Understanding Diabetes

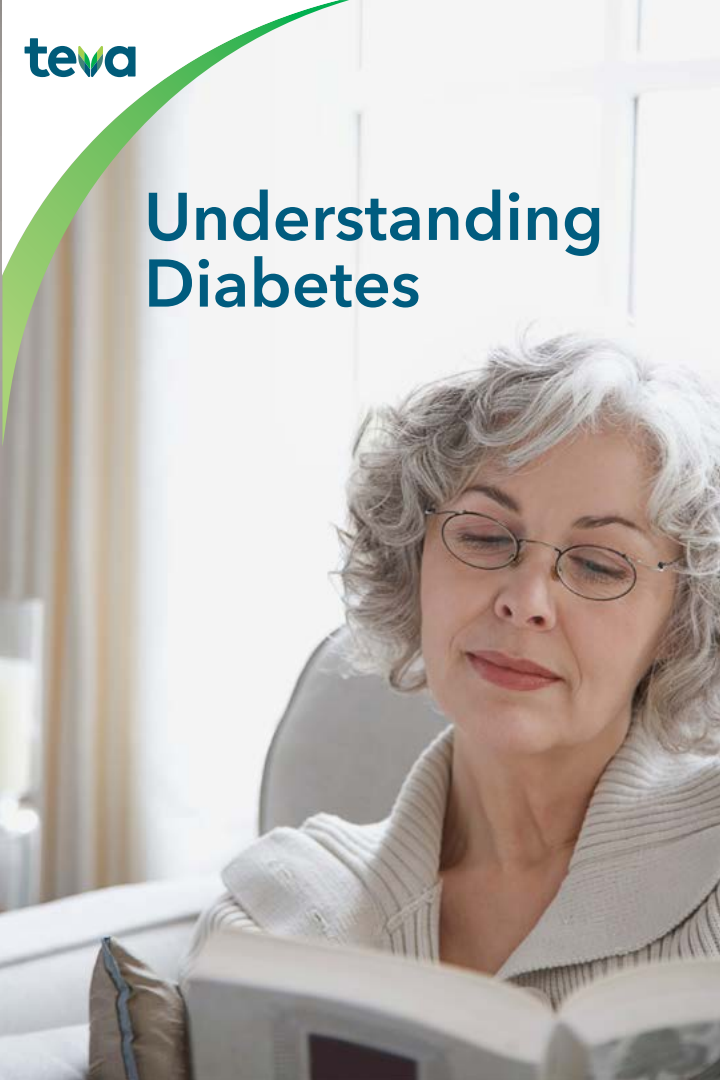

Table of Contents

- Introduction 2
- Background Information 3
- Immunization Record 6
- Diabetes at a Glance 9
- Understanding Diabetes 10
- Blood Glucose Targets 17
- Diabetes Complications 20
- Healthy Eating 26
- Physical Activity 38
- Weight Control 40
- Smoking 42
- Alcohol 43
- Medicines 45
- My Diabetes Medicines 52
- My Other Medicines 54
- Remembering to Take Your Medicine 56
- Nonprescription Medicines 57
- Natural Health Products 60
- Monitoring Devices 62
- Tracking Your Progress 66
- FAQs 84
- Sources of Additional Information 88
- Information You Should Have about Your Medicines 90

Introduction

The power to manage your diabetes and get the most out of your treatment is in your hands. If you learn all you can about your condition and follow the treatment plan you create with your healthcare team, you can take control of your health.

This booklet includes important information about diabetes and provides a way for you to monitor your progress, so that you can see the effectiveness of your efforts.

Sharing the tracking sections of this booklet with your pharmacist, doctor, and certified diabetes educator will help your whole healthcare team stay aware of your progress. And that will help you achieve optimum health.

Background Information

Name: _____

Address: _____

_____

Home Phone: _____

Cell: _____

Email: _____

In case of emergency, contact: _____

_____

Family Doctor: _____

Phone: _____

Specialist: _____

Phone: _____

Pharmacy: _____

Phone: _____

Additional information:

_____

_____

_____

Allergies

☐ No known allergies.

If you have allergies, please fill in this table.

Drug, Food, or Other Substance	Date of Last Reaction	What Happened?	Do You Need to Avoid This Substance?	
			Yes	No
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐

Immunization Record

Recommended Immunizations			
Vaccines	**Scheduled**	**Received**	
		Yes	**No**
DTaP-IPV-Hib	2 months	☐	☐
	4 months	☐	☐
	6 months	☐	☐
	18 months	☐	☐
DTaP-IPV	4-6 years	☐	☐
Tdap or Tdap-IPV	14-16 years	☐	☐
HB	Infancy (3 doses) **OR** preteen/teen (2-3 doses)	☐	☐
MMR	12 months **AND** 18 months **OR**	☐	☐
	4-6 years **OR**	☐	☐
	MMR-Var (2 doses)		
Var	12-18 months **AND** 18 months **OR**	☐	☐
	4-6 years **OR**	☐	☐
	MMR-Var (2 doses)	☐	☐

Recommended Immunizations			
Vaccines	**Scheduled**	**Received**	
		Yes	**No**
MMR-Var	12 months **AND** 18 months **OR**	☐	☐
	4-6 years	☐	☐
Men-C	Infancy (1-4 doses) **AND**	☐	☐
	Preteen (1 dose)	☐	☐
Men-C-ACYW-135	Preteen (1 dose)	☐	☐
Pneu-C-13	2 months	☐	☐
	4 months	☐	☐
	6 months	☐	☐
	12-15 months	☐	☐

Recommended Immunizations

Vaccines	Scheduled	Received	
		Yes	No
Inf	6-59 months (1-2 doses)	☐	☐
HPV	9-18 years (3 doses)	☐	☐
Rot	2 months	☐	☐
	4 months	☐	☐
	6 months	☐	☐

DTaP = Diphtheria, Tetanus, Acellular Pertussis
HB = Hepatitis B
Hib = Haemophilus Influenzae Type b
HPV = Human Papillomavirus
Inf = Influenza (Flu)
IPV = Inactivated Poliomyelitis (Polio)
Men-C = Meningococcal conjugate
Men-C-ACYW-135 = Quadrivalent meningococcal ACYW-135
MMR = Measles, Mumps, Rubella
MMR-Var = Measles, Mumps, Rubella, and Varicella (Chickenpox)
Pneu-C-13 = Pneumococcal conjugate 13 valent
Rot = Rotavirus
Tdap = Tetanus, Diphtheria, Acellular Pertussis
Var = Varicella (Chickenpox)

Diabetes at a Glance

- Diabetes is a lifelong condition in which the body either cannot produce insulin or cannot properly use the insulin it produces.
- A person with prediabetes has blood glucose levels that are higher than normal but not high enough to be diagnosed as diabetes.
- Symptoms of diabetes include frequent thirst, slow healing bruises and cuts, frequent urination, weight change, tingling or numbness in the hands or feet, or extreme tiredness.
- Many people with type 2 diabetes experience no noticeable symptoms.
- If left untreated, diabetes can lead to complications such as erectile dysfunction; heart, kidney and eye disease; and nerve damage.
- Actively managing diabetes significantly reduces the risk of developing complications and prevents complications from getting worse.
- A healthy meal plan for someone with diabetes is very similar to a healthy diet recommended for people without diabetes.
- Regular exercise plays an important role in managing diabetes.

Understanding Diabetes

In someone with diabetes, the body does not handle glucose (sugar) properly. Glucose is an essential form of fuel for the body. Our bodies make some of the glucose we need, and we get the rest from food sources that contain carbohydrates.

Glucose gets to the parts of our body that need it through the help of insulin, a hormone that moves glucose through the bloodstream. In someone with diabetes, the body's supply of insulin is low. As a result, too much glucose remains in the bloodstream, and this high level of blood glucose can cause a number of medical complications.

There are three main types of diabetes:

- **Type 1 diabetes:** In people with type 1 diabetes, the body is unable to produce insulin. This condition generally develops in children and teenagers, but it can develop in young adults up to the age of 30. The cause of type 1 diabetes is not known, but scientists suspect that it may happen because the body's immune system attacks the pancreas (the organ that makes insulin).

- **Type 2 diabetes:** In type 2 diabetes, either the body doesn't make enough insulin, or the body can't use the insulin it does make properly. Type 2 diabetes tends to develop in adults over the age of 40 years, although it is becoming more common among adolescents and younger adults. People who are overweight, lead an inactive lifestyle, or have a family history of type 2 diabetes are more likely to develop the condition.

- **Gestational diabetes:** Gestational diabetes is a form of the condition that develops during pregnancy. After the pregnancy, the mother's blood glucose may return to normal, or the diabetes may continue. A woman who has had gestational diabetes has a higher risk of developing type 2 diabetes.

Signs & Symptoms

Signs are indicators of a problem that can be observed or measured—such as a rash or fever. Symptoms are things that only the person experiencing the problem feels—such as dizziness or hunger. Problems with blood glucose (both when it's too high and when it's too low) produce both signs and symptoms.

What are the signs and symptoms of high blood glucose?

High blood glucose (known medically as hyperglycemia) may produce signs and symptoms that include dry mouth, frequent thirst, frequent urination, fatigue, dizziness, confusion, unexplained weight loss, or a fruity-smelling breath. People with type 1 diabetes tend to have more severe symptoms.

People with type 2 diabetes generally have milder symptoms, and sometimes none at all, so many people with type 2 diabetes don't realize that they have the disease. It is important to control blood glucose levels whether you have symptoms or not, because high blood glucose can lead to long-term complications.

Talk to your doctor to find out what blood glucose levels are considered too high for you.

What are the signs and symptoms of low blood glucose?

Low blood glucose (hypoglycemia) may produce signs and symptoms that include trembling, palpitations, sweating, anxiety, hunger, nausea, tingling, difficulty concentrating, confusion, weakness, drowsiness, vision changes, difficulty speaking, headache, and dizziness.

However, not everyone experiences symptoms at all, so blood glucose testing is very important. If it is left untreated, low blood glucose can lead to seizures, loss of consciousness, and possibly coma or death, so it is vital to recognize the signs of low blood glucose and take action quickly.

Blood glucose readings of less than 4 mmol/L are generally considered too low and require action to be taken quickly to raise blood glucose to a safe level.

Managing Low Blood Glucose

Hypoglycemia (low blood glucose) may result from several factors, including skipping meals, eating later than you should or less than you should, taking too much diabetes medicine, drinking alcohol, or more physical activity than usual. It can come on very quickly and should be treated right away.

You can treat low blood glucose by consuming 15 grams of fast-acting carbohydrates, either in the form of glucose tablets (the preferred method) or by eating foods or drinking beverages that provide 15 grams of fast-acting carbs. Not all glucose tablets contain the same amount of glucose, so be sure to check the label to make sure you're getting the right amount. Here are some examples of foods and beverages that will provide the fast-acting carbs you need:

- 15 mL (3 tsp.) or 3 packets of table sugar dissolved in water
- 175 mL (3/4 cup) of juice or regular soft drink (not diet)
- 6 Life Savers® candies
- 15 mL (1 Tbsp.) of honey

Wait 15 minutes, then retest your blood glucose. If it is still below 4 mmol/L, consume another 15 grams of fast-acting carbohydrates.

If your next meal is more than an hour away or you are going to be very active, have a snack that contains both carbohydrates plus a protein source.

For severe hypoglycemia, consuming 20 grams of carbohydrates is recommended. If blood glucose is still below 4 mmol/L 15 minutes later, take in another 15 grams of carbohydrates. Once your symptoms have been reversed, try to prevent another episode by eating your usual meal or snack. If your usual eating time is more than an hour away, take in another 15 grams of carbohydrates plus a protein source.

Be careful to avoid over-treating hypoglycemia—this can cause hyperglycemia, or high blood sugar.

Wait at least 45 minutes to an hour before driving after treating hypoglycemia.

Important: If your blood sugar becomes very low, you may become confused or you may even lose consciousness. In either case, you will be unable to treat the hypoglycemia by yourself. There are two things you can do to help ensure that someone will know how to help you in the event that you cannot take action on your own:

1. Wear medical identification jewellery that indicates you have diabetes.

2. Make sure your family, friends, and co-workers are familiar with the signs of low blood glucose and the types of fast-acting carbohydrate that will help you. They should also be shown how to give you an injection of glucagon (an emergency injection that will raise your blood glucose quickly) if you are unable to eat or drink anything.

Your doctor or certified diabetes educator can help you develop a plan for dealing with emergencies.

Blood Glucose Targets

A target that is right for one person may not be right for another. The important thing is to keep your blood glucose as close as possible to the targets your doctor has set for you. Your doctor or certified diabetes educator will help you establish a plan to meet those targets and will explain how often you should test your blood glucose. Paying attention to symptoms alone will not tell you whether your diabetes is being controlled. Testing your blood at home and visiting your doctor regularly for monitoring is the best way to know whether you are reaching your target blood glucose levels.

Home Testing

In order to test your blood glucose at home, you will need a machine called a blood glucose meter. Your pharmacist or certified diabetes educator can help you to select a blood glucose meter that suits your needs.

The type of diabetes you have, the medicine you are taking, and the blood glucose level you are aiming for will all play a role in how often you test. At certain times, you may need to test more often, such as during a particularly stressful time, when you are ill, or if there are changes in your medicine, exercise routine, or diet.

Getting Tested by Your Doctor

When you have your regularly scheduled blood work done, your doctor can also check your blood glucose levels. This is a good time to ensure your blood glucose meter is giving you accurate readings (see page 62 for more information).

A1C, or glycosylated hemoglobin, is another type of blood test your doctor may order. Rather than giving you a single look at your blood glucose during one test, an A1C test offers an overview of your average blood glucose control within the last three to four months.

Ask your doctor how often you should have an A1C test. With the exception of children under age 12 and pregnant women, an A1C target goal for most people is 7% or below. Targets may differ, however, so it is important to confirm your individual target with your doctor.

Diabetes Complications

Hyperglycemia

Hyperglycemia (high blood glucose) can cause dangerous short-term symptoms and signs that need immediate attention. Over the long term, high blood glucose can also cause other serious complications. You can minimize these complications by keeping your blood glucose levels within your target range.

Heart Disease

In addition to controlling blood glucose, it is important to be screened for risk factors for heart disease and to treat them if necessary. Because diabetes increases the risk for heart and blood vessel (cardiovascular) problems such as stroke or heart attack, risk factors such as high cholesterol and high blood pressure should be taken seriously.

High Cholesterol

High cholesterol levels in the blood can block blood vessels, contributing to cardiovascular problems, and can also lead to eye damage.

The two main types of cholesterol are low-density lipoprotein (LDL) and high-density lipoprotein (HDL). LDL, often referred to as “bad” cholesterol, deposits cholesterol along the lining of the arteries. HDL, called “good” cholesterol, helps to remove excess cholesterol from the blood and the artery walls.

Another type of fat found in the blood is triglycerides (TG). People with type 2 diabetes often have higher TG levels, which can lead to an increased risk of heart problems. Extremely high TG levels can also lead to complications in the pancreas.

Even if your last cholesterol test was normal, it is important to continue to have your doctor check your blood cholesterol levels periodically. Your results will show the total amount of cholesterol along with a breakdown of your HDL, LDL, and TG levels. Be sure to discuss what your test results mean with your doctor and ask how often you should get rechecked.

High Blood Pressure

It is important to check your blood pressure regularly to make sure you are at or below your target pressure. High blood pressure is a major risk factor for stroke and heart disease, and it can also cause kidney and eye damage. Although you can check your blood pressure by using the blood pressure monitor at the pharmacy or by purchasing a monitor for home, it is also important for your doctor to check your blood pressure on a regular basis.

Metabolic Syndrome

Metabolic syndrome is the name for a condition that includes a number of risk factors that occur together and can increase your risk of having a heart attack or stroke. These risk factors include having high blood sugar levels, high blood pressure, central obesity (see page 40), low levels of good HDL cholesterol, and high triglycerides. If you have any of these risk factors, talk to your doctor so you can learn to manage them before they cause serious problems.

Foot Problems

It is important for people with diabetes to check their feet daily. When diabetes is not controlled properly, it can lead to a decrease in blood flow to the feet, leading to nerve damage. This makes your feet more likely to develop problems, and you may not be able to feel injuries or pain. Unless they are caught early, sores and cuts can become infected, causing ulcers to develop. For people with diabetes, these foot ulcers and infections are leading causes of foot amputations.

Keep these tips in mind when caring for your feet:

- Wash your feet every day with warm, soapy water. Make sure the water is not too hot.
- After washing, thoroughly dry your feet. Apply foot powder to reduce moisture throughout the day.
- Prevent cracking by keeping your feet soft with lotions or moisturizing creams, but do not apply these products to the area between your toes.
- When trimming your toenails, cut them straight across and make them even with the tip of your toe.

- Avoid bare feet and wearing sandals. Socks and comfortable shoes are best, both inside and outdoors.
- Look for sores, swelling, blisters, cuts, or bruises by inspecting your feet carefully in good light. If necessary, use a mirror to check the bottom of your feet.
- Check with your healthcare professional before using callus or corn removers.
- Think about periodically visiting a foot care specialist, such as a chiropodist or podiatrist.
- Talk to your doctor, certified diabetes educator, or foot care specialist right away if you notice a problem.

Eye Problems

Have your eyes checked once a year so that you can detect any problems early. When you have diabetes, your risk for developing diabetic retinopathy (damage to the retina) and cataracts increases. In fact, the leading cause of blindness in North America is diabetic retinopathy.

Take care of your eyes by:

- Having an eye examination once a year.
- Reporting vision problems to your doctor immediately.
- Keeping your blood glucose and blood pressure levels within your target range.
- Paying attention to your cholesterol levels.

Kidney Problems

Controlling your blood sugar and blood pressure levels can help you to prevent kidney damage. This is very important—the number one cause of kidney failure in Canada is kidney disease due to diabetes. Because protein in the urine is an early sign of kidney problems, it's important to get checked for this by your doctor every year.

Keep your kidneys in good shape:

- Have your doctor conduct kidney tests every year.
- If you develop a urinary tract infection, see your doctor right away.
- Eat a healthy diet.
- Keep your blood glucose and blood pressure levels within your target range.

Healthy Eating

Developing healthy habits has a great deal to do with proper diabetes control. You can reduce your risk of complications and improve your overall health by making a few important lifestyle changes.

It is important to talk to your doctor about developing a healthy eating program that works for you. A dietitian or certified diabetes educator can also work with you to design a nutritious plan that will help you manage your blood sugar and control your body weight.

When changing your eating habits, keep in mind that someone with diabetes needs the same types of healthy food as someone without diabetes. Canada's Food Guide provides useful information about the types of food our bodies need and the amounts we should be eating each day. The Canadian Diabetes Association has also produced a number of helpful tools. They are available on the association's website at http://www.diabetes.ca/diabetes-and-you/healthy-living-resources/diet-nutrition.

Carbohydrate Counting

It is important to keep track of the amount and type of carbohydrates you take in, because carbohydrates affect blood glucose levels. Carbohydrates—starches and sugars—are found in many foods, including pasta, grains, breads, milk, vegetables, and fruits.

A dietitian can help you calculate exactly how many carbohydrates you should be consuming each day, but as a general rule, 45% to 60% of your total daily calorie (energy) intake should come from carbohydrates.

Your dietitian will determine your daily calorie requirements, and based on that, will calculate your daily carbohydrate needs. You can then plan your meals and snacks so you are getting the right carbohydrate content from a variety of foods. This information can be found on the Nutrition Facts table on food labels. This process, called carbohydrate counting, will help you manage your blood glucose levels.

Reading Nutrition Facts Tables

Nutrition facts tables provide the information you need to make healthy food choices. You can find out a food's carbohydrate content, as well as the amount of cholesterol, fat, and total calories it contains. The following page contains a sample of a typical nutrition facts table. The sample nutrition facts table below shows you what to look for.

Nutrition Facts			
Per 125 mL (87 g)			
Amount			**% Daily Value**
Calories 80			
Fat 0.5 g			**1%**
Saturated 0 g + Trans 0 g			**0%**
Cholesterol 0 mg			
Sodium 0 mg			**0%**
Carbohydrate 18 mg			**6%**
Fibre 2 g			**8%**
Sugars 2 g			
Protein 3 g			
Vitamin A	2%	Vitamin C	10%
Calcium	0%	Iron	2%

- **Serving Size:** All other numbers on the label are based on this amount of food.
- **% Daily Value:** The amount of a nutrient's recommended daily intake contained in the food item.
- **Energy:** Pay attention to calorie content. And remember that the calories listed are for the serving size indicated, not for the whole package.
- **Fat*:** The total amount of fat in one serving of food. Fat content is divided into unsaturated, saturated, and trans fats.
- **Dietary Cholesterol:** This number deals only with the cholesterol content of the food item, not with the effect that fats contained in the food will have on your blood cholesterol levels.
- **Carbohydrate Content:** Use this number to determine whether this item will fit into your daily carbohydrate needs. Here you can learn the total grams of carbohydrates per serving. Carbohydrates are divided into fibre and added sugars.

*See note on next page.

NOTE:

You can calculate the amount of unsaturated fat a food contains by subtracting saturated and trans fat from the total fat. Although healthier than the other fats, unsaturated fats should be eaten moderately. Some vegetable oils, fatty fish, nuts, and olives all contain this type of fat. Saturated and trans fats should be eaten in limited amounts. Foods such as dairy products made from whole milk, meat, egg yolks, palm and coconut oil contain saturated fats. Trans fats are found in margarine and other solids made from oils (hydrogenated products). Partially hydrogenated products also contain trans fats.

The Glycemic Index

The glycemic index (GI) is a useful scale that can help you predict how various foods will affect your blood glucose levels, and this can help you to choose the right carbohydrates. Different from the carbohydrate count, the GI index ranks foods containing carbohydrates based on how much they raise blood glucose levels compared with a particular food item, such as a slice of white bread or glucose.

Foods are divided into three groups: low GI, medium GI, and high GI. Foods with a low GI are less likely to raise your blood glucose levels than foods with a high GI. Pasta, for example, has a low GI and can be eaten more often than a Russet baked potato, which has a high GI. The table on the next page will help you determine which foods to choose most often and which to eat only occasionally.

Your Guide to the Glycemic Index (GI)*

	Low GI (55 or less): Choose Most Often	Medium GI (56-69) Choose More Often	High GI (70 or more) Choose Less Often
Bread	100% stone ground whole wheat Heavy mixed grain Pumpernickel	Pita Rye Whole wheat	White bread Kaiser roll Bagel, white
Cereal	All-Bran® All-Bran® Buds® with psyllium™ Oat bran	Grape-Nuts® Oatmeal Puffed Wheat	Bran flakes Corn flakes Rice Krispies®
Grains	Barley Bulgur Parboiled or converted rice Pasta/noodles	Basmati rice Brown rice Couscous	Short-grain rice
Other	Legumes Baked beans Chickpeas Kidney beans Lentils Soy beans Split peas Sweet potato Yam	Black bean soup Green pea soup Popcorn Potato, white/new Ryvita® (rye crisps) Stoned Wheat Thins® Sweet corn	French fries Potato, baking (Russet) Pretzels Rice cakes Soda crackers

** Expressed as a percentage of the value for glucose.*
Source: Canadian Diabetes Association

Many low GI foods are a healthy choice, because they not only keep blood glucose levels low after meals, but they are also high in fibre and low in fat. (Note: Fats and proteins are not usually included in GI tables, because they have low GI values and do not influence blood glucose levels as much as carbohydrates.)

When planning your diet, it's a good idea to use both the GI index and carbohydrate counting. That way you will understand the type of food you are eating as well as the total amount of carbohydrates it contains.

Fats, Fibre, and Protein

Another important part of planning a healthy diet is thinking about the role that fats, fibre, and protein play.

Fats:

Although your body needs some dietary fat in order to function properly, a high-fat diet can increase your risk for obesity, heart disease, and cancer. Some fats are unhealthier than others. Avoid eating saturated and trans fats. Instead, choose monounsaturated fats whenever possible.

Fibre:

Fibre is an important carbohydrate source. It is not broken down as completely or quickly as other carbohydrates and does not increase your blood glucose levels. Taking in 25 to 50 grams of fibre each day can help improve your blood glucose and cholesterol levels and may also reduce your risk of some cancers. There are two types of fibre—soluble and insoluble.

Soluble fibre keeps blood glucose levels low after meals by slowing the digestion of food. This type of fibre can also help to keep cholesterol levels low. Some sources of soluble fibre include legumes such as beans and peas, oat bran, various root vegetables, and pectin (found in apples).

Although it does not affect blood glucose or cholesterol levels, insoluble fibre is important for good health, because it helps prevent constipation and other bowel problems. Insoluble fibre absorbs water, making stools heavier and helping to improve their passage through the intestines. Insoluble fibre can be found in whole grains, wheat bran, and the skins of a variety of fruit and vegetables.

You can increase your fibre intake by making a few small changes to your diet, such as adding peas, beans, or lentils to soups and stews, adding bran or fresh fruit to yogurt and cereals, or switching from white bread to whole grain breads.

Protein:

When planning your diet, keep in mind that people with diabetes need the same amount of protein as those without diabetes. If cholesterol is a concern, eating a vegetable protein such as soy may be a better option than eating an animal protein such as red meat. However, avoid eating too much protein, because this can lead to kidney problems.

Here are some tips to help you make the diet changes you may need:

- Planning meals ahead of time will make it easier to control your blood sugar and cholesterol levels.
- Include lots of high-fibre foods in your diet, such as fresh fruit and vegetables, whole-grain cereals and breads, and bran.
- Watch your fat intake. Keep in mind that low-calorie foods are not always low in fat.

- Spreading your carbohydrates out evenly throughout the day can help you control blood glucose levels. Try to eat four to six small meals and snacks throughout the day.
- Speak with your doctor before taking any medication that reduces your appetite.
- If you have any questions about nutrition or diet, ask your doctor to refer you to a dietitian.

Sugar and Sugar Substitutes

You can limit the amount of sugar you take in by replacing it with sugar substitutes and sweeteners. Sweeteners are divided into two groups—nutritive and non-nutritive.

Nutritive sweeteners:

The types of sugars everyone is familiar with, such as honey, syrup, and table sugar are also known as nutritive sweeteners. About four calories per gram, these sweeteners can raise blood glucose, so it's important to count them in your meal plans.

Sugar alcohols including maltitol, mannitol, lactitol, sorbitol, and xylitol also fall under the nutritive sweetener category. Lower in calories, sugar alcohols do not usually raise blood glucose as much, but large amounts may lead to upset stomach or diarrhea.

Non-nutritive sweeteners:

Also called sugar substitutes, the non-nutritive sweeteners listed below are often a preferred option, because they do not raise blood glucose levels and are calorie-free. Two exceptions to note:

1) If you have a condition called phenylketonuria, avoid aspartame.
2) When breastfeeding, avoid saccharin and cyclamate.

Non-nutritive sweeteners include: Acesulfame potassium (Sunett®); Aspartame (Equal®, NutraSweet®); Cyclamate (Sucaryl®, Sugar Twin®, Sweet'N Low®); Saccharin (Hermesetas™); Sucralose (Splenda®); Stevia-based sweeteners (Stevia®, Truvia®, Krisda®, Pure Via®).

Physical Activity

Physical activity can help you to lose weight, lower your blood glucose levels, and allow your body to use insulin more efficiently.

The activities you choose should suit your current level of health and be enjoyable. Swimming or walking, for example, are excellent activities for people who haven't exercised in a while. Don't overdo it. Start at a comfortable level, and increase the amount you exercise over time.

Here are some tips to get you started on the way to great fitness:

- Before you start an exercise program or make changes to your current program, talk to your doctor to find out what level of physical activity is appropriate for you.
- Choose exercises and set goals that are right for your current health.
- Be realistic about your goals. While some people may feel comfortable walking 30 to 60 minutes per day on most days of the week, others may not be able to exercise this much at first.

- Start small and gradually increase the intensity of your workout and the amount of time you exercise.
- Check your blood glucose before and again two hours after you exercise. Discuss your levels with your doctor.
- Wear the proper footwear for the activity you will be performing.
- Always check your feet for any cuts or blisters.
- In case you experience any symptoms of low blood glucose, have at least 15 grams of fast-acting carbohydrates with you at all times.

Weight Control

Being overweight puts you at higher risk for type 2 diabetes and a variety of other health problems. By bringing your weight into the healthy range, you can lower your blood glucose levels, decrease your A1C, and reduce your risk of developing serious complications.

To determine whether or not your weight falls within a healthy range, you can check using a body mass index chart or an online calculator such as the one found on the Canadian Diabetes Association website (http://www.diabetes.ca/diabetes-and-you/healthy-living-resources/weight-management/body-mass-index-bmi-calculator). If your weight is out of the healthy range, you may be at higher risk for health problems and should speak with your doctor about healthy ways to lose weight.

Another way to assess whether your weight is healthy is to check your waist circumference. Carrying extra weight in the abdomen area (called central obesity) puts you at greater risk for developing health problems such as heart disease. You may have heard the term "apple-shaped body" used to describe people with central obesity. The term "pear-shaped body" describes people who carry most of their excess weight in their hip area.

Central obesity is determined by having a waist circumference close to or above the following measurements shown in the chart below.

Ethnic Background	Males	Females
European, Sub-Saharan African, Eastern Mediterranean, Middle Eastern	102 cm (40 in.)	88 cm (35 in.)
South Asian, Chinese, Japanese, Malaysian, South and Central American	90 cm (35 in.)	80 cm (32 in.)

Source: Heart and Stroke Foundation of Canada

Smoking

If you have diabetes, it is even more important not to smoke than it is for people who do not have diabetes. In addition to your diabetes, smoking can increase your risk of high blood pressure, heart disease, and other complications.

If you smoke but would like to quit, here are some steps you can take:

- Talk with your pharmacist about a nonprescription smoking cessation aid.
- Talk with your doctor about a prescription medicine that can help you quit.
- Contact a smoking cessation support group.
- Set a target quit date.
- Follow up with your pharmacist or doctor on a regular basis, sharing your progress or concerns.
- Don't get discouraged if you don't quit successfully the first time. Just try again. Most people have to try quitting several times before they stop smoking for good.

Alcohol

Drinking moderately (one or two drinks per day) isn't harmful for many people with diabetes, but you should check with your doctor before drinking alcohol. If your doctor says it is safe for you to drink alcohol, ask how much alcohol consumption is appropriate for you. As a rule, people with high blood pressure, high triglycerides, or liver problems should avoid drinking alcohol.

Regular drinkers should limit themselves to one to two drinks per day for women, or two to three drinks per day for men. Keep in mind that one drink is equivalent to about 12 oz. (360 mL) of beer, 5 oz. (150 mL) of wine, or 1.5 oz. (45 mL) of spirits.

Because alcohol can lower your blood sugar—especially when combined with diabetes medication—it is important to avoid drinking on an empty stomach. Also, in case you have a hypoglycemic reaction, wear some form of medical identification that lets others know you have diabetes.

You can reduce the effects of alcohol on your diabetes by following these tips:

- Try to minimize your sugar intake. Dry wines and light beer have less sugar than sweet wines and liqueurs. For mixed drinks, use club soda, water, or diet beverages rather than sugary colas or other soft drinks.
- Opting for mixed drinks—a white wine spritzer, for example—is a good way to reduce the amount of alcohol you drink.
- For your second drink, choose a non-alcoholic alternative. Add a slice of lime to tomato juice or soda water to make it tastier.
- Consider switching to non-alcoholic wine or beer.
- Be sure to count your calories. A dietitian can help you work out the calorie content of alcohol and include it in your diet plan.

Medicines

Medicines are important for managing diabetes, but remember that they work in combination with diet and lifestyle changes to lower your blood glucose levels; they are not a substitute for a healthy lifestyle.

There are a number of different kinds of diabetes medicines, and the one your doctor chooses for you will depend on many factors, including:

- Your type of diabetes
- Other medical conditions you have (e.g., heart failure, kidney or liver problems)
- Other medicines that you are currently taking
- How well you are managing your blood glucose levels
- How well you have responded to other diabetes medicines
- Side effects you may have experienced

There are two main types of diabetes medicines: oral therapy (pills) and insulin.

Oral Therapy

Oral medicines are used along with diet and exercise in the treatment of type 2 diabetes. There are several different types of the medicines.

Oral Diabetes Medicines	
Type of Medication	**What It Does**
Alpha-glucosidase Inhibitors • Acarbose	Decrease absorption of carbohydrates from the small intestine. Often used in combination with other drugs.
Biguanides • Metformin	Decrease glucose production by the liver; help the body to use insulin more effectively.
Dipeptidyl Peptidase-4 (DPP-4) Inhibitors • Alogliptin • Linagliptin • Saxagliptin • Sitagliptin	Help the body make more insulin. Unlikely to cause hypoglycemia or weight gain.
Glucagon-Like Peptide-1 (GLP-1) Agonists • Exenatide • Liraglutide	Help the body make more insulin and improve blood sugar levels.

Oral Diabetes Medicines	
Type of Medication	**What It Does**
Insulin Secretagogues, Sulfonylureas • Gliclazide • Gliclazide, Long-acting • Glimepiride • Glyburide	Stimulate insulin release from the pancreas.
Insulin Secretagogues, Meglitinides • Nateglinide • Repaglinide	Stimulate insulin release from the pancreas.
Sodium-Glucose Cotransporter 2 Inhibitors • Canagliflozin • Dapagliflozin	Lower blood sugar levels by causing the kidneys to eliminate more glucose from the urine.
Thiazolidinediones (TZDs) • Pioglitazone • Rosiglitazone	Increase the body's sensitivity to insulin (i.e., help the body to use insulin more effectively).
Combination Products • Rosiglitazone/Metformin • Saxagliptin/Metformin • Sitagliptin/Metformin • Linagliptin/Metformin	

Insulin

Insulin injections are required when the body can no longer make its own insulin. People with type 1 diabetes always need insulin, and some people with type 2 diabetes need it as well. Insulins differ in terms of how long they take to start working (onset) and how long they act (duration).

Types of Insulin	Examples	Appearance
Rapid-Acting Insulin Analogues • Insulin Aspart • Insulin Glulisine • Insulin Lispro	NovoRapid® Apidra® Humalog®	Clear
Short-Acting Insulin* • Insulin Regular	Humulin® R, Novolin® ge Toronto	Clear
Intermediate-Acting Insulin* • Insulin NPH	Humulin® N, Novolin® ge NPH	Cloudy
Long-Acting Insulin Analogues • Insulin Detemir • Insulin Glargine	Levemir® Lantus®	Clear
Premixed (Regular/NPH) Insulin	Humulin® 30/70, Novolin® ge 30/70, Novolin® ge 40/60, Novolin® ge 50/50	Cloudy
Premixed Insulin Analogues • Insulin Lispro/Lispro Protamine • Insulin Aspart/Aspart Protamine	Humalog® Mix25®, Humalog® Mix50® NovoMix® 30	Cloudy

** Pork-based insulin is available for people who cannot tolerate human insulin or analogues.*

The aim of insulin therapy is to introduce insulin into the body in the same way the pancreas normally releases insulin: a small, constant amount of insulin to control fasting blood glucose plus bursts of insulin around mealtimes. To achieve this, a combination of fast and slow insulin types is usually required.

Several premixed insulin products are also available in a variety of combinations of intermediate-acting insulin along with either rapid- or short-acting insulin. Examples of such products include Novolin® ge 30/70 (which consists of 30% Toronto insulin and 70% NPH insulin) and Humalog® Mix25® (which consists of 25% insulin lispro and 75% NPH insulin). Because they contain NPH insulin, premixed products have a cloudy appearance.

Premixed insulins may help some patients reduce the number of injections they require each day. Your doctor will help you determine the best type of insulin therapy for you.

Insulin can be delivered by a syringe, pen, jet injector, or pump. Each delivery method has benefits and drawbacks. Your diabetes care team can help you find the method that best meets your needs.

No matter which delivery method you choose, insulin requires proper storage in order to work properly.

- Store insulin in the refrigerator, away from the door and from the freezer.
- Keep vials of insulin in their original box, away from direct heat or light.
- If you use a pen, protect the insulin by keeping the cap on when the pen is not in use.
- Once opened, insulin may be kept at room temperature for 28 days; then it must be discarded.

Do not use insulin that has passed its expiry date.

Here are some guidelines for using insulin:

- Always inspect your insulin before injecting it.
- Do not use insulin that will not mix properly or that has any clumps or particles floating in it or that are stuck to the sides of the vial.
- Cloudy insulin should look evenly milky all the way through. Remember to mix it (by rolling or shaking the vial) before preparing a dose.
- Remember to clean the top of your insulin vial with an alcohol swab before preparing a dose.

My Diabetes Medicines

Use this chart to track your diabetes medications and when you should take them. When you stop taking a drug, cross out its name and write down the date you stop taking it.

Drug Name and Amount to Take	Taken at				Special Instructions (e.g., what to do if you miss a dose)	Side Effects and What to Do about Them
	Breakfast	Lunch	Supper	Bedtime		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		

My Other Medicines

Use this chart to keep track of all of the other medications you take and when you should take them. When you stop taking a drug, cross out its name and write down the date you stop taking it.

Drug Name and Amount to Take	Taken at				Special Instructions (e.g., what to do if you miss a dose)	Side Effects and What to Do about Them
	Breakfast	Lunch	Supper	Bedtime		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		
	☐	☐	☐	☐		

Remembering to Take Your Medicine

In order for your medications to work as intended, it is important to take them exactly as your doctor prescribes. If you find yourself missing medication doses, talk to your pharmacist about developing a strategy that will help you remember. In the meantime, here are some ideas to help keep you on track.

- Ask someone else to remind you.
- Take your medication in conjunction with a daily activity. For example, you could take a dose before eating dinner or brushing your teeth at bedtime.
- Use a weekly pill reminder box. Your pharmacist can help you choose one that will work best for you.
- Ask your pharmacist to dispense your medicines in a blister pack (each dose is in a separate compartment).

Nonprescription Medicines

If you are taking any nonprescription medications, it is important to review them with your pharmacist. Some nonprescription medications can help you deal with certain health problems, such as a cold, upset stomach, or a headache. But not all nonprescription medicines are appropriate for people with diabetes. The choice of medicine depends a great deal on your current health conditions(s) and the prescribed medications you are taking. Your pharmacist will ensure that your nonprescription medicines are appropriate for you and can be taken safely with your prescribed medicines.

List all nonprescription medications you are taking—or are thinking about taking—and discuss them with your pharmacist:

The following table provides a general guide to the impact some nonprescription medications can have on diabetes. However, some medicines that may be safe for use by someone with diabetes may not be safe for you if you have other medical conditions. Your doctor or pharmacist can advise you on which products are safe for you and which you should avoid.

Problem	Nonprescription Medicines that Are Usually Safe in Diabetes	Nonprescription Medicines that May Cause Problems
Pain	Acetaminophen Acetylsalicylic acid (ASA) in lower doses (e.g., 81 to 650 mg per day) Ibuprofen	High-dose acetylsalicylic acid (more than 4000 mg per day) can increase the effects of diabetes medicines.
Constipation	Stool softeners (e.g., docusate) Sugar-free Metamucil® Senokot®	
Cough/cold	Guaifenesin (expectorant) Dextromethorphan (cough suppressant) Saline nasal spray *Always look for products that are sugar-free and alcohol-free.*	Decongestants (e.g., Sudafed®) may increase blood glucose levels and blood pressure. Cough syrups containing sugar and/or alcohol.
Weight loss (appetite suppressants)		Some medicines that reduce appetite can increase blood glucose and blood pressure and can be harmful to your heart.

Natural Health Products

A number of natural health products have been studied for their ability to prevent or help manage diabetes, but so far there is not enough evidence to show that they work. In addition, some natural health products can interact with diabetes treatments or increase the risk of kidney problems.

Anyone with a chronic health condition such as diabetes should speak with a doctor or pharmacist before deciding to take any natural products.

List all natural health products you are taking—or are thinking about taking—and discuss them with your pharmacist:

Monitoring Devices

Your blood glucose meter is very important for achieving and maintaining proper blood glucose control. Cleaning and calibrating your meter will ensure that it provides accurate results. While the meters currently available in Canada are safe and accurate, each one has its own unique features and requirements.

The following tips will help you get the most benefit from your blood glucose monitoring.

- Work with your doctor or certified diabetes educator to establish a regular testing schedule.
- Test more often when you are ill or under a lot of stress.
- Use a fresh lancet each time you test.
- Wash your hands with soap and warm water before testing.
- Always double-check the expiry date on your test strips, and discard any expired strips.
- Follow the manufacturer's recommendations about handling test strips.
- Remember to recalibrate your meter for each new batch of test strips (if required).

- If needed, calibrate your machine with a control solution every four to six months or when the readings are unusual.
- Certain blood glucose meters require regular cleaning; consult the instruction manual for your particular device.

How to Check Your Blood Glucose Meter

Here are two ways to help ensure that your blood glucose meter is working properly:

1. Many meters allow you to use a control liquid to make sure the meter is working properly. Record the control checks you perform on your meter in column (A) of the table below.

2. Your meter's accuracy can also be checked by comparing its blood glucose readings with those of a lab when your doctor has your blood work checked. In order to get the most accurate results, avoid eating or drinking anything except for water for eight hours before the test. This is called a fasting blood glucose test. Within ten minutes of your blood being taken, perform a self-test. Record the comparison in column (B) of the table on the next page.

Date	(A) Control Check		(B) Comparison with Lab	
	Solution Used	Test Result	My Meter's Result	Lab Result

If your blood glucose meter result is not within 20% of the lab result for fasting blood glucose, talk to your pharmacist. Reasons for a mismatch between your meter's result and the lab result may include abnormally high or low red blood cell counts, dehydration, or eating within eight hours of the test.

Tracking Your Progress

The following charts are intended for you to review with your doctor. Keep track of your progress by recording blood glucose readings and other important results, such as tests ordered by your doctor. Also make a note of your symptoms and of the goals your doctor set for you.

Blood Glucose Control

Daily Blood Glucose Testing Schedule

In the chart on the next page, put a checkmark in the columns showing the times that you should be testing your blood glucose.

Time	Days of the Week						
	S	M	T	W	T	F	S
Before breakfast							
After breakfast*							
Before lunch							
After lunch*							
Before dinner							
After dinner*							
Bedtime							
Before exercising							
After exercising							
Other							

* After-meal blood glucose readings should generally be taken one to two hours after eating, unless your doctor or certified diabetes educator suggests otherwise.

Daily Blood Glucose Results

Record your readings and the time of day they were taken on the chart below.

	Breakfast		Lunch		Supper		Bedtime	Other	Other
	Before	After	Before	After	Before	After			
My Goal									
Date									

	Breakfast		Lunch		Supper		Bedtime	Other	Other
	Before	After	Before	After	Before	After			
My Goal									
Date									

	Breakfast		Lunch		Supper		Bedtime	Other	Other
	Before	After	Before	After	Before	After			
My Goal									
Date									

A1C (Glycosylated hemoglobin) Testing Schedule

My A1C should be checked every _____.
(Find out from your doctor or certified diabetes educator how often you should have this test.)

My A1C goal is: _____

A1C Tracking Record			
Date Tested	**A1C (%)**	**Date Tested**	**A1C (%)**

A1C Tracking Record			
Date Tested	**A1C (%)**	**Date Tested**	**A1C (%)**

Hypoglycemic Reactions

Use the table below to track your low blood glucose reactions.

Date	Blood Glucose Reading	Signs/Symptoms	How I Treated It	Comments

My Cholesterol Record

My cholesterol should be checked every

_____.

(Find out from your doctor or certified diabetes educator how often you should have this test.)

My cholesterol goals are:

Total cholesterol: _____

LDL cholesterol: _____

HDL cholesterol: _____

Triglycerides: _____

Total cholesterol/HDL ratio: _____

Date	TC	LDL	HDL	TG	TC/HDL Ratio

TC=total cholesterol LDL=low-density lipoprotein cholesterol
HDL=high-density lipoprotein cholesterol TG=triglycerides

My Blood Pressure Record

My blood pressure should be checked every _____.

(Find out from your doctor or certified diabetes educator how often you should have this test.)

My blood pressure goal is: _____

Date	Time of Day	Blood Pressure

Date	Time of Day	Blood Pressure

My Foot Care Record

Check your feet every day and write down any problems you find.

Date	Notes

Other Test Records

Test	Date
Yearly Eye Exam	
Yearly Eye Exam	
Yearly Eye Exam	
Yearly Kidney Test	
Yearly Kidney Test	
Yearly Kidney Test	
Other (specify):	
Other (specify):	
Other (specify):	
Other (specify):	
Other (specify):	

FAQs

Below are some frequently asked questions about diabetes and the answers to them. If you have questions that you don't see here, or if there is anything you don't understand about the answers, please speak with your doctor or pharmacist. Understanding diabetes and its treatment is vital to managing the condition, preventing or delaying complications, and leading a healthy life.

Will I always have to take my diabetes medication?

Sometimes people with type 2 diabetes are able to lower the amount of medicine they need by dramatically improving their blood glucose through lifestyle changes—healthy eating, weight loss, and exercise. However, most people take diabetes medicine for a lifetime. People with type 1 diabetes will need insulin throughout their lives.

If I decide to stop taking my diabetes medicine, what will happen?

When you have diabetes, taking your medicine is a key factor in maintaining good health. Without it, you would put yourself at risk for both immediate and long-term health issues. For example:

- Hyperglycemia can be fatal if not treated, and it can develop very quickly—especially in someone with type 1 diabetes.
- You would be at risk for a number of complications, including kidney failure, blindness, heart disease, and amputations.

Do urine glucose test strips work for checking my diabetes progress?

No. Because urine glucose test strips often only detect very high blood glucose levels, they are not a good way to monitor your diabetes. Mid-range blood glucose levels (e.g., 9 or 10) can still increase your risk for diabetes complications, yet they cannot be detected in the urine. A blood glucose meter is the best way to check your diabetes progress.

What should I know about travelling?

You can go just about anywhere as long as you plan your trip carefully. Make sure you have all your medicines and testing supplies in your carry-on bag in case you lose your luggage. You should always carry a source of glucose with you in case of a hypoglycemic reaction. If there are changes in your meals and activities, test your blood glucose more often. Speak to your doctor or certified diabetes educator about adjusting insulin when crossing time zones.

Always wear medical identification jewellery when you travel to let others know you have diabetes. It's also a good idea to keep a doctor's letter with you explaining that you have diabetes and need to carry diabetes supplies. If you will be flying, call the airline beforehand to find out any security regulations regarding lancets or syringes. More information about travelling with diabetes can be found at the Canadian Diabetes Association's website at http://www.diabetes.ca/diabetes-and-you/healthy-living-resources/general-tips/travel-tips-for-people-with-diabetes.

What if I catch a cold or flu?

When you get sick, controlling your blood glucose may become more difficult. Test your blood sugar more often than usual, at least once every four hours. Drink lots of fluids and get plenty of rest. Even if you are unable to eat, be sure to continue taking your diabetes medicine, including insulin. Try to drink fluids that contain sugar. If your blood sugar is greater than 14 mmol/L before eating or if you are experiencing symptoms of diabetic ketoacidosis such as nausea, abdominal pain, or vomiting, test your urine for ketones. Call your doctor if your blood sugar stays high, if your urine contains ketones, or if you are vomiting and unable to keep down fluids.

Sources of Additional Information

For further assistance, contact the following groups or visit the websites listed below.

Canadian Diabetes Association

National Office:
522 University Avenue, Suite 1400
Toronto, Ontario M5G 2R5
Tel: 1-800-BANTING (1-800-226-8464)
or (416) 363-3373
Fax: (416) 363-3393
Website: www.diabetes.ca
Email: info@diabetes.ca

Health Canada Diseases & Conditions: Diabetes
http://www.hc-sc.gc.ca/hc-ps/dc-ma/diabete-eng.php

Eating Well with Canada's Food Guide
http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php

Health Canada: Food & Nutrition: The Nutrition Facts Table
http://www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/cons/index-eng.php

Canadian Diabetes Association: Understanding the Nutrition Label
http://www.diabetes.ca/diabetes-and-you/healthy-living-resources/diet-nutrition/understanding-the-nutrition-label

Information You Should Have about Your Medicines

There is some information you should know about every medication you take. If you can't answer the questions below, ask your doctor or pharmacist.

- What is the name of the medicine (both the brand name and generic name, where applicable)?
- Why has this medicine been prescribed for me?
- How should I take this medicine?
- How much of the medicine should I take and at what times should I take it?
- Should the medicine be taken on an empty stomach or after eating some food?
- Are there any foods or beverages I should avoid while taking this medicine?
- Are there any nonprescription medicines that should not be taken at the same time?

- Are there any of my other prescription medicines that I should not take at the same time that I take this medicine?
- What should I do if I miss a dose?
- How long will it take for this medicine to have an effect, and how will I know it's working?
- How long should I take this medicine for?
- What are the most common side effects it can cause?
- What should I do if I have one of these side effects?
- What side effects should I report to my doctor or pharmacist?
- How should the medicine be stored?

TevaCanada.com