

What is diabetes?

Whether you have been recently diagnosed with diabetes or have been living with diabetes for some time, you probably know that it's a disease that's sometimes difficult to understand. There are many misconceptions about diabetes, and many old wives' tales about its causes and treatments.

But these days, we know a great deal more about this disease... what causes it, who's most at risk, how it can be treated—and, in the case of type 2 diabetes—how it can be prevented. You can live well with diabetes if you understand more about it, and that includes a better understanding of insulin, one of our body's hormones.

Diabetes is a disease in which your body is not able to control the amount (or level) of glucose (sugar) in the blood. This may happen because:

- your pancreas doesn't produce any insulin
- your pancreas produces insulin but not enough
- your body resists the action of insulin

When your blood glucose level remains high for long periods of time, damage can be done to your heart, your eyes, and your kidneys.

Let's begin with the basics.

There are different kinds of diabetes:

- Type 1 diabetes
- Type 2 diabetes
- Gestational diabetes

Simply click on the link that interests you most for a detailed explanation.

What is insulin?

Insulin is one of two hormones (the other is glucagon) that help to control your blood glucose. These hormones are produced in your pancreas, a small gland that sits just behind your stomach. Your **pancreas** contains small clusters of cells known as the islet of Langerhans, and these cells in turn contain cells that produce hormones. **Alpha cells** produce glucagon and **beta cells** produce insulin.

When we eat, our blood glucose level rises, and this causes extra insulin to be released by our beta cells. Alpha cells release glucagon when blood glucose levels fall (usually when we have not eaten for awhile).

Insulin and glucagon are always working together to help your body maintain a steady blood glucose range, about 4-7 millimoles of glucose per litre of blood. In people with diabetes, this system may fail because the body is not producing insulin at all, (or enough of it), or the body's cells are resisting insulin.

Did you know...?

The first recorded mention of diabetes was on an Egyptian papyrus dated 1552 B.C. in which a physician describes "polyuria" (frequent urination), a symptom of diabetes.

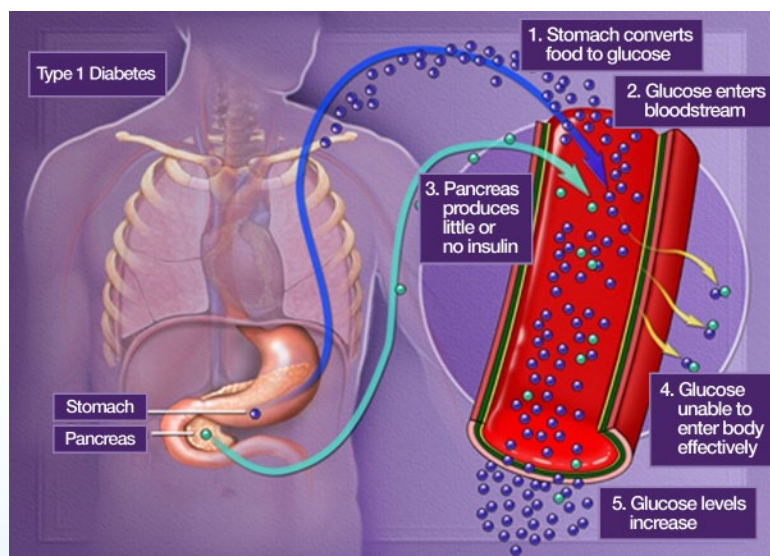


Insulin acts as the key that unlocks the cell and permits glucose to enter and be metabolized.

Type 1 Diabetes

Type 1 is not the most common type of diabetes, and affects less than 1 in 5 people with diabetes. It is *sometimes* referred to as juvenile onset diabetes—mostly because it is generally diagnosed in childhood—but this term is outdated. It was also previously known as “insulin-dependent” diabetes.

No one knows what causes type 1 diabetes. It is possible that our bodies’ immune system attacks the cells that produce insulin, but this is not clear. What is clear is that type 1 diabetes **cannot be prevented**.



When you eat or drink something, glucose—which is our main source of energy—enters the bloodstream, causing a rise in blood glucose levels. In type 1 diabetes, because the body is unable to produce insulin, body cells can’t take in any glucose, so your body doesn’t get the energy it needs. This can make you tired, cause a lack of energy, make you lose weight, and make you feel thirsty and/or dehydrated. You may also urinate more frequently. The lack of glucose means your body will look for other sources of energy by breaking down fat and protein from your muscles.

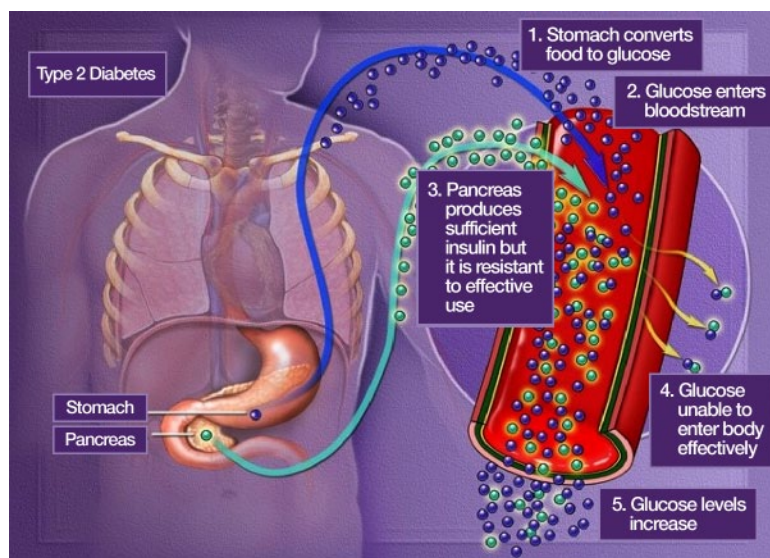
There is no cure for type 1 diabetes, but it can be treated with insulin. Insulin is not available as a tablet or pill, and needs to be injected into the body. You can learn to do this for yourself. You may also use an insulin pump, which provides a continuous flow of insulin. There are several different kinds of insulin and many different doses. You and your doctor or your diabetes educator will help determine which kind and dose is best for you.

Type 1 diabetes is a serious disease, but you can live a long, healthy life with the right treatment and support.

Type 2 Diabetes

People used to refer to type 2 diabetes as *non-insulin-dependent diabetes* because it was a kind of diabetes that did not require treatment with insulin. But in fact, some people with type 2 diabetes *do* need to use insulin. Type 2 diabetes is usually diagnosed in people over the age of 40, but recently it's being diagnosed more often in teenagers and children, especially those who do not lead an active lifestyle and/or are overweight.

Like type 1 diabetes, type 2 diabetes is a serious disease. But the good news is that it can be managed, sometimes reversed, and even prevented.



If you have been diagnosed with type 2 diabetes, it is important to understand that your body is still producing insulin—but it is not producing enough, or it may be resisting what insulin does for you. This means that your blood glucose levels continue to rise and your body's cells don't receive enough glucose. This might make you feel tired or like you have no energy. It might make you feel thirsty all the time, or make you need to urinate frequently. The lack of glucose means your body will look for other sources of energy by breaking down fat and protein from your muscles.

Sometimes changing your diet to one that is healthier and increasing your amount of exercise is enough to keep your blood glucose levels controlled. Medications can also be used, and your doctor and/or diabetes educator will discuss them with you.

Prediabetes—what is it?

Many people who go on to develop type 2 diabetes have “prediabetes” first. This is a condition in which your blood glucose level is higher than normal, but not as high as in someone with diabetes. Your doctor can determine whether you have normal metabolism, prediabetes or diabetes by using **one of two simple blood tests**, both of which require you to fast (miss a meal, usually breakfast).

It's important to remember that some of the serious health consequences of diabetes—like damage to our hearts, kidneys, eyes, or feet—can also be caused by **prediabetes**.

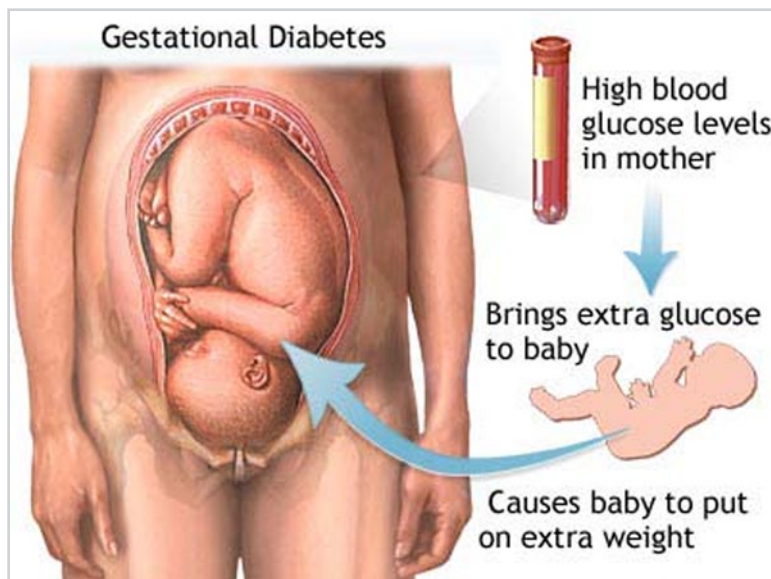
You can make real changes to your life if you find out you have prediabetes, and this may help you to avoid developing diabetes. Talk to your healthcare professional about a weight loss program, if weight is a problem for you, find out what exercise programs would be best for you. In short, do all of the things you can in order to stop diabetes before it starts.

Fact: Two large studies of people with prediabetes proved that making changes to lifestyle had a positive effect on preventing the development of diabetes. Reducing fat intake, losing 5-10% of body weight, and exercising for at least 150 minutes a week led to a **58% reduction** in the number of people who developed diabetes.

Gestational diabetes

This form of diabetes is diagnosed during pregnancy. As your baby develops inside you, an increase in the hormones that your body produces increases the need for insulin. If you are unable to produce this additional insulin, your blood glucose level will rise.

Gestational diabetes is not the same as other kinds of diabetes. It usually disappears once you give birth, although there is the possibility that you will develop type 1 or type 2 diabetes while you are pregnant. Gestational diabetes occurs more often in women who are overweight before they become pregnant and in women who are over 35 years of age.



Adjusting your food intake while you are pregnant may be enough to control your blood sugar levels. If not, your doctor will recommend insulin injections.

How common is diabetes?

Did you know...?

Certain medications can cause a rise in your blood glucose level or stop the insulin in your body from working the way it is supposed to. These include thiazide diuretics and beta-blockers, both of which are used to treat high blood pressure, immunosuppressant drugs—taken by people who have had an organ transplant—and steroids like prednisone which treat a variety of inflammatory conditions or diseases.

Talk to your doctor or pharmacist if you are taking any of these medications.

Sometimes we hear diabetes referred to as an epidemic, because so many people are affected by it. In Canada, right now, over 2 million people have diabetes. About 90% of them have type 2 diabetes, and about 10% have type 1.

Worldwide, diabetes currently affects 246 million people, and by the year 2025, this number is expected to be 380 million. Compare this with the 30 million people in the world who had diabetes in 1985, and you will understand what a growing and serious condition this is for everyone.

Right now, the rates of diabetes are higher in developed countries, for example Canada, the U.S. and European nations, but developing countries are also starting to see huge rises in the numbers of people diagnosed. Much of this has to do with the “western” lifestyle habits that many of these countries have adopted—unhealthy diets and lack of exercise.

- Here’s an interesting fact. In China, the government did a nutrition and health survey between 1992 and 2002, and found that more than 60 million people had become obese! The rate of obesity in China has increased 97% in 10 years, and obesity is closely linked to diabetes.

Why are more people getting diabetes?

Several things are contributing to the increase in diabetes:

- the population is aging
- our diets are unhealthy
- we don’t exercise enough
- more people are overweight or obese

Who is at risk for diabetes?

Diabetes, like many other diseases, is sometimes a result of genetic factors. That is, if one of your family members has diabetes, the chances of you also getting it may be higher.

- If your mother has type 1 diabetes, your risk of getting it is increased 1-2%
- If your father has type 1 diabetes, your risk is increased 3-6%
- If both parents or an identical twin have type 1 diabetes, the risk increases 30%

In type 2 diabetes, genes do not play a role, but your risk of getting the disease may be higher if one of your family members has it. For example, if one of your parents has this kind of diabetes, your risk is increased 14%, and if both parents have it, this risk increases to 75%.

Age can also be a factor. Anyone over the age of 40 is at risk for developing type 2 diabetes, and the Canadian Diabetes Association recommends that you be tested for it at least every three years.

Certain ethnic groups are also at higher risk of developing type 2 diabetes—for example, people of South Asian, Asian, African, Hispanic or Aboriginal descent.

Other risk factors include:

- giving birth to a baby weighing over 4 kg (9 lbs)
- gestational diabetes (diabetes during a pregnancy)
- having polycystic ovary syndrome
- having high blood pressure or high levels of cholesterol (click on these for more information about these conditions elsewhere on this web site)
- having a history of impaired glucose tolerance (IGT) or impaired fasting glucose (IFG)
- being overweight, especially if most of your extra weight is around your waist

Don’t ignore any of these risk factors. Talk to your doctor.

Can risk factors be controlled or changed?

Yes and no. In type 2 diabetes, some of the most common risk factors—being overweight or obese, having high blood pressure or high cholesterol, leading an inactive lifestyle, or not eating properly—can be controlled. For more on exercise and nutrition and their role in managing diabetes, see the section titled Living well with diabetes.

The genetic factors that might cause a person to develop type 1 diabetes cannot be controlled. But having this genetic predisposition to type 1 diabetes doesn't mean you're going to get the disease.

Modifiable risk factors – in other words, risk factors that we can change – include:

- lowering blood pressure and cholesterol
- losing weight
- stopping smoking
- ensuring the adequate intake of nutrients from food and/or supplements

For more on modifying risk factors, see the section called Living well with diabetes.

Non-modifiable risk factors include age, genetics, ethnic background, menopause, and having other endocrine disorders or diseases.

Can diabetes be prevented?

Again, in type 1, there is no way to prevent the disease from developing if you carry the gene for it.

But type 2 diabetes is preventable, and **sometimes even reversible**. Diabetes can develop quite slowly over many years, so you may have it without realizing it. Make sure you know what the risk factors for type 2 diabetes are. See your physician regularly. Watch your diet, control your weight, and find ways to incorporate exercise into your daily routine.

What are the symptoms of diabetes?

Some people who are diagnosed with diabetes never show any signs of the disease. This is why regular check-ups with your doctor are so important.

Some of the signs and symptoms of diabetes include:

- **Feeling tired.** All of us feel tired from time to time because of work, family responsibilities, or stress, for example—but extreme fatigue and/or a lack of energy is a warning sign—it means that glucose, which is our main source of energy, is not getting into your body's cells.
- **Feeling the need to urinate frequently**—at certain levels of blood glucose, your kidneys start working harder in order to get rid of excess glucose, and this makes your body produce more urine. You may find that you are getting up more than once during the night to use the bathroom.
- **Being unusually thirsty, or having a dry mouth.** The thirst may result from urinating more frequently, which in turn can cause you to become dehydrated. If you are thirsty, choose water or sugar-free drinks, since drinks with added sugar will only cause your blood glucose to go higher.

Early detection means earlier treatment. Don't delay seeing your doctor if you have any of these symptoms.

- **Frequent infections**, or infections that keep coming back. Bacteria and germs love living in the environment that is created by the extra glucose in your urine. Women who have more frequent yeast or bladder infections should seek medical attention.
- **Blurry vision in one or both eyes**. High blood glucose levels cause your eyes to absorb more glucose and water. This can cause your eyes to swell, which makes your vision blurry.
- **A tingling sensation in your hands or feet**.
- **Weight gain**. In type 2 diabetes, weight gain may be a sign of excess insulin in your body. Excess insulin may make you hungrier than usual.
- **Fruity-smelling breath**. This is a danger sign in type 1 diabetes and means that your body has very high blood glucose levels. Your body has been breaking down fat and protein from your muscles as a source of energy, and this produces a by-product called ketones. Many people think this smells like nail polish remover. This is an alarm signal and you must seek medical attention immediately.

How is diabetes diagnosed?

Earlier we talked about prediabetes, and the kinds of tests that your doctor can do to determine whether you have this condition that often comes before the development of diabetes.

The same tests—**Fasting Plasma Glucose (FPG)** and an **Oral Glucose Tolerance Test (OGTT)**—are used to diagnose diabetes, as is a **random blood glucose test** (for which you are not required to fast).

Here is a description of the various tests your doctor might use if he or she is looking for diabetes or prediabetes, and what the results of each of them means:

The test	What do the results mean?
Urine test. A sample of your urine is applied to a dipstick that changes colour depending on how much glucose is present.	This is not a definitive test for diabetes . If the test shows that you have glucose in your urine, you will need additional blood tests.
Fasting Plasma Glucose. You are not allowed to have any food overnight or at breakfast. A small sample of your blood will be collected.	Diabetes is the diagnosis if you have some or any of the symptoms of diabetes, and if the results of this test show that your blood glucose level is equal to or higher than 7.0 millimoles per litre of blood (mmol/L).
Oral Glucose Tolerance Test. You are not allowed to have any food overnight or at breakfast. Blood will be drawn from your arm immediately, and then again 2 hours after you have a sweet drink that contains glucose.	Even without any symptoms of diabetes, if your glucose level is shown to be higher than 6.9 mmol/L and/or your 2-hour results show a blood glucose level higher than 11.1 mmol/L, you have diabetes.
Random blood glucose test , no fasting necessary.	A blood glucose level higher than 11.1 mmol/L means you have diabetes even if you don't have any symptoms.
Fingerprick test. A small drop of blood is taken from your fingertip and analyzed in a blood glucose meter.	This test is not enough to make a diagnosis of diabetes. However, if the results show that your blood glucose is higher than 6.1 mmol/L, your doctor will schedule you for some other blood tests.

Understanding blood glucose levels

People who do *not* have diabetes have a blood glucose level between **4-7 millimoles per litre**.

This is the ideal range for you too, no matter whether you have type 1 or type 2 diabetes. Maintaining a level that does not change too much is the best way to help you feel better, and will prevent the likelihood of complications from diabetes.

Several things can affect your blood glucose.

It can increase if:

- you eat too many carbohydrates, or drink a lot of soft drinks that contain added sugar
- you are ill, even with a cold or flu
- you are under stress (this may also lower your blood glucose)

It can be lowered if:

- you are taking oral medication for diabetes
- you are using insulin for type 1 diabetes
- you are exercising; physical activity helps insulin to work in a more efficient way

Other factors, like a change in routine (a vacation, for example), alcohol use, or pregnancy can have an impact on how stable your blood glucose levels are.

For more on blood glucose, please see Self-monitoring of blood glucose under Living well with diabetes.

How is diabetes treated?

Making sure that your blood sugar levels are controlled is the most important treatment goal in diabetes, and your doctor or diabetes educator will help you to learn how to gain this control.

In some people, diabetes can be successfully treated with lifestyle change—for example, eating low-fat foods, losing weight, and increasing exercise. But sometimes we are not able to manage on our own, and medications become necessary. Certainly for people who have type 1 diabetes, medications are almost always needed.

Type 1 diabetes is treated with insulin. There are different kinds of insulin, and they are classified according to how long they last (that is, the number of hours before your next dose is required) and how fast they work. The most commonly used insulin preparations are **basal** (longer-acting and taken once a day) or **prandial** (shorter-acting and taken around mealtimes), which most closely match the way in which our pancreas normally produces insulin.

The insulin is delivered into your body using a syringe, an insulin pen, or through a continuous pump.

What kind of insulin preparation you will use and how much insulin you need depends on things like your overall health, your age, your diet and your lifestyle. You can learn to make adjustments in your insulin regimen so that you can be sure of getting the best control of your diabetes.

For people with type 2 diabetes, the Canadian Diabetes Association recommends that an oral medication should be prescribed if changes in your lifestyle have not been enough to help you control your blood glucose after 2 or 3 months. Oral medications are not effective in treating type 1 diabetes.

Sometimes you will start taking an oral medication right away if your doctor finds that you already have some of the microvascular or macrovascular complications of diabetes. Diabetes can take a long time to develop before it is diagnosed, and it is very important that your blood glucose is controlled quickly in order to prevent any further damage to your body.

In most patients, **metformin** is the first medication that is used, because it is very effective in lowering blood glucose and has very few side effects.

Classes of oral medications used include:

- an alpha-glucosidase inhibitor (Glucobay), which slows the breakdown of carbohydrates while you are digesting food. This means glucose is released into your bloodstream more slowly.
- thiazolidinediones (Avandia or Actos) may be prescribed in combination with metformin, or on their own. They work by reducing insulin resistance in your body, and also have a positive effect on blood fat levels.
- sulfonylureas (like Diamicon or Diabeta) work by stimulating the insulin in your beta cells so that your pancreas produces more insulin.

Remember...

It is important not to take more pills than what your doctor has recommended, and not to stop taking them without discussing this with your healthcare professional. These medications can only keep your blood glucose level under control while you are taking them.

What happens if diabetes goes untreated or is not treated properly?

When your blood glucose level goes above 7 millimoles per litre, hyperglycemia (high blood sugar) occurs. This can happen to people with either type 1 or type 2 diabetes, and can be a result of:

- eating more food than usual, or foods high in sugar
- being sick, even with a mild illness like a cold
- stress, which can affect the way insulin in your body works; you may also eat less or less well when you are under stress
- not getting the right amount of insulin or pills

You may or may not have symptoms, which is why monitoring your blood glucose carefully and frequently is important. If your blood glucose remains elevated for long periods of time, you are at increased risk for microvascular disease.

Hypoglycemia (low blood sugar) is the opposite of hyperglycemia, and describes a condition in which your blood sugar is too low. This can happen when you have too much insulin in your body, maybe because you did not take the correct dose of your medication (insulin or pills) or because the medication didn't work with the amount of food you ate or how much exercise you did. You might feel weak, hungry, anxious, or begin to sweat or shake. These are early warning symptoms and should not be ignored, because as your blood glucose continues to fall, more serious symptoms will appear—like feeling confused or disoriented, or unable to concentrate.

As soon as you see signs of hypoglycemia (and your family, friends and co-workers should learn to recognize these as well) you must eat or drink something high in glucose right away. A glass of juice is one option, but try to carry something sweet with you all the time, like candy or glucose tablets. If you start to feel better quickly, the next step is to eat a carbohydrate snack like cheese and crackers.

The **microvascular** complications of diabetes can develop slowly, and some may have been present before you were even diagnosed with diabetes. Microvascular disease describes three possible long-term complications that your doctor will discuss with you:

- **Diabetic retinopathy** (progressive damage to the eye)
 - When your blood glucose levels remain high, the blood vessels of your retina can become damaged. This happens in 3 stages, and the most serious—proliferative retinopathy—causes reduced vision or possibly blindness. Cataracts or glaucoma may also result from diabetes.
- **Diabetic nephropathy** (kidney disease)
 - Millions of tiny blood vessel clusters in your kidneys filter waste from your blood, but this system can be damaged by diabetes. In severe cases, kidney failure can result, meaning that you would need a kidney transplant or dialysis.
- **Diabetic neuropathy** (nerve damage)
 - When your blood sugar is too high, the walls of the little blood vessels that supply nourishment to your nerves become damaged. You may experience feelings of numbness, tingling or burning, often in the tips of your toes or fingers. If you aren't treated, you will eventually lose all sensation in the arms or legs that are affected. Neuropathy can also result in erectile difficulties in men.
 - If your feet are affected, you may not be able to feel small cuts or blisters, which could get seriously infected and may even lead to amputation. You must regularly inspect your feet (or ask a family member to do it for you) to make sure there are no cuts or other sores. And don't walk around barefoot, even at home.

Macrovascular disease in diabetes refers to diseases or conditions which affect our heart and circulatory systems. Coronary artery disease, heart attack, high blood pressure, atherosclerosis (narrowing of the arteries) and stroke may result. Watching your weight, limiting your salt intake and consumption of alcohol and keeping a close eye on your blood sugar levels are very important in the treatment and management of macrovascular disease.

Living well with diabetes

Modifying risk factors

You can live well with diabetes. Yes, it is a serious disease, but with the help of your doctor, your diabetes educator, your diabetes nurse, your pharmacist—and your family and friends—life with this disease is very manageable for most people.

Let's focus first on some of the risk factors for diabetes that can be modified to improve your health overall.

Diabetes is often referred to as a cardiovascular disease. About 75 percent of people who have diabetes die of some type of heart or blood vessel disease, according to the American Heart Association. Diabetes dramatically increases the risk of various cardiovascular problems, including coronary artery disease with chest pain (angina), heart attack, stroke, narrowing of the arteries (atherosclerosis) and high blood pressure. In fact, according to a 2007 study, the risk of stroke more than doubles within the first five years of being treated for type 2 diabetes.

If you have high blood pressure, getting it lower and keeping it under control is important, whether or not you have diabetes. Talk to your doctor about the various options available for managing your blood pressure. These may include healthier eating, increasing the amount of exercise you do, or taking medications.

Your cholesterol level is also important, and must be kept at a healthy level. Again, there are treatment options available, and if exercise and diet changes do not help, there are medications (called lipid-lowering agents or statins) available that will help you lower and maintain healthy cholesterol levels.

Stop smoking. A tough one for many people, but important. There are smoking cessation programs offered in most communities or through hospitals or clinics. Many medications are available to help you stop smoking, and most are supported with help lines that you can call 24 hours a day, 7 days a week.

Make sure that you are getting an adequate intake of nutrients from food and/or supplements. When you are first diagnosed with diabetes, your doctor might arrange for you to see a diabetes educator (if this service is available in your community) or a dietitian. Eating well will make you feel better, help you lose weight if you need to, and improve your overall health.

Let's talk about food!

When you are first diagnosed with diabetes, you may think that you have to radically change the way you eat completely, or that you will no longer be able to enjoy many of the things you like most. For everyone, these things are different, but they may include sweet desserts or alcohol. But when used in moderation, everything can be incorporated into your diet. It's all about balance and sensible food choices. A diabetes meal plan is not as restrictive as some people think, and because it is a good, healthy way of eating, your family will be able to make healthy changes too.

You may need to adjust your eating schedule if you have type 1 diabetes. You need to match your food intake to the way your insulin is working to make sure that your blood glucose level remains steady. If it is time to take your insulin, and dinner has been delayed, you will need to eat a snack so that your body has some energy available when your insulin is at its peak action. If your insulin is going to start working in 15 minutes, you don't want to wait 2 hours to eat.

If you have type 2 diabetes, and are taking oral medications, it is important that you time your medications according to your meals. Some pills help your body to break down food more slowly, and others help your pancreas produce more insulin, so they will not be effective if you take them at the wrong times of day.

Bits and bites...

- It is only carbohydrates which affect our blood sugar level.
- Our bodies convert carbohydrates into glucose for energy.
- People with diabetes do not need to avoid sugar completely. But try to avoid adding sugar to your food, and limit your intake of sugary foods and drinks. Pick natural sugars, like the ones found in fruits, if you need a "sweet fix".
- You may need to eat snacks or meals more regularly throughout the day (and before bed) in order to keep your blood glucose level stable.
- Your favourite recipes can be adapted so that overall fat and sugar is reduced.
- Learn how to count carbohydrates; a dietitian or nutritionist can help you with this.
- Learn more about the glycemic index by visiting www.glycemicindex.com
- Learn to read food labels.

One, two, three, GO!

When you have diabetes, 150 minutes of moderate activity each week can help you to maintain a steady blood glucose level, and also help to prevent long-term complications like heart conditions and problems with your circulation.

Exercise is important for everyone, and can be done at a level that satisfies and suits you. It's not necessary to join a gym or climb mountains or play hockey—you can find easy ways to incorporate aerobic exercise into your daily routine. Taking a short walk after work today is a good start!

No matter what exercise program you are beginning, start slow, especially if you have not exercised for a long time. Talk to your doctor first to find out if there is any reason why you should not exercise, or should not do a particular kind of exercise.

If your activity is strenuous:

Let's say you are planning to exercise for 2 hours or more, maybe because you are training for a marathon. You will need to pay extra attention to your blood glucose level, since a level that is too high or too low can make you tired and affect the way you are performing. You need to test your blood glucose before you begin a strenuous activity, probably during it, and certainly afterwards. You may need to make adjustments to your insulin or oral medications, and your healthcare professional can help you do this. If you are exercising regularly at a high level, you will learn over time what affect this exercise has on your blood glucose levels and can plan more carefully.

Self-monitoring of blood glucose: the very best do-it-yourself diabetes management tool

Taking control of your diabetes means many things: making changes to your diet to be sure it is as healthy as possible, watching your intake of sugar, salt, alcohol and fats, increasing your level of exercise, losing weight if you need to, and maintaining a positive attitude.

Your healthcare team will also help you keep control—by offering encouragement and support and adjusting your medications if necessary. And every 2 or 3 months your blood glucose will be tested. This is the A1C measurement that your doctor may have mentioned; it provides an average of your blood glucose levels over the last 6-8 weeks.

Let's get physical...

- Remember—always warm up before exercising, and cool down afterwards. A little bit of stretching before physical activity helps make your muscles work better.
- Overall fitness is a combination of stamina, flexibility and strength. You may want to pick an exercise or activity that focuses on just one of these, or one that covers all three.
- Consider how much time you have to devote to an exercise program before beginning one.
- Less intense activities include golfing, bowling, swimming and strolling; more intense activities are things like running, skiing, race walking, biking and tennis.

Blood glucose meters offer a variety of features, including:

- size and shape; some are smaller and therefore easier to handle if you have arthritis in your hands
- display—you may opt for one with a larger display, easier to read
- memory capabilities; some meters can store up to 450 results
- averages: some meters calculate the average of your readings over the last week, two weeks or month
- blood sample size required: this varies from one meter to another

Many meters are free with the purchase of testing strips. Your pharmacist would be able to help you decide which meter is right for you.

Resources:

There are many good resources for people with diabetes and their families. Several good books and magazines focused on diabetes are available through libraries or your local book stores, including ones on meal planning and recipes.

Websites of interest:

Canadian Diabetes Association

www.diabetes.ca

The Canadian Diabetes Association provides links to provincial and local organizations, and lists educational or sporting events linked to diabetes that may be taking place in your community.

American Diabetes Association

www.diabetes.org

International Federation of Diabetes

www.idf.org

Diabetes Quebec

www.diabete.qc.ca

The Glycemic Index

www.glycemicindex.com