glucose can then be used for energy or be stored for later use.

The glucose cannot enter the cells if:
1. your body does not make insulin or
2. your body does not make enough insulin or
3. your insulin does not work properly (this is called insulin resistance).

When the glucose cannot enter the cells of the body, it begins to build up in the blood.

Symptoms of diabetes may include:
- feeling tired
- increased thirst
- frequent urination
- blurred vision
- weight loss for no reason
- hunger even though eating well
- nausea or feeling ill
- skin, gum or urinary tract infections
- slow healing cuts, and sores
- tingling, burning or pains in feet

If you have these symptoms and have not yet been told you have diabetes, you need to see your doctor to have a blood test done. This blood test will show if you have diabetes.
What Type of Diabetes Do You Have?

The three most common are type 1 diabetes, type 2 diabetes and gestational (during pregnancy) diabetes. This booklet will discuss type 1 and type 2 diabetes. If you are not sure what type of diabetes you have, ask your diabetes health care team.

Type 1 Diabetes

- You had symptoms when you found out you had diabetes
- Most often occurs in people younger than 30 years old
- Your body stops making insulin

You will need:
- injections of insulin
- a healthy, balanced diet
- regular blood glucose testing
- information and support
- exercise

Type 2 Diabetes

- You may not have any symptoms
- Most often diagnosed in people 40 years of age or older
- More common in people who are overweight
- Your body does not make enough insulin and/or the insulin does not work properly

You will need:
- a healthy, balanced diet
- exercise
- regular blood glucose testing
- information and support

You may need:
- to lose weight
- diabetes medication (pills or injections)

If you have type 2 diabetes, you may be able to manage for the first while with healthy eating and exercise. As you get older though, your pancreas will make less and less insulin, so you will likely have to take medication such as pills or insulin later on.
Blood Glucose

Facts About Blood Glucose Levels

Blood glucose levels go up and down throughout the day and night. Long periods of high blood glucose can damage your body. It is important to keep your blood glucose as close to target levels as possible.

Things that lower blood glucose:
- regular balanced meals and snacks
- exercise
- reducing body fat
- relaxation techniques
- diabetes medications (pills or injections)

Things that raise blood glucose:
- too much food or not having meals and snacks on time
- not enough exercise
- weight gain above your healthy weight
- emotional or physical stress and illness
- not taking enough diabetes medication
- some prescription and over the counter medication*
- certain hormones which cause the liver to leak glucose into the blood when it is not needed ("leaky" liver)

* It is best for you to use the same pharmacy all the time. Tell the pharmacist that you have diabetes when you are filling any prescription or buying any over the counter medications. Talk to the pharmacist first if you are buying cold medicine, vitamins, herbal products or any product like these. Ask if the product is o.k. for someone with diabetes.
Target Blood Glucose Levels

The amount of glucose (sugar) in blood is measured in "millimoles per litre." The abbreviation for this is mmol/L. Keeping your blood glucose levels within the target range will keep you feeling well and will reduce your risk of developing other health problems that are related to diabetes. These “diabetes complications” are discussed on page 28.

The target blood glucose levels listed below are for most adults with type 1 or type 2 diabetes. Talk to your diabetes health care team about the target that is right for you.

<table>
<thead>
<tr>
<th>Target Blood Glucose Fasting or Before Meals</th>
<th>Target Blood Glucose Two Hours After Meals</th>
<th>Target A1C</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 - 7.0 mmol/L</td>
<td>5.0 - 10.0 mmol/L</td>
<td>7% or less</td>
</tr>
</tbody>
</table>

You may be asked to keep your blood glucose 2 hours after meals between 5.0 and 8.0 mmol/L when:

- your A1C (explained below) is above 7%
- you are not at risk for low blood glucose

You can expect your blood glucose to rise 2.0 - 3.0 mmol/L, 2 hours after eating.

Target A1C Levels

The chart above shows a target A1C level. The A1C level is measured by a blood test. Your A1C shows you how close to target your blood glucose has been over a 3 month period. When your blood glucose is high there will be more glucose coating your red blood cells and your A1C will go up. People who have an A1C higher than 7% are more likely to develop health problems caused by high blood glucose.

Your doctor or diabetes health care team may give you a different target. For some people a target of 6.5% or less will be recommended. For others, a target of higher than 7.0 % is best. You can keep your A1C level in check by keeping your blood glucose levels within the target range.

<table>
<thead>
<tr>
<th>A1C (%)</th>
<th>Average Blood Glucose (mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5.4</td>
</tr>
<tr>
<td>6</td>
<td>7.0</td>
</tr>
<tr>
<td>7</td>
<td>8.6</td>
</tr>
<tr>
<td>8</td>
<td>10.2</td>
</tr>
<tr>
<td>9</td>
<td>11.8</td>
</tr>
<tr>
<td>10</td>
<td>13.4</td>
</tr>
<tr>
<td>11</td>
<td>14.9</td>
</tr>
<tr>
<td>12</td>
<td>16.5</td>
</tr>
<tr>
<td>13</td>
<td>18.1</td>
</tr>
<tr>
<td>14</td>
<td>19.7</td>
</tr>
</tbody>
</table>

Your A1C test result corresponds to your average glucose level before and after meals over the previous 3 months.
Blood Glucose Testing

Checking blood glucose levels can give you information about how food, exercise and medication affect your blood glucose. This can help you see where changes are needed to improve your blood glucose. Talk to your doctor or diabetes health care team about:

- if you need to test
- when you need to test
- how often you need to test

Fair Pharmacare: based on your family’s annual income the BC Ministry of Health may help pay for test strips.

You must:

- register with Fair Pharmacare (call 604 683-7153 or visit: www2.gov.bc.ca/gov/content/health/health-drug-coverage/pharmacare-for-bc-residents)
- attend a Diabetes Education Centre to be “certified” and learn about blood glucose testing

Getting started:

- obtain a blood glucose meter from your pharmacy
- have the pharmacist show you how to use your meter (you may need to make an appointment)
- purchase any supplies you need (test strips, lancets, disposal container)
- blood glucose testing requires a drop of blood, usually from the side of your finger.

People taking insulin need to check their blood glucose every day. Those not taking insulin may check less often. It can help to test more often when you are getting started to see why your blood glucose goes up and down. Talk with your diabetes health care team about how often to test.

You may be asked to test your blood glucose levels one time per day or just before and again 2 hours after a meal. This may be for one, two or three meals each day. What foods make your glucose level go up or down? What time of day is your glucose level higher or lower? Enter the blood glucose test results in the log book provided with your meter. Bring the log book to your visit with your diabetes health care team.

This example shows a log book for someone who tests before and after one meal each day. Making notes helps you learn what foods or situations affect your blood glucose level.

<table>
<thead>
<tr>
<th>Date</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Supper</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>2 hr after</td>
<td>Before</td>
<td>2 hr after</td>
</tr>
<tr>
<td>May 10</td>
<td>6.9</td>
<td>14.7*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 11</td>
<td></td>
<td>3.5*</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td>May 12</td>
<td></td>
<td></td>
<td>5.4</td>
<td>8.4</td>
</tr>
</tbody>
</table>
Hypoglycemia (Low Blood Glucose)

**What is hypoglycemia?**
Hypoglycemia is when your blood glucose drops below 4 mmol/L.

**Who is at risk for hypoglycemia?**
People who take insulin or some types of type 2 diabetes medications (see page 24). Check with your diabetes health care team to see if you need to be concerned about hypoglycemia.

**What are the symptoms of hypoglycemia?**
Hypoglycemia can happen quickly and there may be warning symptoms.

![Symptoms of Hypoglycemia]

**Why does hypoglycemia happen?**
- not enough food or a late meal
- unusual increase in exercise
- too much insulin or too many diabetes pills
- alcohol without food
- diarrhea or vomiting

Let your doctor know if low blood glucose occurs often, such as 3 times or more per week.

**Alcohol** may cause hypoglycemia for up to 24 hours after drinking. Always eat a meal or a snack if you are drinking alcohol. Discuss the effects of alcohol with your diabetes health care team.

**It is very important to treat hypoglycemia quickly!**

Carry fast acting carbohydrate and wear diabetes identification!
Treatment of Hypoglycemia

Use the 'Take 15 - Wait 15' rule to treat hypoglycemia.

Call 911, if you are confused or cannot follow the instructions listed here.

1. Test your blood glucose.

2. If your blood glucose level is less than 4.0 mmol/L or you have symptoms of hypoglycemia and cannot test, you need to take one of the following 15 grams of fast acting carbohydrate:

<table>
<thead>
<tr>
<th>15 g of glucose tablets</th>
<th>¾ cup (175 mL) of juice or regular soft drink</th>
<th>3 teaspoons (15 mL) or 3 packets of sugar</th>
<th>1 tablespoon (15 mL) of honey</th>
<th>6 Life Savers®</th>
</tr>
</thead>
</table>

**Note:** if you take acarbose (Glucobay®) you must use glucose tablets. If not available then use honey or 1½ cups (375 mL) milk.

3. Wait 15 minutes

4. Test your blood glucose again.

5. If blood glucose is still less than 4.0 mmol/L, take another 15 grams of fast acting carbohydrate. Wait 15 minutes and test your blood again.

6. If your blood glucose is still less than 4.0 mmol/L on the third test, call 911 or have someone take you to the nearest emergency department.

**DO NOT DRIVE IF YOUR BLOOD GLUCOSE LEVEL IS LESS THAN 5.0 mmol/L!**

7. If your blood glucose level goes back up into your target range, eat your meal. If your meal is longer than 1 hour away, eat a snack that contains 15 grams of carbohydrate and protein such as one of the following:

| ¾ cup (175 mL) yogurt | 1 cup (250 mL) milk | ½ peanut butter sandwich | 6 soda crackers and cheese |
Severe Hypoglycemia

- Blood glucose less than 2.8 mmol/L
- Can occur in any person taking insulin but more common if you have type 1 diabetes
- **20 g carbohydrate** is needed to treat severe hypoglycemia (for example, take 5 Dex4® glucose tablets instead of 4)

If you have type 1 diabetes you need to talk to your doctor or diabetes health care team about:

- your risk for severe hypoglycemia
- how this can affect you
- how to prevent it
- having glucagon available for emergencies

Hyperglycemia (High Blood Glucose)

If your blood glucose level is above your target range, this is called hyperglycemia. Hyperglycemia can be caused by illness, infection, eating too much, lack of exercise, stress, or not enough type 2 diabetes medication or insulin.

You may feel:
- hungry
- extreme thirst
- fatigue
- weak

You may have:
- frequent urination
- blurred vision

If you have symptoms, check your blood glucose level within an hour or 2, and make sure to check it before every meal for the next 2 days. **Some people who have hyperglycemia have no symptoms at all.** You may only know you have hyperglycemia from your blood glucose testing. The occasional high reading is not a concern. If your blood glucose is above the target level once, then drops to within your target level the next time you check it, don’t be concerned.

If your blood glucose is high (greater than 14 mmol/L for type 1 diabetes and greater than 20 mmol/L for type 2 diabetes) for longer than 8 hours follow the instructions listed in the section: Sick Day Management (see page 26).

When your blood glucose is above your target range for more than a week, even if you are not sick, you need to contact your doctor or diabetes health care team to work on ways to lower your blood glucose.
Healthy Eating

Healthy eating is an important part of taking care of diabetes. With planning and help from the dietitian at your Diabetes Education Centre, you can learn how to enjoy your favourite foods and keep your blood glucose levels within the target range. Making healthy food choices will help your family too! Plan to attend Diabetes Education Classes for more information on the many topics introduced in this section.

General Guidelines

These tips will help you keep your blood glucose within the target range, manage your cholesterol, reduce your risk of heart attack and stroke and stay at a healthy weight.

- Always eat 3 meals each day.
- Eat your first meal of the day within 1 to 2 hours of waking up.
- Eat your meals every 4 to 6 hours.
- If your meals are more than 4 - 6 hours apart, have a healthy snack.
- An evening snack may be recommended. Check with your diabetes health care team.

Good food and drink choices:

- Choose **high fibre foods** like 100% whole grain breads and cereals, barley, brown rice, whole wheat pasta, fresh fruit, vegetables, beans and lentils, oat bran and wheat bran
- Choose **lower fat sources of protein** like lean meats, chicken, fish, low fat cheese and tofu
- Drink **lower fat** milk and soy beverages
- Drink **plenty of water**

Eat less of the following foods and drinks:

- **sweet foods** including sugar, honey, jam, regular pop, juice, candy, chocolate bars, pie, cookies and cakes. They raise your blood glucose.

- **high fat foods** including fried food, butter and margarine, especially those high in saturated fats or containing trans fats. They can cause weight gain and increase risk for heart disease.

- **alcohol** is high in calories and may contribute to weight gain. Limit alcohol use to no more than one to two drinks per day. One drink is 150mL (5 oz) wine, 45mL (1.5 oz) hard liquor or 360mL (12 oz) of beer. Avoid drinking alcohol on an empty stomach.

**Sugar substitutes** that do not raise blood glucose can be used in moderation (acesulfame potassium, aspartame, cyclamate, neotame, saccharin, sucralose, stevia, tagatose, thaumatin and sugar alcohols such as erythritol, isomalt, lactitol, maltitol, mannitol, sorbitol and xylitol).
### HOW DOES FOOD AFFECT BLOOD GLUCOSE?

<table>
<thead>
<tr>
<th>Increases Blood Glucose</th>
<th>Little or No Increase in Blood Glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbohydrate</strong></td>
<td><strong>Protein</strong></td>
</tr>
<tr>
<td>Breads, crackers, roti, tortilla</td>
<td>Fish</td>
</tr>
<tr>
<td>Cereals</td>
<td>Poultry</td>
</tr>
<tr>
<td>Grains (e.g. rice, barley, corn)</td>
<td>Meat</td>
</tr>
<tr>
<td>Pasta, noodles</td>
<td>Eggs</td>
</tr>
<tr>
<td>Potatoes, corn, yams</td>
<td>Cheese, cottage cheese, plain Greek yogurt</td>
</tr>
<tr>
<td>Fruits, juices</td>
<td>Beans &amp; lentils*</td>
</tr>
<tr>
<td>Milk, yogurt</td>
<td>Tofu, soy beverage (unsweetened)</td>
</tr>
<tr>
<td>Sweet foods, snacks</td>
<td>Nuts, seeds, peanut butter, nut butters</td>
</tr>
<tr>
<td><strong>Fats</strong></td>
<td></td>
</tr>
<tr>
<td>Oils, salad dressing</td>
<td></td>
</tr>
<tr>
<td>Margarine, butter</td>
<td></td>
</tr>
<tr>
<td><strong>Most Vegetables</strong>**</td>
<td></td>
</tr>
<tr>
<td><strong>Extras</strong></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>Coffee, tea</td>
<td></td>
</tr>
<tr>
<td>Sugar-free pop</td>
<td></td>
</tr>
</tbody>
</table>

Balance meals to include proteins, vegetables and small amounts of fats at meals along with carbohydrates

*Beans and lentils contain carbohydrate but raise blood glucose less than most other carbohydrate foods

**Beets, parsnips, peas and winter squash can increase blood glucose if eaten in large amounts
Planning Meals

Planning your meals ahead of time will help to make sure that you have the foods you need for healthy eating. There are two meal planning methods that will make it easier for you to get the right amount of different kinds of foods. These two methods are the “Plate Method” and the “Handy Portion Method.” You can use either of these methods for any meal.

The Plate Method

Examples:

- Vegetables (1/2 of your plate) – green beans, broccoli, carrots, spinach, zucchini
- Grains & Starch (1/4 of your plate) – whole grain bread, whole wheat pasta, barley, corn, brown rice, cereal and roti. **Note:** starchy vegetables like potatoes, yams and sweet potato count as starch not as vegetables.
- Meat & Alternatives (1/4 of your plate) – lean beef, pork, chicken or other meat, fish, beans, lentils, eggs, peanut butter, unsalted nuts, lower fat (light) cheese and tofu.
- Fresh fruit (1 medium) – apple, pear, orange
- Milk & Alternatives (250 mL/1 cup) – skim or 1% milk, fortified soy beverage or yogurt

The Handy Portion Method

This is called the “handy portion method” because you use your hands to measure the amount of each type of food for your meal. The guide below shows you how to do this.

**FRUIT/GRAINS & STARCHES**
Choose an amount the size of your fist for each of Fruit and Grains & Starches.

**VEGETABLES**
Choose as much as you can hold in both hands.

**MEAT & ALTERNATIVES**
Choose an amount up to the size of the palm of your hand and the thickness of your little finger.

**FATS**
Limit fat to an amount the size of the tip of your thumb.

**MILK & ALTERNATIVES:** Drink up to 250 mL (250 mL) of low-fat milk with a meal

*Source: Canadian Diabetes Association, reprinted with permission, [www.diabetes.ca](http://www.diabetes.ca)*
Managing Carbohydrates

Keeping track of carbohydrates is important. Foods containing carbohydrates turn into glucose and raise your blood glucose levels. You do need to eat foods containing carbohydrates to give you energy, but it is important that you eat the right type and amount at each meal to help keep your blood glucose within your target range.

Keeping Track of Carbohydrates

1. Know your carbohydrate foods

Carbohydrates are found in grains and starches, fruits, milk, yogurt and sugary foods. See pages 12 and 15 for examples.

2. Glycemic index or GI ranks foods containing carbohydrate by how much they raise blood glucose levels. Foods with a high GI raise blood glucose quickly. Foods with a low GI raise blood glucose slowly. Lower GI foods can help you manage blood glucose, cholesterol and weight.

Look for these lower GI carbohydrate foods:
- Breads – sprouted grain, whole grain, pumpernickel/whole meal rye
- Cereals – steel cut oats, quick oats, oat bran, high fibre cold cereals (e.g. All Bran®, Bran Buds with Psyllium®)
- Grains – barley, wild rice, brown/white basmati rice, parboiled rice, bulgur, quinoa, buckwheat, pasta
- Starchy Vegetables: sweet potatoes, yams, corn, new potato
- Fruits – apples, grapefruit, oranges, pears, berries, stone fruits (apricots, peaches, plums)
- Other – milk, yogurt, legumes (chickpeas, kidney beans, lentils)

3. Learn to count carbohydrates

A. Plate Method or Handy Portion Method (see page 13)

A simple way to track carbohydrates is to keep the portion size of Grains & Starch to 1/4 of your plate or the size of your fist, plus 1 fruit serving the size of your fist. Then add milk (250 mL or 1 cup) to balance your meal. If this method is keeping your blood glucose within target levels, you can keep using it. If not, using the Carbohydrate Choices method or counting grams of carbohydrate may work better for you.

B. Carbohydrate Choices and Grams of Carbohydrate

Using “Carbohydrate Choices” is another way to count carbohydrates. Carbohydrate Choices are portions of food that contain 15 grams of carbohydrate. The amount of carbohydrate listed in grams for a food item can also be found on the Nutrition Facts table found on packaged foods, in resource books, restaurant fact sheets and internet sites. Page 15 lists common foods equal to 15 grams of carbohydrate. Page 20 shows you how to count carbohydrate on food labels using the Nutrition Facts table.
### Foods and Portions
#### Equal to One Carbohydrate Choice or About 15 Grams of Carbohydrate

<table>
<thead>
<tr>
<th>Grains &amp; Starches</th>
<th>Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 slice bread</td>
<td>1 medium apple, orange or pear</td>
</tr>
<tr>
<td>3/4 cup (175 mL) cooked cereal</td>
<td>1/2 banana</td>
</tr>
<tr>
<td>1/2 - 3/4 cup (125mL-175 mL) cold cereal</td>
<td>1 cup (250 mL) melon or fresh fruit</td>
</tr>
<tr>
<td>1/2 cup (125mL) corn</td>
<td>1 cup (250 mL) blueberries</td>
</tr>
<tr>
<td>1/2 cup (125 mL) pasta, barley, couscous, quinoa or buckwheat (cooked)</td>
<td>2 cups (500 mL) blackberries, raspberries, or strawberries</td>
</tr>
<tr>
<td>1/2 cup (125 mL) potato or yam</td>
<td>15 small cherries or grapes</td>
</tr>
<tr>
<td>1/3 cup (75 mL) rice or millet</td>
<td>1/2 cup (125 mL) cooked or canned fruit</td>
</tr>
<tr>
<td>1/2 English muffin</td>
<td>1/2 medium mango or pomegranate</td>
</tr>
<tr>
<td>1/4 bagel</td>
<td>3 small guava or 2 small kiwi fruit</td>
</tr>
<tr>
<td>1/2 hamburger bun</td>
<td>3 prunes or apricots</td>
</tr>
<tr>
<td>1/2 medium pita or tortilla</td>
<td>2 Tbsp (15 mL) raisins or dried cranberries</td>
</tr>
<tr>
<td>1 small roti (6 in/15 cm)</td>
<td>1/2 cup (125mL) unsweetened fruit juice</td>
</tr>
</tbody>
</table>

#### Milk & Alternatives (lower fat choices recommended) | Other Choices (sweet foods & snacks)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup (250mL) milk</td>
<td>3 cups (750mL) popcorn (popped)</td>
</tr>
<tr>
<td>1 cup (250 mL) yogurt, no sugar added</td>
<td>1/2 small muffin or 2 plain cookies</td>
</tr>
<tr>
<td>1 cup sweetened, fortified soy beverage (carbohydrate varies, check label)</td>
<td>1/2 cup (125 mL) ice cream, frozen or sweetened yogurt or chocolate milk</td>
</tr>
<tr>
<td>1 cup 250mL (raita) or unsweetened lassi</td>
<td>1/2 cup (125mL) pop</td>
</tr>
</tbody>
</table>

**Note:** unsweetened soy beverage, cottage cheese and plain Greek yogurt are low in carbohydrate

**Most** people need:
- 3 to 4 Carbohydrate Choices or 45 to 60 grams of carbohydrates **per meal.**
- 1 to 2 Carbohydrate Choices or 15 to 30 grams of carbohydrates **per snack**
  (but remember snacks are not necessary for everyone).

**Legumes** (dried beans, lentils and peas) are a good source of protein and have less effect on blood glucose than other foods containing carbohydrate. They can be counted as
- 1/2 cup (125 mL) cooked = 15 grams of carbohydrate

**Most vegetables** are low in carbohydrate. If eaten in larger amounts, beets, parsnips, peas and winter squash can be counted as
- 1 cup (250mL) = 15 grams carbohydrate
Menu Ideas for Diabetes

<table>
<thead>
<tr>
<th>Small Appetites</th>
<th>Bigger Appetites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Breakfast</strong></td>
<td><strong>Breakfast</strong></td>
</tr>
<tr>
<td>1 orange</td>
<td>1 orange</td>
</tr>
<tr>
<td>1 slice whole grain toast or</td>
<td>2 slices whole grain toast or</td>
</tr>
<tr>
<td>¾ cup (175 mL) cooked oatmeal</td>
<td>1½ cups (375 mL) cooked oatmeal</td>
</tr>
<tr>
<td>1 tbsp (30 mL) peanut butter, nuts or 1 egg</td>
<td>2 tbsp (30 mL) peanut butter, nuts or 1 egg</td>
</tr>
<tr>
<td>1 cup (250 mL) skim or 1% milk</td>
<td>1 cup (250 mL) skim or 1% milk</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
<td><strong>Lunch</strong></td>
</tr>
<tr>
<td>2 slices whole grain bread</td>
<td>2 slices whole grain bread</td>
</tr>
<tr>
<td>2 slices (60 g/2 oz) meat</td>
<td>2 slices (60 g/2 oz) meat</td>
</tr>
<tr>
<td>1 tsp (5 mL) soft margarine or mayonnaise tomato and lettuce salad with low fat dressing</td>
<td>2 tsp (10 mL) soft margarine or mayonnaise tomato and lettuce salad with low fat dressing</td>
</tr>
<tr>
<td>1 apple</td>
<td>1 banana</td>
</tr>
<tr>
<td><strong>Supper</strong></td>
<td><strong>Supper</strong></td>
</tr>
<tr>
<td>3 oz (90 g) chicken or fish</td>
<td>5 oz (150 g) chicken or fish</td>
</tr>
<tr>
<td>½ potato with light sour cream</td>
<td>1 potato with light sour cream</td>
</tr>
<tr>
<td>1 tsp (5 mL) soft margarine or oil</td>
<td>1 tsp (5 mL) soft margarine or oil</td>
</tr>
<tr>
<td>½ cup (125 mL) carrots broccoli</td>
<td>½ cup (125 mL) carrots broccoli</td>
</tr>
<tr>
<td>1 cup (250 mL) mixed fresh fruit</td>
<td>1 cup (250 mL) mixed fresh fruit</td>
</tr>
<tr>
<td>1 cup (250 mL) low fat milk or yogurt (no added sugar)</td>
<td>1 cup (250 mL) low fat milk or yogurt (no added sugar)</td>
</tr>
</tbody>
</table>

**Notes:**

- Coffee, tea, water or other sugar-free beverages may be taken throughout the day.
- Beans, lentils, soy products or paneer can be substituted for meat, chicken and fish.
- To meet your calcium needs, make sure you have 2-3 servings per day of Milk and Alternatives.
- Eating Well With Canada’s Food Guide (available online or from your diabetes health care team) is helpful in learning about different food groups and alternatives.
- Remember to eat a meal every 4 to 6 hours during the day. If your meals are spaced more than 4 to 6 hours apart, have a healthy snack between meals. (See page 17 for ideas.)
Healthy Snack Ideas

If you need to snack it is often recommended to have 15 grams of carbohydrate. Some snack ideas that contain about 15 grams of carbohydrate are listed below.

- 1 fist sized fresh fruit or 1 cup (250 mL) of cut-up fruit or berries
- ½ cup (125 mL) unsweetened, cooked or canned fruit
- 7 small (e.g. soda), 4 medium (e.g. melba toast) or 2 large (e.g. rye crisp) with lower fat cheese (20% milk fat or less), peanut butter or hummus
- 1 cup (250 mL) skim or 1% milk or low fat yogurt (no sugar added)
- ½ cup (125 mL) high fibre cereal with ½ cup (125 mL) skim or 1% milk
- 1 small homemade muffin (made with less sugar and a healthy oil)
- 3 cups (750 mL) of hot air popped popcorn or light microwave popcorn
- ½ sandwich or 1 slice of whole grain bread or toast with nut butter
- 1 cup (250 mL) hot chocolate (no sugar added)
- ½ cup (125 mL) cottage cheese/plain Greek yogurt and ½ cup (125 mL) fruit
- 2-3 plain cookies or ½ cup (125 mL) regular pudding, yogurt or ice cream (less often)

Unsalted nuts and seeds also make a healthy snack but keep in mind they are high in calories. Limit your serving to ¼ cup (50 mL) per day if trying to lose weight.

Feel free to add foods that contain low amounts of carbohydrate and calories to your snacks. These include:

- raw vegetables
- water, clear broth, coffee, and tea and beverages with less than 5 grams of carbohydrate (e.g. Crystal Light®), Jell-O® with no added sugar
Managing Blood Fats

The kinds of fats that you eat and the kinds of fats found in your blood are related but different. When we talk about “blood fats,” we’re talking about low-density lipoprotein cholesterol (LDL-cholesterol), high-density lipoprotein (HDL-cholesterol) and triglycerides.

Diabetes is a major risk factor for heart disease and stroke. To stay healthy, you need lower levels of LDL-cholesterol and triglycerides in your blood and higher levels of HDL-cholesterol. Eat more fibre and choose the right kind of fats to improve blood fats. See Blood Fats on page 28 and blood lipid targets listed on page 34.

Fat

- Eat less saturated fats such as high fat dairy products (butter, cream, whole milk, cream cheese, sour cream and ice cream), meat fat, lard, palm oil and coconut oil. Choose small portions of lean meat; low fat milk and yogurt; and cheese with less than 20% milk fat (M.F.).

- Avoid trans fats found in hard or hydrogenated margarine or shortening and many deep fried foods and baked goods.

- Choose unsaturated fats such as liquid vegetable oils, nuts, seeds, nut butter, avocados and fish. Examples of oils are olive oil, canola oil, peanut oil, soybean oil and sunflower seed oil. Salad dressings usually contain unsaturated fats.

- Limit foods high in cholesterol such as organ meats (like liver or kidneys), shrimp, squid and egg yolks (up to 3 per week is o.k.).

- Prepare foods with little or no added fat. Healthier cooking methods use lower temperatures and liquid for cooking; for example, stew, steam, poach, microwave, and pressure cook.

- Limit the amount of added fats to between 3 and 6 teaspoons (and ¼ cup of nuts) per day, if you are trying to lose weight.

Fibre

Try to eat at least 25 grams of fibre each day. Small changes can help you increase fibre.

<table>
<thead>
<tr>
<th>Low Fibre Meal (grams of fibre)</th>
<th>High Fibre Meal (grams of fibre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 slices white bread (1g)</td>
<td>2 slices sprouted grain bread (10 g)</td>
</tr>
<tr>
<td>2 slices turkey (0g)</td>
<td>2 slices turkey (0g)</td>
</tr>
<tr>
<td>Tomato and lettuce (1g)</td>
<td>Tomato and lettuce (1g)</td>
</tr>
<tr>
<td>2 cookies (1g)</td>
<td>1 apple (4g)</td>
</tr>
<tr>
<td>Total Fibre = 3 g</td>
<td>Total Fibre = 15 g</td>
</tr>
</tbody>
</table>

On the Road to Diabetes Health 18
### Things You Can Do To Improve Your Blood Fats

<table>
<thead>
<tr>
<th>To do this...</th>
<th>do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower LDL-cholesterol</strong></td>
<td>Eat less saturated and trans fats; choose unsaturated fats instead</td>
</tr>
<tr>
<td></td>
<td>Eat less foods containing cholesterol</td>
</tr>
<tr>
<td></td>
<td>Eat more fibre</td>
</tr>
<tr>
<td></td>
<td>Be more physically active every day</td>
</tr>
<tr>
<td></td>
<td>Maintain a healthy weight</td>
</tr>
<tr>
<td><strong>Increase HDL-cholesterol</strong></td>
<td>Avoid trans fats; choose unsaturated fats instead</td>
</tr>
<tr>
<td>(this will lower your total</td>
<td>Be more physically active every day</td>
</tr>
<tr>
<td>cholesterol/HDL-cholesterol ratio)</td>
<td>Maintain a healthy weight</td>
</tr>
<tr>
<td></td>
<td>Stop smoking</td>
</tr>
<tr>
<td><strong>Lower Triglycerides</strong></td>
<td>Reduce or avoid alcohol use</td>
</tr>
<tr>
<td></td>
<td>Eat less sugars and sweets</td>
</tr>
<tr>
<td></td>
<td>Eat 2 or more servings per week of salmon, sardines, mackerel, herring and trout</td>
</tr>
<tr>
<td></td>
<td>Be more physically active every day</td>
</tr>
<tr>
<td></td>
<td>Maintain a healthy weight</td>
</tr>
</tbody>
</table>

### About Blood Pressure

Keeping your blood pressure in a healthy range is also important. People with diabetes often have high blood pressure. Lifestyle changes that can help keep your blood pressure down in the healthy range include:

- daily physical activity
- reducing body fat
- reducing sodium
- limiting alcohol
- quitting smoking
- managing stress
- following the DASH diet. This eating plan encourages more fibre and less fat, especially saturated fat and cholesterol. It includes lots of vegetables and fruit, whole grains and low fat dairy products. It is moderate in meat, fish and poultry and includes nuts, seeds, beans and lentils several times per week.

### Sodium:

- “salt,” “sea salt”, “sodium” and “sodium chloride” are all the same thing
- 1 teaspoon of salt = 2,300 milligrams (mg) sodium
- limit sodium to less than 2,300 mg per day
- if you have high blood pressure try to reduce to 1500 mg or less per day
- too much salt can raise your blood pressure

Be sure to check condiments like ketchup, HP sauce and mayonnaise for sodium content!
Reading Food Labels

Food labels, including the **Ingredients** list and **Nutrition Facts** table found on packaged foods, can help you keep track of the amount of carbohydrate you are eating and make heart healthy choices. Some key points are listed below.

The **Ingredients** list is found on most food packages. Ingredients are listed in order from highest amount to least amount. For example, if the Ingredients list reads, "Sugar, flour, spices," this means there is more sugar than flour and more flour than spices.

**The Ingredients list can help you make heart healthy choices. Look for foods that contain whole grains and healthy (unsaturated) fats.**

The **Nutrition Facts** table is found on most foods. The table lists the amount of carbohydrate, fat and sodium, among other things, found in a specific amount of the food. This amount is called the “Serving Size.” When you are planning food choices based on the Nutrition Facts table, be sure to make note of the serving size you plan to eat.

**Carbohydrates:**

The table will list “Total Carbohydrates” first, then Fibre, Sugars and maybe Starches, underneath. While fibre is a carbohydrate, eating fibre does not raise blood glucose, so you do not have to count it. Since fibre is already included in the Total Carbohydrate number, you can subtract the amount of fibre from the total carbohydrate number. The result is the number you would count for 1 serving size.

**Example:** The Nutrition Facts table shows that there are 13 grams of Total Carbohydrate and 2 grams of Fibre in 4 crackers. 13 – 2 = 11, so count 11 grams of carbohydrate for 4 crackers.

**Fats:**

You will find information about the type and amount of fat on the Nutrition Facts Table. Look for foods with smaller amounts of saturated fat and 0 grams of trans fat. You can see how much total fat is in your serving and how much of that is saturated and trans fat.

**Suggested daily amounts for some nutrients:**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Suggested Daily Amount (50-60 year old)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>1700-2500 (1200-1800 may be needed for weight loss)</td>
</tr>
<tr>
<td>Total Fat</td>
<td>50-60 grams</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>Less than 12 grams</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0 grams</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than 200 milligrams</td>
</tr>
<tr>
<td>Sodium</td>
<td>1500-2300 milligrams</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>130-250 grams</td>
</tr>
<tr>
<td>Fibre</td>
<td>25-50 grams</td>
</tr>
</tbody>
</table>
**Tips for Eating Away From Home**

When you eat away from home, ask for:

- drinks such as water, sugar-free drinks or coffee/tea with milk rather than cream
- gravy, sauce, dressing and butter on the side
- foods that are baked, steamed, poached, grilled, roasted or stir-fried rather than fried, breaded and battered
- fresh or steamed vegetables and salads rather than French fries
- little or no mayonnaise or butter on sandwiches
- tomato based pasta sauces rather than cream sauces

Other suggestions:

- If you are at a restaurant, ask how foods are prepared before ordering
- If you are at an event or a friend’s house, ask how foods have been prepared
- Use the plate or handy portion method
- If you can, check your blood glucose level 2 hours after you eat to see what effect it had, especially if you have eaten foods that you don’t usually eat

**Ideas for Losing Weight**

If you are above your healthy weight, losing 5 - 10% of your weight will improve the way your insulin works and reduce your risk of heart disease (e.g. if you weigh 200 lb that would be 10 – 20 lbs). The suggestions below can help with weight loss.

1. **Healthy Eating:** follow the guidelines in the Healthy Eating section of this book, reduce foods high in fats, sugar and alcohol.

2. **Increase physical activity:** it may be necessary to exercise 60 minutes 5 days per week to be successful with weight loss. Try to incorporate both aerobic and resistance exercise. Talk to your doctor about safe types of exercise for you.

3. **Take a fresh look at some of the reasons why you eat.** Do you eat only when you feel hungry or do you find yourself eating when you are upset or bored? Do you always stop eating when you feel satisfied or do you eat until you feel too full? Paying more attention to your eating habits can help you make changes so you can reach your weight loss goal.

4. **Sleep is important,** aim for 7 to 9 hours each night.

5. **Use a notebook to keep track of everything you eat and drink,** time, reason for eating and how you are feeling. Bring the notebook with you when you meet with your diabetes health care team.

6. **Look for a weight management program that includes exercise, nutrition and behaviour change support.**
Physical Activity

The information in this book provides general suggestions about physical activity. It is very important for you to talk to your doctor or diabetes health care team to create an activity plan that is safe for you. For most people, simply going for a walk is a good way to safely increase physical activity.

**Keep these important notes in mind:**

- talk to your doctor if you have not been active or you plan to increase the intensity of your exercise, an ECG stress test may be recommended
- talk to your doctor before starting resistance training such as lifting weights, some people with diabetes should not do resistance training
- Some medications (see page 24) and insulin may increase your risk of hypoglycemia. Carry a fast acting carbohydrate such as glucose tablets with you in case you develop signs of hypoglycemia.
- Carry diabetes identification (see page 25).

**Stop exercising immediately if you:**

- have chest pain, shortness of breath or rapid heart beat
- feel faint, dizzy, nauseated or sick to your stomach
- have any signs of hypoglycemia (see page 8)
- have any unusual pain.

**Physical activity is an important part of staying healthy with diabetes**

Regular physical activity provides many benefits for people with diabetes. When you are more physically active you can:

- lower blood glucose
- improve insulin sensitivity (may need less medication)
- improve circulation
- increase physical strength
- strengthen your immune system
- reduce risk of falls and injuries
- reduce risk of heart disease
- lower blood pressure
- lower cholesterol
- improve sleep
- improve mood and brain function
- reduce tension and stress
- lose weight

**Getting Started**

- Talk to an exercise specialist who can also advise you about how to get started and maintain an exercise program. See page 37 for resources.
- Test your blood glucose before and after to see what effect exercise has.
- Avoid vigorous exercise within 1 hour of a large meal.
• Aim for 30 to 60 minutes of activity at a regular pace (when just starting your exercise plan, start with 5 to 10 minutes twice a day working up to 30 or more minutes.
• Stick to activities that you have been told are safe and suit your abilities.
• Set aside a specific time each day for physical activity. Mark it in your calendar like you do for other plans and appointments.

Planning tips for exercise

An exercise session includes warm-up, aerobic training, cool-down and stretching. Aerobic activities are brisk walking, cycling, swimming, dancing and exercise classes.

• **Warm-up**: 5 to 10 minutes of light to moderate intensity aerobic activity.
• **Aerobic**: 150 minutes of aerobic exercise per week. This should be spread over at least 3 days per week at moderate intensity. This could be a 30 minute brisk walks 5 days per week or 50 minutes 3 days per week. You will get even more benefit if you increase to 300 minutes per week or a higher intensity. Avoid gaps of more than 2 days between sessions.
• **Cool-down**: 5 to 10 minutes of light to moderate intensity aerobic activity.
• **Stretching**: 10 minutes or more of stretching exercises after warm-up or cool-down.

Include resistance training using weights, resistance bands or exercise machines.

Recommendations for resistance training:

• 2 to 3 days per week with 2 days in between for the same muscle group.
• 2 to 4 sets at light to moderate intensity
• 10 to 15 repetitions per set
• start with 10 to 20 minute sessions
• gradually increase resistance or repetitions

Activity ideas to discuss with your doctor or diabetes health care team include:

• walking, running, mall walking
• swimming
• aquasize
• cycling
• joining a fitness centre
• dancing
• chair exercises
Diabetes Medication

Type 2 Diabetes Medications

Healthy eating, exercise and weight loss (if you are overweight) may be all you need to control your blood glucose in the early stages of type 2 diabetes.

If you are doing all that you can and your blood glucose remains above your target you may need to take type 2 medications as well.

There are many kinds of type 2 medications and each kind has a different action. You might end up taking more than one kind. The kinds are:

- **Glucophage®, Glumetza®** - (metformin), decreases the release of stored glucose from the liver and helps insulin work better.
- **Avandia®** (rosiglitazone), **Actos®** (pioglitazone) - improves the way glucose moves into your cells.
- **Glucobay®** (acarbose) - helps slow down the digestion of starches and some sugars to glucose so that glucose enters your blood more slowly.
- **Januvia®** (sitagliptin), **Onglyza®** (saxagliptin), **Trajenta** (linagliptin), **Victoza®** (liraglutide), **Byetta®** (exenatide) - helps you make insulin when you eat and decreases the release of stored glucose from the liver.
- **Diabeta®** (glyburide), **Diamicron®** (gliclazide), **Gluconorm®** (repaglinide), **Amaryl®** (glimepiride) - helps you make insulin. **Caution: these pills increase your risk of hypoglycemia (low blood glucose).** When you take these pills you need to carry fast acting carbohydrate in case you need to treat hypoglycemia suddenly.

**Points to remember**

- Carry a list with you at all times of all medications you are taking. Include the name of the medication, how often you take it and the amount you take each time.
- Take your medication as ordered by your doctor.
- Do **not** miss or delay meals, even if you are busy.

**Tell your doctor if you:**

- start having hypoglycemia (low blood glucose)
- get an upset stomach or diarrhea
- get a skin rash
- are planning a pregnancy
- want to drink alcohol (alcohol increases the risk of low blood glucose)

Your dose of type 2 medication may need to be changed depending on your blood glucose levels. See your doctor regularly and more frequently, if you are having difficulty keeping your blood glucose within the target range.
Insulin

If you have type 1 diabetes, you must take insulin every day.

If you have type 2 diabetes, you may need to take insulin to help you keep your blood glucose at target.

If you have type 2 diabetes, you may need insulin:
- as well as type 2 medications
- instead of type 2 medications
- temporarily while you are sick, stressed, pregnant or having medical problems or surgery

There are many types of insulin. Insulin is given by injection (syringe, pen or pump). Your diabetes health care team will:
- help determine the type(s) best for you
- spend time teaching you how to use insulin

Diabetes Identification

Health care providers need to know immediately if you have diabetes. In case you are unable to speak or get confused in an emergency situation, it is important that you wear a medical ID such as a bracelet or a necklace at all times.

MedicAlert® is one of the best known emergency health information providers. When you register with MedicAlert® they will send you an ID bracelet or necklace that tells others that you have diabetes. Your health information will also be available by phone to emergency health care providers 24 hours a day from anywhere in the world.

Call: 1-800-668-1507 (toll free) or register online at www.medicalert.ca
Sick Day Management

A bad cold, the flu or a serious injury can make your blood glucose too high. People not usually taking insulin may need to take insulin when they are sick. On the other hand when you take diabetes medication (pills and/or injections) and cannot eat your usual foods, your blood glucose may go too low. Follow these guidelines to help you stay out of hospital.

**Sick Day Management for Type 1 Diabetes**

- Be prepared – before you get sick ask your doctor for sick day insulin guidelines or have your diabetes nurse educator review the handout *Type 1 Diabetes: Sick Day Management and Insulin Guidelines*. Ask your pharmacist how you can test for “ketones” if you do become sick.

- Continue to take your insulin even if you are not eating your normal meals. Your insulin requirements may increase when you are sick. Talk to your doctor or refer to the handout *Type 1 Diabetes: Sick Day Management and Insulin Guidelines*.

- Continue to follow your meal plan. If you are unable to eat your usual foods, try to follow the *Foods for Sick Days* ideas in the next section.

- Drink plenty of sugar-free fluids such as water, weak or caffeine-free tea and sugar-free pop. Try to drink at least 8 to 10 cups of fluids each day.

- Test your blood glucose and ketones every 4 hours. (See the handout *Type 1 Diabetes: Sick Day Management and Insulin Guidelines*).

**See your doctor today or go to emergency for help if any of the following occurs:**

- Your blood glucose is greater than 14 mmol/L before meals or bedtime on 2 tests in a row and your urine ketones are moderate to large or blood ketones are 1.5 mmol/L or higher.

- You are unable to eat or drink due to vomiting for longer than 24 hours. You need to drink 8 cups or 2 litres of fluid in 24 hours.

- You have diarrhea lasting longer than 24 hours.

**What can happen when your blood glucose is high?**

- High blood glucose on 2 tests (4 hours apart) can quickly become Diabetic Ketoacidosis (DKA).

- You do not have enough insulin and are unable to use glucose for energy.

- When glucose cannot be used, your body burns fat.

- Burning fat makes ketones. Ketones are toxic to your body and can cause weakness, fatigue, weight loss, stomach pain, nausea and vomiting.

- **DKA must be treated immediately!** Failure to do so may lead to shock, coma, and death.
Sick Day Management for Type 2 Diabetes

- Be prepared – before you get sick, ask your pharmacist how you can test for “ketones” if you do become sick.
- Continue to take your type 2 medication, or insulin, as usual.
- Continue to follow your meal plan. If you are unable to eat your usual foods, try to follow the **Foods for Sick Days** ideas in the next section.
- Drink plenty of sugar-free fluids such as water, weak or caffeine-free tea and sugar-free pop. Try to drink at least 8 to 10 cups of fluids each day.
- If you test your blood glucose, test 4 times each day (before meals and before bed)
- If your blood glucose is greater than 20 mmol/L for more than 8 hours you need to test your urine or blood for ketones.

**See your doctor today or go to emergency for help if one of the following occurs:**

- Your blood glucose is greater than 20 mmol/L for more than 8 hours; and your urine ketones are moderate to large or blood ketones are 1.5 mmol/L or higher.
- You take type 2 medication and/or insulin and are unable to eat or drink due to vomiting.
- You are unable to eat or drink due to vomiting for longer than 24 hours. You need to drink 8 cups or 2 litres of fluid in 24 hours.
- You have diarrhea lasting longer than 24 hours.

**What may happen when your blood glucose is high?**

- You may become dehydrated.
- Dehydration can cause an increase in blood glucose and may lead to shock and coma.

**Foods for Sick Days**

Drink plenty of sugar-free fluids such as water, weak or caffeine-free tea, sugar-free pop, Crystal light® or broth. Try to drink 8 to 10 cups of fluid per day.

Continue to eat your usual foods as much as possible. If you are not able to eat your usual foods, have one of the following every 1 to 2 hours, even if your blood glucose is high. (Each of these servings contain about 15 grams of carbohydrate.)

- ½ cup (125 mL) fruit juice
- ½ cup (125 mL) regular pop (not sugar-free)
- 1 cup (250 mL) Gatorade®
- ½ cup (125 mL) regular Jell-O®
- 1 twin popsicle
- 1 cup (250 mL) milk or yogurt
- 1 cup (250 mL) cream soup
- ½ cup (125 mL) ice cream, custard or pudding
- 6 soda crackers
- 1 slice toast with margarine/butter/jam
- ½ cup (125 mL) applesauce
- ½ cup (125 mL) milk shake or liquid meal replacement
Complication

Risks

Having diabetes increases your risk for long term complications involving your blood vessels and nerves. Risk factors often seen in people with diabetes are high blood pressure, high blood glucose and abnormal blood fats. These cause damage to your blood vessels and nerves over time. Regular exercise, eating healthy foods, avoiding smoking and taking your medications help to avoid these complications.

High Blood Glucose

In this book we have talked about many ways to get your blood glucose levels to target. Talk with your diabetes health care team about how you want to get started and how they can help you make an action plan.

High Blood Pressure (Hypertension)

High blood pressure can damage your blood vessels which leads to eye, kidney and circulation problems. Have your blood pressure checked regularly. Try to keep your blood pressure below 130/80 or the target suggested by your doctor. Along with being active, healthy eating and less salt, many people need to take medications to lower blood pressure.

Blood Fats (Lipids)

Blood fats should be checked every year because they can contribute to blocked blood vessels. This will include your total cholesterol, LDL-cholesterol (bad), HDL-cholesterol (good) and triglycerides. High levels of LDL-cholesterol and triglycerides, and low levels of HDL-cholesterol are common in people with diabetes. Exercise, weight loss, eating more fibre and the right kinds of fat will help to improve blood fats. If you cannot achieve your blood fat targets talk to your doctor about medication.

Smoking

Quitting smoking is one of the best ways to lower your risk of complications. It is also very hard to do. There are many resources that can help. Talk to your diabetes health care team about what help is out there for you.

One great resource is the QuitNow program. This free program is available by phone or online. You can talk with others who are also quitting, create your own plan, track how you are doing and get expert help.

Visit www.quitnow.ca or call HealthLink BC at 811

Remember, the things that help to delay or prevent diabetes complications are the same things that promote a long, active and enjoyable life!
Complications

Heart and Stroke
People with diabetes are at very high risk of heart disease and stroke. If a blood vessel becomes blocked in the heart, it may cause a heart attack. If a vessel is blocked in the brain, it may cause a stroke. If this happens in the heart, it is called cardiovascular disease (CVD) and if it happens in the brain it is called a cerebrovascular accident (CVA). Being overweight (especially around the stomach) and low levels of exercise are also risk factors. People who smoke or have a family history of heart disease or stroke are at even higher risk.

Retinopathy (Eye Complications)
The tissue that lines the inside of your eye is called the retina. Over time, high blood glucose can damage the tiny blood vessels in the retina. If this is left untreated it may cause vision loss. People with diabetes are more likely to develop cataracts at a younger age or to develop glaucoma. It is important to have your eyes checked by an eye doctor (ophthalmologist or optometrist) every one to two years.

Nephropathy (Kidney Complications)
High blood pressure and high glucose levels can cause damage to the kidneys. Your kidneys contain over a million tiny filters called nephrons. These nephrons filter your blood keeping the useable products in (protein) and remove the waste products (creatinine). If these filters are damaged they do not filter properly. Kidney damage is detected by finding protein in the urine and measuring creatinine in the blood. In the early stages of kidney disease most people will not have any symptoms. You need to have a urine test for protein and blood test for creatinine levels at least once each year to check your kidney function.

Neuropathy (Nerve Damage)
Over time, high blood glucose levels can damage the nerves in your hands and feet, as well as nerves that affect your blood pressure and digestion. Signs of neuropathy are often first detected in the feet. The first signs may be a numb, tingling or burning sensation. If you are unable to feel light touch, pain or heat, damage or injury may not be noticed. Severe burns or ulcers can occur without any pain and infection can quickly follow. See your doctor if you have numbness, tingling or burning in your feet. You should have your feet checked for sensation at least once a year.

Sexual Dysfunction (Erectile Dysfunction; ED)
Diabetes may affect sexual function in both men and women because of physical and emotional concerns. Men may experience erectile dysfunction (ED) where they are unable to maintain an erection. Diabetes may cause damage to the vessels which affect blood flow to the penis. Nerve damage can affect erection quality. Erectile dysfunction can also be a side effect of some medications. Temporary problems with erection may be caused by stress or drinking too much alcohol and is more common in men who smoke. This is a real medical problem and should be discussed with your doctor or diabetes health care team. There are a number of treatments available and changes can be made to your medications.
Caring For Your Feet

Foot care is an important part of diabetes management. High blood glucose can damage the nerves and blood vessels in your feet.

Symptoms of nerve damage can include:

- loss of feeling, numbness
- burning or pain in feet or legs
- tingling
- trouble with balance

Symptoms of blood vessel (circulation) problems can include:

- cold feet
- leg and calf pain when walking, at night or at rest
- changes in skin color
- sores that don’t heal
- dry cracked skin

You can prevent serious foot problems by taking care of your feet.

DO...

- DO check your feet everyday for cuts, cracks, bruises, blisters, sores, infections or unusual markings. Use a mirror if you need to, to look at the bottom of your feet.
- DO see your doctor or go to emergency that day if you have signs of infection such as pain, redness, swelling or oozing pus.
- DO see your doctor within a few days at the first sign of any other problems.
- DO wash your feet with soap and water daily, especially between toes and dry them well.
- DO put cream or lotion on your heels and soles every day, but never between your toes.
- DO change your socks every day and wear a good supportive shoe.
- DO trim your nails straight across.
- DO see a foot care specialist if you need advice or treatment including orthotics.
- DO clean cuts or scratches with mild soap and water, cover with a dressing for sensitive skin.
- DO buy shoes in the afternoon (feet swell slightly by then), choose heels under 2 inches
- DO keep your feet warm-avoid extreme cold and heat, keep your feet out of direct sunlight.
- DO follow your physical activity plan to improve the blood flow to your feet and legs
- DO keep your blood glucose within target levels.
DON’T...

- DON’T smoke.
- DON’T cut your own corns or calluses or use products to treat corns or warts. They are dangerous for people with diabetes.
- DON’T treat your own in-grown toenails with a razor or scissors.
- DON’T apply heat to your feet with a hot water bottle or electric blanket. These products can burn your feet without you realizing it.
- DON’T put cream or lotion between your toes.
- DON’T take very hot baths or soak your feet in hot water.
- DON’T walk barefoot inside or outside.
- DON’T wear tight socks, garters or elastics, or knee highs.
- DON’T wear tight shoes. You should be able to wiggle your toes in proper fitting shoes.
- DON’T wear high heels that squish your toes.
- DON’T sit for long periods. Get up and walk at least once every hour during the day.

Inspect your feet daily and see your doctor within 2 days if anything of concern.

Diabetes and Driving

Diabetes can affect a person’s ability to drive safely. Insulin and some types of medication used to treat diabetes can cause low blood glucose, which may result in a sudden loss of consciousness (fainting) or changes in consciousness. Since each person is affected differently by diabetes it is important to monitor your own fitness to drive and to take action if needed. If you are at risk for hypoglycemia always carry glucose tablets with you and know how to treat hypoglycemia. (See page 8.)

Each time you are planning to drive, check your blood glucose level first.

- If your blood glucose is less than 4.0 mmol/L or if you have any signs of hypoglycemia, do not drive! You need to treat your hypoglycemia first. You must wait 45 to 60 minutes after you treat hypoglycemia before you drive.
- If your blood glucose is 4.0 to 5.0 mmol/L, eat a snack containing carbohydrate before you start to drive. “Be 5 to DRIVE”
- If you have had severe hypoglycemia, hypoglycemia unawareness or you are a professional driver, your blood glucose needs to be 6.0 mmol/L or higher.

Talk to your diabetes health care team for more information about driving and diabetes.

Note: you must disclose on the driver’s license renewal form that you have a disease which may interfere with the safe operation of a motor vehicle.
Making Lifestyle Changes

Changing behaviour is difficult for most people. If you are ready to make a change it is important to decide on a realistic goal that is important to you, and then make plans that break down what you need to do into small steps. If you have committed to a long term goal such as losing 10 pounds in the next 6 months, the next step is to make an action plan. This may be to start walking for 15 minutes Monday, Wednesday and Friday after dinner or it may mean eating breakfast every day. You will be more successful achieving your long term goal if you commit to small steps that you keep track of daily and review weekly.

Example of a goal and action plan

**Goal:** Lower my blood glucose to 10 mmol/L after dinner within 3 months.

**Action Plan:**

- **What?** Walk
- **When?** After dinner, Monday, Wednesday, Friday
- **Where?** At the nearby park
- **How long?** 15 minutes

**Rate your confidence:** on a scale of 0 – 10, rate how sure you are that you will have success with your action plan. If your confidence is less than 7 out of 10, you need to change your action plan to increase your chance of success.

**Barriers:** list the things that might get in the way of your action plan; for example, you might be too busy or it might be too dark after dinner in the winter.

**Solution:** write down things you can do to make sure you can achieve your goal in spite of barriers; for example, I will not make other plans until after 7 p.m. so I will have time to walk; in the winter months I will walk during lunch hour.

To increase your success with your goals and action plans, talk to your diabetes health care team to learn more about resources, including:

- Diabetes or Chronic Disease Self Management Program, which you can also call directly at 1-866-902-3767, or check their website:

  **www.selfmanagementbc.ca**
Travel Tips

See your doctor or diabetes educator 4 to 6 weeks before your trip
- Get a letter stating your full legal name, that you have diabetes, describing your treatment and the medications and supplies you need (lancets, syringes, pens, pumps).
- Discuss treating minor illness while away (anti-nausea/anti-diarrhea medications).
- Have required vaccinations at least 4 weeks before travel.
- Wear a MedicAlert®, especially if you are at risk of hypoglycemia (see page 25).

Be prepared for emergencies
- Buy travel insurance and be sure to let them know you have diabetes.
- Carry extra medications and supplies (twice as much as you think you need) in case of lost baggage or other accident.
- Know where to access English speaking resources in case you need medical care or medications.
- Know the generic names of any medications you use.
- Carry a local language phrase book so you can get help such as, “I need juice”, “I need a doctor”. You can get a list of English speaking doctors through the International Association for Medical Assistance to Travellers (IAMAT) at www.iamat.org

At the airport
- Before screening begins let them know you are carrying diabetes supplies.
- Carry all your diabetes supplies in one bag for easier inspection. Have all medications in their original containers, with labels showing your name as it appears on your passport.
- Insulin should not repeatedly be X-rayed as it may not work well.

When driving
- Check local laws for blood glucose levels and driving for people with diabetes.
- Check your blood glucose regularly (at the start of the trip and then every 4 hours).
- Make sure you are taking breaks to stretch and eat.
- Treat hypoglycemia at first sign and don’t drive until blood glucose level is at least 5 mmol/L or more (or what the local limit is) and all signs of hypoglycemia are gone. This could take 45 to 60 minutes.

If you use insulin
- Do not store insulin in checked baggage, it can freeze in the cargo hold.
- Keep your insulin in its safe temperature range. You may need cooler bags and ice, or to carry it in an inside jacket pocket.
- Inspect insulin before using. If it looks any different than usual (different colour, anything floating in the vial or cartridge) throw it away.

Adapted from Canadian Diabetes Association, Travelling with Diabetes, see page 39, reference 2
# Staying Healthy Reminders

## Promoting a Healthy Lifestyle

<table>
<thead>
<tr>
<th>Healthy Eating</th>
<th>As recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity</td>
<td>Moderate intensity exercise at least 150 min per week as recommended on page 23</td>
</tr>
<tr>
<td>Foot Care</td>
<td>Daily</td>
</tr>
<tr>
<td>Stress</td>
<td>Manage appropriately</td>
</tr>
<tr>
<td>Smoking</td>
<td>Quit</td>
</tr>
<tr>
<td>Taking Medications</td>
<td>Take as prescribed</td>
</tr>
</tbody>
</table>

## Monitoring the Effects of Your Lifestyle

<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Less than 130/80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Weight</td>
<td>Body Mass Index (BMI) less than 25</td>
</tr>
<tr>
<td>Waist Circumference (lower targets in Asian, S. Asian, Ethnic South &amp; Central American)</td>
<td>Men: less than or equal to 102 cm (40 inches) Women: less than or equal to 88 cm (35 inches)</td>
</tr>
<tr>
<td>Blood Glucose Testing</td>
<td>As recommended, see page 7</td>
</tr>
</tbody>
</table>

## Regular Examinations

<table>
<thead>
<tr>
<th>Dilated Eye Examination (Ophthalmologist/Optometrist)</th>
<th>Every 1 - 2 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental Examination (Dentist)</td>
<td>Every 6 - 12 months</td>
</tr>
<tr>
<td>Foot Examination (Doctor)</td>
<td>Every medical visit</td>
</tr>
<tr>
<td>Visits to Doctor and Diabetes Education Centres</td>
<td>As recommended</td>
</tr>
</tbody>
</table>

## Regular Laboratory Testing

<table>
<thead>
<tr>
<th>A1C</th>
<th>Less than or equal to 7% or as advised Check every 3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipid Targets (Cholesterol):</td>
<td>Check every year</td>
</tr>
<tr>
<td>LDL - Cholesterol</td>
<td>Less than or equal to 2.0 mmol/L</td>
</tr>
<tr>
<td>Other Lipids:</td>
<td></td>
</tr>
<tr>
<td>Total Cholesterol/HDL Cholesterol ratio</td>
<td>Less than 4.0 mmol/L (suggested)</td>
</tr>
<tr>
<td>HDL - Cholesterol</td>
<td>Men: greater than 1.0 mmol/L (suggested) Women: greater than 1.3 mmol/L (suggested)</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>Less than 1.5 mmol/L (suggested)</td>
</tr>
<tr>
<td>Kidney Function</td>
<td>Check every year</td>
</tr>
<tr>
<td>eGFR</td>
<td>Greater than 60 mL/min</td>
</tr>
<tr>
<td>Urine Albumin/Creatinine Ratio (ACR)</td>
<td>Less than 2.0 mg/mmol</td>
</tr>
<tr>
<td>Check Meter Accuracy</td>
<td>Fasting blood glucose in laboratory (once per year) Meter to laboratory comparison: within 20%</td>
</tr>
<tr>
<td>Electrocardiogram (ECG)</td>
<td>Talk with your doctor</td>
</tr>
</tbody>
</table>

## Vaccinations

<table>
<thead>
<tr>
<th>Flu shot</th>
<th>Every year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td>Talk with your doctor</td>
</tr>
</tbody>
</table>

1 Talk to your doctor about your laboratory tests. There may be reasons for your targets to be different.
Conclusion

This booklet provides an overview of ways for people with type 1 and type 2 diabetes to stay healthy. There’s a lot to learn! No one expects you to learn it all at once, and there are a lot of people to help you. If you have questions talk to your doctor, or other diabetes health care team members; or call the Canadian Diabetes Association.

Involving your family and friends too. The more they learn about diabetes, the more they can help and support you. Listed on the following pages, are books and websites where you can find more information.
Resources

Books


Cookbooks


Physical Activity Resources

1. Act Now BC. Move for Life. DVD: easy to do, stay healthy activities for older adults. Available from B.C. public libraries or online at: www.seniorsbc.ca Health & Safety > Active Aging > Move for Life DVD

2. Canadian Diabetes Association. Diabetes Physical Activity and Exercise Toolkit. A resource manual for diabetes educators which includes worksheets and brochures to help clients get started with physical activity and exercise. Brochures include aerobic and resistance exercise. To order, contact: diabetestoolkit@gmail.com Website: www.diabetes.ca/clinical-practice-education/professional-resources/physical-activity-exercise


   Physical Activity Line (PAL) – free phone and online resource, certified exercise physiologists are available to assist with physical activity related needs. Monday to Friday, 9:00 am - 5:00 pm. Phone: 604-241-2266, toll free: 1-877-725-1149

Nutrition Composition Resources

1. Calorie King (USA): www.calorieking.com


3. Dietitians or Canada: www.eatracker.ca


Organizations and Websites

1. **American Diabetes Association**: [www.diabetes.org](http://www.diabetes.org)
   Phone: 1-800-342-2383

2. **Canadian Diabetes Association**: [www.diabetes.ca](http://www.diabetes.ca)
   Pacific Area Office, #360-1385 West 8th Ave., Vancouver, B.C. V6H 3V9
   Phone: 604-732-1331  Toll free in BC: 1-800-665-6526
   National E-mail:  info@diabetes.ca
   National Information Line: 1-800-BANTING (226-8464)

3. **HealthLink BC**: [www.healthlinkbc.ca](http://www.healthlinkbc.ca)
   Phone: 8-1-1 for non-emergency health issues and advice from registered nurses, dietitians and pharmacists. Email a registered dietitian also available.

4. **Joslin Diabetes Centre**: [www.joslin.org](http://www.joslin.org)


6. **The Juvenile Diabetes Research Foundation**: [www.jdrf.ca](http://www.jdrf.ca)
   Vancouver Chapter, 150-6450 Roberts Street, Burnaby, B.C. V4G 4E1
   Phone: 604-320-1937

7. **Heart and Stroke Foundation**: [www.heartandstroke.bc.ca](http://www.heartandstroke.bc.ca)
   BC & Yukon, #200 - 1212 West Broadway, Vancouver, B.C. V6H 3V2
   Phone: 604-736-4404

8. **Health Canada Quit Smoking**: [www.quitnow.ca](http://www.quitnow.ca)
   BC Quitline 1-877-455-2233
References


   http://guidelines.diabetes.ca/


8. Office of the Superintendent of Motor Vehicles, Fact Sheets, Drivers with Diabetes (Class 1 – 4 License) and Drivers with Diabetes (Class 5 – 8 License) July 2012. www.pssg.gov.bc.ca/osmv/publications/index.htm


11. Sick Day Management. Reviewed by: Dr. Dave Shu, Regional Division Head of Endocrinology, Fraser Health Authority, Undergraduate Clinical Teaching Director, Royal Columbian Hospital