

Chapter Organization – Newly Diagnosed

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You are not alone!





Living with Prediabetes

Wouldn't it be nice if the human body had an "early alert system" that advised us when something was about to go wrong with our health? Prediabetes offers a warning and gives us a chance to change the future.

Prediabetes refers to blood glucose (sugar) levels that are higher than normal, but not yet high enough to be diagnosed as type 2 diabetes (i.e. a fasting plasma glucose level of 7.0 mmol/L or A1C of 6.5 per cent or higher). Although not everyone with prediabetes will develop type 2 diabetes, many people will.

It is important to know if you have prediabetes, because research has shown that some long-term complications associated with diabetes – such as heart disease – may begin during prediabetes.

Risk factors

Like type 2 diabetes, prediabetes can occur without you knowing it, so being aware of your risks and getting tested are important. This is especially true if you have prediabetes as part of the "metabolic syndrome," meaning you also have high blood pressure, high levels of LDL cholesterol (the "bad" cholesterol) and triglycerides, low levels of HDL cholesterol (the "good" cholesterol) and excess fat around the waist.

The risk for type 2 diabetes is higher as you grow older, so Diabetes Canada recommends screening for everyone once they reach age 40 and every three years after that. If you have risk factors that increase the likelihood of developing type 2 diabetes, you should be tested more frequently or start regular screening earlier.

The good news

Research has shown that if you take steps to manage your blood sugar when you have prediabetes, you can delay or prevent type 2 diabetes from developing. You may be able to reduce blood sugar levels with simple changes, such as increasing your physical activity and enjoying a healthy eating pattern.

Losing even a modest amount of weight (five to 10 per cent of total body weight) through healthy eating and regular physical activity can make a huge difference in your health and quality of life.

When healthy behaviour changes are not enough to normalize blood sugar, your health-care provider might recommend that you use oral medication.

If you have prediabetes, you are at increased risk for heart disease or stroke. Your doctor may wish to also treat or counsel you about cardiovascular risk factors such as tobacco use, high blood pressure and high cholesterol.

The important thing to remember about prediabetes is that it doesn't always lead to diabetes. If you have prediabetes, taking steps to manage your blood sugar gives you a chance to change your future to one that does not include type 2 diabetes.

Living with Type 1 Diabetes

Type 1 diabetes is a disease in which the pancreas does not produce any insulin. Insulin is a hormone that helps your body to control the level of glucose (sugar) in your blood. Without insulin, sugar builds up in your blood instead of being used for energy.

Your body produces sugar and also gets sugar from foods like bread, potatoes, rice, pasta, milk and fruit.

The cause of type 1 diabetes remains unknown. It is not caused by eating too much sugar and is not preventable. The current thought is that type 1 diabetes occurs when the body's immune system destroys the cells that make insulin.

Insulin Therapy

Insulin therapy is required for the treatment of type 1 diabetes.

There are a variety of insulins available to help manage diabetes. Insulin is injected by pen, syringe or pump. Your doctor will work with you to determine:

- The number of insulin injections you need per day
- The timing of your insulin injections
- The dose of insulin you need with each injection

The insulin treatment your doctor prescribes will depend on your goals, age, lifestyle, meal plan, general health and motivation. Social and financial factors may also need to be considered.

The good news

You can live a long and healthy life by keeping your blood sugar levels in the target range set by you and your health-care provider:

You can do this by:

- Taking insulin as recommended (and other medications, if prescribed by your doctor)
- Monitoring your blood sugar levels regularly using a home blood glucose meter*
- Eating healthy meals and snacks
- Enjoying regular physical activity

- Aiming for a healthy body weight
- Managing stress effectively

* Discuss with your health-care provider how often you should measure your blood sugar level.

Who can help you?

Your health-care team is there to help you. Depending on your needs and the resources available in your community, your team may include a family doctor, diabetes educator (nurse and/or dietitian), endocrinologist, pharmacist, social worker, exercise physiologist, psychologist, foot-care specialist, eye-care specialist. They can answer your questions about how to manage diabetes and work with you to adjust your food plan, activity and medications.

Remember, you are the most important member of your health-care team.

Get the support you need

A positive and realistic attitude toward your diabetes can help you manage it. Talk to others who have type 1 diabetes or their caregivers. Ask your local Diabetes Canada branch about additional resources, joining a peer-support group or taking part in an information session.

Living with type 2 Diabetes

Type 2 diabetes is a disease in which your pancreas does not produce enough insulin, or your body does not properly use the insulin it makes. As a result, glucose (sugar) builds up in your blood instead of being used for energy.

Your body gets sugar from foods like bread, potatoes, rice, pasta, milk and fruit. To use this sugar, your body needs insulin. Insulin is a hormone that helps your body to control the level of sugar in your blood.

The good news

You can live a long and healthy life by keeping your blood sugar levels in the target range set by you and your health-care provider. You can do this by:

- Eating healthy meals and snacks
- Enjoying regular physical activity
- Monitoring your blood sugar using a home blood glucose meter*
- Aiming for and staying at a healthy body weight
- Taking diabetes medications including insulin and other medications, if prescribed by your doctor
- Managing stress effectively

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Your health-care team is there to help you. Depending on your needs and the resources available in your community, your team may include a family doctor, diabetes educator (nurse and/or dietitian), endocrinologist, pharmacist, social worker, exercise physiologist, psychologist, foot-care specialist, eye-care specialist. They can answer your questions about how to manage diabetes and work with you to adjust your food plan, activity and medications.

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Blood Sugar & Insulin

An important part of diabetes management is controlling your blood glucose (sugar) levels. One way to do this is by using insulin. All people with type 1 diabetes and many with type 2 diabetes require insulin to manage their blood sugar levels.

Starting insulin can be life-changing. It's common to feel confused, worried, anxious, isolated and frustrated. You're not alone. Diabetes Canada and your diabetes health-care team are there to support you.

Blood Sugar

Blood glucose (sugar) is the amount of sugar in your blood at a given time.

It is important to check your blood sugar levels, because it will:

- Provide a quick measurement of your blood sugar level at a given time;
- Determine if you have a high or low blood sugar level at a given time;
- Show you how your lifestyle and medication affect your blood sugar levels; and
- Help you and your diabetes health-care team to make lifestyle and medication changes that will improve your blood sugar levels.

How often should you check your blood sugar levels?

How frequently you check your blood sugar levels should be decided according to your own treatment plan. You and your health-care provider can discuss when and how often you should check your blood sugar levels. Checking your blood sugar levels is also called Self-Monitoring of Blood Glucose (SMBG).

How do you test your blood sugar levels?

A blood glucose meter is used to check your blood sugar at home. You can get these meters at most pharmacies or from your diabetes educator. Talk with your diabetes educator or pharmacist about which one is right for you. Once you receive a meter, ensure you receive the proper training before you begin to use it.

Ask your health-care provider about:

- How and where to draw blood
- How to use and dispose of lancets (the device that punctures your skin)
- The size of the drop of blood needed
- The type of blood glucose strips to use
- How to clean the meter
- How to check if the meter is accurate
- How to code your meter (if needed)

A flash glucose meter (FGM) is a new generation device that uses sensor scans for blood sugar monitoring and doesn't require finger pricks.

A continuous glucose monitor (CGM) is a device that checks blood sugar level using a sensor inserted under your skin.

How do you keep your blood sugar levels within their target range?

If you have diabetes, you should try to keep your blood sugar as close to target range as possible. This will help to delay or prevent complications of diabetes. Maintaining healthy eating habits and an active lifestyle, and taking medication, if necessary, will help you keep your blood sugar levels within their target range. Target ranges for blood sugar can vary. It depends on a person's age, medical condition and other risk factors.

Targets for pregnant women, older adults and children 12 years of age and under are different. Ask your health-care provider what your levels should be.

Recommended blood sugar targets for most people with diabetes*

(Your target may not be the same as the examples in this blood sugar levels chart. Yours should be specific to you.)

	A1C**	Fasting blood glucose (sugar)/ blood sugar before meals (mmol/L)	Blood sugar two hours after eating (mmol/L)
Target for most people with diabetes	7.0% or less	4.0 to 7.0	5.0 to 10.0 (5.0 – 8.0 if A1C** targets not being met)

* This information is based on the Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada and is a guide.

** A1C is a measurement of your average blood sugar control for the last two to three months and approximately 50 per cent of the value comes from the last 30 days.

Talk to your health-care provider about YOUR blood sugar target ranges

You should have your A1C measured every three months, when your blood sugar targets are not being met or when you are making changes to your diabetes management.

A1C, before meal and after meal blood sugar levels are all important measurements of your diabetes control.

Managing your blood sugar when you're ill

When you are sick, your blood sugar levels may fluctuate and be unpredictable. During these times, it is a good idea to check your blood sugar levels more often than usual (for example, every two to four hours). It is also very important that you continue to take your diabetes medication. If you have a cold or flu and are considering using a cold remedy or cough syrup,

ask your pharmacist to help you make a good choice. Many cold remedies and cough syrups contain sugar, so try to pick sugar-free products.

When you are sick, it is VERY IMPORTANT that you:

- Drink plenty of extra sugar-free fluids or water; try to avoid coffee, tea and colas, as they contain caffeine, which may cause you to lose more fluids;
- Replace solid food with fluids that contain sugar if you can't eat according to your usual meal plan;
- Try to consume 15 grams of carbohydrate every hour if you are not able to follow your usual meal plan;
- Call your doctor or go to an emergency room if you vomit and/or have had diarrhea two times or more in four hours; and,
- If you are on insulin, be sure to continue taking it while you are sick. Check with your health-care team about guidelines for insulin adjustment or medication changes during an illness.

For more information, learn about low and high blood sugar levels.



Managing your blood sugar

What is blood glucose (sugar)?

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A1C, before meal and after meal blood sugar levels are all important measurements of your diabetes control.

Related article: *Lows and highs: blood sugar levels*

[Interactive Self-monitoring of Blood Glucose Tool and Sick-day Management](#)

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Thinking of starting insulin?

management

Many medications are used to manage diabetes, but the one that most people have heard about is insulin. If you are thinking of starting insulin, here are some things you will want to know.

What is insulin?

Insulin is a hormone produced by the pancreas to control the amount of glucose (sugar) in the blood. Without insulin, glucose builds up in the bloodstream. This can lead to serious health problems, such as blindness, heart disease, kidney problems, amputation, nerve damage, and erectile dysfunction.

Looking forward to good health

If this seems like a lot to learn, don't worry – your diabetes healthcare team will work with you to ensure that you understand how to use insulin effectively.



What happens in diabetes?

Type 1 diabetes

The pancreas is no longer able to make insulin. As a result, people diagnosed with type 1 diabetes will need to start on insulin immediately and take it for life. Insulin is given either with multiple daily injections using insulin pens or syringes or by using an insulin pump.

Type 2 diabetes

The pancreas no longer produces enough insulin or the body is not able to use its own insulin effectively. If you have type 2 diabetes, you may be able to keep your blood glucose levels in your target range through healthy eating, physical activity, and by taking diabetes medication. Ask your doctor to refer you to a diabetes educator (nurse, dietitian, or pharmacist) who can help you with lifestyle changes and managing your blood glucose levels. Type 2 diabetes is a progressive condition and, over time, many people will need to use insulin to manage their blood glucose.

How do I feel about starting insulin?

Sometimes people feel scared, nervous, or guilty about having to start insulin therapy, and that's okay. Taking insulin to help manage your diabetes may be hard to understand and you might be scared of taking injections. What is important to remember is that using insulin can help you to reach your blood glucose targets and prevent complications related to diabetes.

Types of insulin

Several different types of insulin are available. Types of insulin differ by how long they work, how quickly they start working, and when they are most effective. By understanding how your prescribed insulin works, you can time your meals, snacks, and activity levels.

You might start on one or more injections each day. Your diabetes educator can work with you to find an insulin treatment that will work well with your lifestyle while helping you to achieve good blood glucose levels.

When prescribing insulin for you, your diabetes healthcare team will consider several factors, such as your treatment goals, age, lifestyle, meal plan, general health, plus risk and awareness of low blood glucose (hypoglycemia). There is no "one size fits all" plan.

When you take insulin, you need to check your blood glucose levels regularly. Regular checks give you important information about how your glucose levels vary during the day, how much insulin you need, and help you determine if you're on track managing your diabetes. Understanding and acting on the results of your blood glucose checks is the best way to keep your glucose levels in their target range.

Your healthcare team will talk with you about the best insulin plan to meet your needs. Remember, it will take time to fine-tune your insulin routine, and it may change over time depending on life events (such as a major illness) or changes in your lifestyle (such as a change in physical activity).

How do I take insulin?

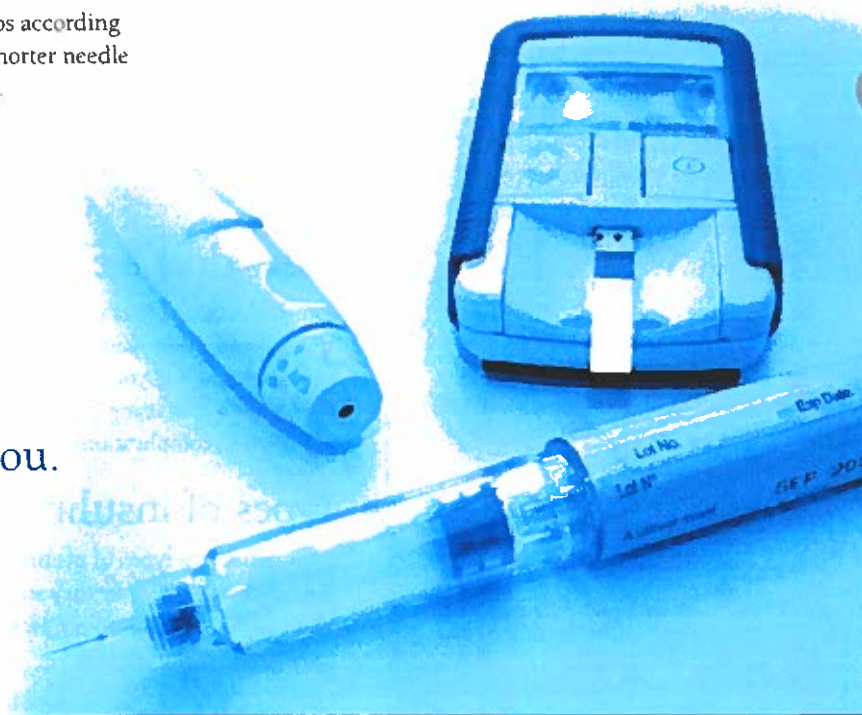
You can take insulin with pens, syringes, or pumps according to your personal preference. Newer devices and shorter needle lengths are available to make taking insulin easier.

Talk to your doctor or diabetes educator about which device is right for you.

Insulin pens are loaded with a cartridge that contains insulin. They are convenient, easy to carry, and ensure accurate dosing. A needle tip is added. You will need a separate insulin pen for each type of insulin you use. If you need to use two types of insulin at the same time, you will need two separate pens and give yourself an injection from each pen.

Syringes today are smaller than ever and have finer needles with special coatings so injecting is as painless as possible. If you need to use two types of insulin at the same time, and they are not available in a premix formula, you can mix the insulin and give yourself only one injection.

Insulin pumps are a safe, effective way to deliver insulin and are most often used by people who need multiple injections of insulin for their diabetes. The device involves a small catheter, which is inserted under the skin, and a pump, which is about the size of a pager, that is worn outside the body.



Across the country, the Canadian Diabetes Association is leading the fight against diabetes by helping people with diabetes live healthy lives while we work to find a cure. Our community-based network of supporters help us provide education and services to people living with diabetes, advocate for our cause, break ground towards a cure and translate research into practical applications.

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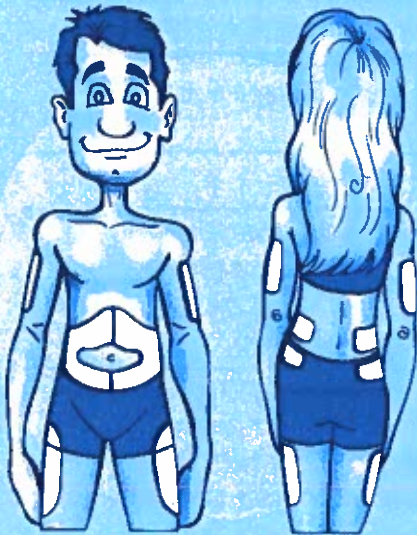
Related articles: *Lows and Highs: Blood Glucose Levels; Getting Started with Insulin; Managing Your Blood Glucose*

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Getting started with insulin

Insulin Injection Sites



NOTE: It is really important to change (rotate) where you give yourself insulin to prevent fatty lumps from forming since these can affect how your body absorbs insulin. For example, you can move from one side of your abdomen to the other side, and you can also move your injection site to a different location within each side of your abdomen.

Avoid a 2-inch area around the belly button as well as scar tissue.

Insulin Pens:

Your pen comes with an instruction book. Please review it to understand how your pen works, how to load the cartridge, and how to prepare your pen for an insulin injection. There are different sizes and lengths of needle tips available. Most often the shortest needle is recommended. Talk with your health-care professional about which needle tip would be best for you.

Mixing Insulin:

Insulin that is cloudy (NPH, premixed) needs to be mixed before using. The pen should be rolled ten times, tipped ten times, and checked for a milky-white consistency.

Check Insulin Flow (Prime):

Attach pen needle. Dial up 2 or 3 units (whichever the manufacturers recommends) and, with pen tip facing upwards, push the dosing button. If no stream of insulin appears, repeat this step again.

Giving Your Injection:

After you have checked the insulin flow, dial up the dose of insulin to be taken. Insert pen tip into skin at a 90° angle. Push the dosing button until you see '0'. Count 10 seconds before removing the needle from your skin to ensure you receive the full dose. With longer needles (≥ 8mm), you may need to gently lift the skin before injection or inject on an angle.

Site	Things to think about
Abdomen (tummy) Stay 2 inches (5 cm) away from your belly button	Easy to reach. Insulin absorbs fast and consistently.
Buttock and thigh	Slower absorption rate than from abdomen and arm sites.
Outer arm	After abdomen, arm provides the next fastest absorption rate. This area is hard to reach when injecting yourself, so it is often not recommended.

Insulin Types:

Type	Onset (How quickly it starts working)	Peak (When it is most effective)	Duration (How long it works)	Timing of injection (When should it be given)
Bolus insulins				
Rapid acting analogues • Apidra / Humalog (U100, U200) / NovoRapid • Fiasp	10 – 15 min 4 min	1 – 2 hours 30 min – 1.5 hours	3 – 5 hours 3 – 5 hours	Given with one or more meals per day. Should be injected 0 – 15 minutes before or after meals. Fiasp is to be given two minutes before the start of your meal or within 20 minutes after.
Short-acting • Entuzity U500 • Humulin-R / Novolin ge Toronto	15 min 30 min	4 – 8 hours 2 – 3 hours	17 – 24 hours 6.5 hours	
Basal insulins				
Intermediate-acting • Humulin-N / Novolin ge NPH	1 – 3 hours	5 – 8 hours	up to 18 hours	Often started once daily at bedtime. May be given once or twice daily. Not given at any time specific to meals.
Long-acting analogues • Basaglar / Lantus U100 • Levemir • Toujeo U300 • Tresiba U100, U200	90 min	not applicable	up to 24 hours 16 – 24 hours > 30 hours 42 hours	Often started once daily at bedtime. Insulin detemir (Levemir) may be given once or twice daily. Not given at any time specific to meals.
Premixed insulins				
Premixed regular insulin • Humulin 30/70 • Novolin ge 30/70, 40/60, 50/50	The onset, peak, and duration of premixed insulins depend on the amounts of rapid-acting or short-acting insulin and intermediate-acting insulin. See above for more information based on the specific insulins contained in the premixed insulin.			Given with one or more meals per day. Should be injected 30 – 45 minutes before the start of the meal.
Premixed insulin analogues • Humalog Mix 25, Mix 50 / NovoMix 30				Given with one or more meals per day. Should be injected 0 – 15 minutes before or after meals.

Insulin Care and Storage:

Unopened insulin should be stored in the fridge between 2°C and 8°C. The insulin you are using can be stored at room temperature for up to 1 month. Both Levemir and Toujeo are the exception; they are safe at room temperature for 42 days. Discard insulin that has been frozen, exposed to temperatures greater than 30°C, or expired.

Diabetes Identification:

You should always wear identification, such as a bracelet or necklace, to identify that you have diabetes. Identification bracelets, such as MedicAlert®, can be purchased at pharmacies and jewellery stores. Always carry identification in your wallet or purse that provides information about your diabetes.

Proper Use of Pen Tips (needles):

Use pen tips only once; they are thin and can become bent or broken if re-used. Reusing pen tips can make the injection more painful. Leaving pen tips on the cartridge may cause leaking or allow air into the cartridge which may affect the concentration of the insulin.

Safe Sharps Disposal:

Pen tips and lancets should be disposed of in a sharps container. Check with your local pharmacy. Many pharmacies supply safe, puncture-proof containers. When the container is full, it is returned to the pharmacy in exchange for a new container. Sharps otherwise should be disposed of in accordance with local regulations.

Diabetes Driving Guidelines

Prevention of low blood sugar for all insulin-treated drivers

- Measure your blood sugar level immediately before and at least every 4 hours during long drives.
- Always carry blood sugar monitoring equipment and an emergency supply of fast-acting carbohydrate within easy reach (e.g. attached to the visor).
- Do not start driving if your blood sugar is less than 4.0 mmol/L. If you feel symptoms of low blood sugar while you are driving, stop the vehicle in a safe location and remove the keys from the ignition.
- If your blood sugar is less than 4.0 mmol/L, you should have 15 grams of carbohydrate and not begin to drive until your blood sugar is at least 5.0 mmol/L. It is suggested to wait for 40 minutes to recover fully from low blood sugar.
- If your blood glucose is < 2.8 mmol/L while driving you must refrain from driving immediately, and notify a member of your health-care team as soon as possible.

Related articles: *Lows and highs: blood sugar levels, Thinking of starting insulin, Managing your blood sugar*

Interactive Self-monitoring of Blood Glucose Tool

See Diabetes Canada on YouTube for videos about using insulin.

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Professional Drivers

- You should follow the above recommendations as well as perform any diabetes self care as required by your licensing province.

Each province has its own rules regarding sugar control and being able to drive.

I want to apply for a commercial licence.

Can I drive in Canada? In the United States?

Canadians with diabetes who are using insulin can apply for a commercial licence. Motor vehicle licensing authorities require a greater level of medical fitness for drivers operating passenger vehicles (buses/commercial vans), trucks, and emergency vehicles. Commercial drivers spend more time driving and are often under more adverse conditions than private drivers.

Canadians with diabetes who are using insulin can be licensed to drive a commercial vehicle in Canada. The Canada/US Medical Reciprocity Agreement (effective March 1999) recognizes the similarity between Canadian and American medical standards and provides for reciprocal arrangements on medical fitness requirements for Canadian and American drivers of commercial vehicles.

However, Canadian commercial drivers who have diabetes requiring insulin, are not permitted to drive in the United States.

What is Diabetes Canada's position on diabetes and driving and licensing?

Diabetes Canada believes people with diabetes should be assessed for a driver's licence on an individual basis.

For more information, see <http://www.diabetes.ca/about-cda/public-policy-position-statements/driving-licensing>.

More than three million Canadians have diabetes

There are three main types of diabetes.

Type 1 diabetes, usually diagnosed in children and adolescents, occurs when the pancreas is unable to produce insulin. Insulin is a hormone that controls the amount of sugar in the blood. Approximately 10 per cent of people with diabetes have type 1 diabetes.

The remaining 90 per cent have **type 2 diabetes**, which occurs when the pancreas does not produce enough insulin or when the body does not effectively use the insulin that is produced. Type 2 diabetes usually develops in adulthood, although increasing numbers of children in high-risk populations are being diagnosed.

A third type of diabetes, **gestational diabetes**, is a temporary condition that occurs during pregnancy. It affects approximately 2 to 4 per cent of all pregnancies (higher in the indigenous population) and involves an increased risk of developing diabetes for both mother and child.

Is diabetes serious?

If left untreated or improperly managed, diabetes can result in a variety of complications, including:

- Heart disease
- Kidney disease
- Eye disease
- Problems with erection (impotence)
- Nerve damage

The first step in preventing or delaying the onset of these complications is recognizing the risk factors, as well as signs and symptoms of diabetes.

What are the risk factors for diabetes?

If you are aged 40 or older or you are an individual at high risk on a risk calculator*, you are at risk for type 2 diabetes and should be tested at least every three years. If any of the following risk factors apply, you should be tested earlier and/or more often:

Being:	<ul style="list-style-type: none"> • a member of a high-risk group (African, Arab, Asian, Hispanic, Indigenous or South Asian descent, low socioeconomic status) • overweight (especially if you carry most of your weight around your middle)
Having:	<ul style="list-style-type: none"> • a parent, brother or sister with diabetes • health complications that are associated with diabetes • given birth to a baby that weighed more than 4 kg (9 lb) • had gestational diabetes (diabetes during pregnancy) • prediabetes (impaired glucose tolerance or impaired fasting glucose) • high blood pressure • high cholesterol or other fats in the blood • been diagnosed with any of the following conditions: <ul style="list-style-type: none"> – polycystic ovary syndrome – acanthosis nigricans (darkened patches of skin) – psychiatric disorders: schizophrenia, depression, bipolar disorder – obstructive sleep apnea – you use glucocorticoid medication

* The Canadian Diabetes Risk (CANRISK) calculator (available at <http://www.healthy Canadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/diabetes-diabete/canrisk/index-eng.php>).

What are the signs and symptoms of diabetes?

Signs and symptoms of diabetes include the following:

- Unusual thirst
- Frequent urination
- Weight change (gain or loss)
- Extreme fatigue or lack of energy
- Blurred vision
- Frequent or recurring infections
- Cuts and bruises that are slow to heal
- Tingling or numbness in the hands or feet
- Trouble getting or maintaining an erection

It is important to recognize, however, that many people who have type 2 diabetes may display no symptoms.

Can you prevent diabetes?

Research shows that lifestyle changes can help prevent or delay the onset of type 2 diabetes. A healthy meal plan, weight control and physical activity are important prevention steps.

How is diabetes treated?

People with diabetes can expect to live active, independent and vital lives if they make a lifelong commitment to careful diabetes management, which includes the following:

Education:

Diabetes education is an important first step. All people with diabetes need to be informed about their condition.

Physical Activity:

Regular physical activity helps your body lower blood sugar levels, promotes weight loss, reduces stress and enhances overall fitness.

Nutrition:

What, when and how much you eat all play an important role in regulating blood sugar levels.

Weight Management:

Maintaining a healthy weight is especially important in the management of type 2 diabetes.

Medication:

Type 1 diabetes is always treated with insulin. Type 2 diabetes is managed through physical activity and meal planning and may require medications and/or insulin to assist your body in controlling blood sugar more effectively.

Lifestyle Management:

Learning to reduce stress levels in day-to-day life can help people with diabetes better manage their condition.

Blood Pressure:

High blood pressure can lead to eye disease, heart disease, stroke and kidney disease, so people with diabetes should try to maintain a blood pressure level below 130/80. To do this, you may need to change your eating and physical activity habits and/or take medication.

Related article: *Type 2 diabetes: the basics, Type 1 diabetes: the basics, Prediabetes, and Are you at risk*

**DIABETES
CANADA**

diabetes.ca | 1-800 BANTING (226-8464) | info@diabetes.ca

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Risk factors for type 2 diabetes

- Being 40 years of age or older;
- Having a close relative (parent or sibling) who has type 2 diabetes;
- Being a member of a high-risk population, such as those of African, Arab, Asian, Hispanic, Indigenous or South Asian descent, low socioeconomic status;
- Having a history of prediabetes (impaired glucose tolerance or impaired fasting glucose;)
- Having some evidence of the complications of diabetes, such as eye, nerve or kidney problems;
- Having heart disease;
- Having a history of gestational diabetes mellitus;
- Having high blood pressure;
- Having high cholesterol;
- Being overweight, especially around your abdomen.
- Having a history of giving birth to a baby that weighed over 4 kg (9 lb) at birth;
- Having obstructive sleep apnea;
- Having a history of using glucocorticoid medication

Wouldn't it be nice if the human body had an "early alert system" that advised us when something was about to go wrong with our health? Prediabetes offers a warning and gives us a chance to change the future.

Prediabetes refers to blood sugar levels that are higher than normal, but not yet high enough to be diagnosed as type 2 diabetes (i.e. a fasting plasma glucose level of 7.0 mmol/L or A1C of 6.5% or higher). Although not everyone with prediabetes will develop type 2 diabetes, many people will.

It is important to know if you have prediabetes, because research has shown that some long-term complications associated with diabetes – such as heart disease – may begin during prediabetes.

Risk factors

Like type 2 diabetes, prediabetes can occur without you knowing it, so being aware of your risks and being tested are important. This is especially true if you have prediabetes as part of the "metabolic syndrome," meaning you also have high blood pressure, high levels of LDL cholesterol (the "bad" cholesterol) and triglycerides, low levels of HDL cholesterol (the "good" cholesterol) and excess fat around the waist.

The risk for type 2 diabetes is higher as you grow older. If you are age 40 or over, or you are an individual at high risk using a risk calculator*, Diabetes Canada recommends screening by testing fasting plasma glucose and/ or A1C every three years. If you have additional risk factors that increase the likelihood of developing type 2 diabetes, you should be tested more frequently or start regular screening earlier.



* The Canadian Diabetes Risk (CANRISK) calculator (available at <http://www.healthy Canadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/diabetes-diabete/canrisk/index-eng.php>)

The good news

Research has shown that if you take steps to manage your blood sugar when you have prediabetes, you can delay or prevent type 2 diabetes from developing. You may be able to reduce blood sugar levels with simple lifestyle changes, such as increasing your physical activity and enjoying a healthy, low-fat meal plan.

Losing even a modest amount of weight (5 to 10 per cent of total body weight) through healthy eating and regular physical activity can make a huge difference in your health and quality of life.

When lifestyle changes are not enough to normalize blood sugar, your health-care provider might recommend that you use oral medication.

If you have prediabetes, you are at increased risk for heart disease or stroke. Your doctor may also wish to treat or counsel you about cardiovascular risk factors such as tobacco use, high blood pressure and high cholesterol.

The important thing to remember about prediabetes is that it doesn't always lead to diabetes. If you have prediabetes, taking steps to manage your blood sugar gives you a chance to change your future to one that does not include type 2 diabetes.



Related articles: *Diabetes, Type 2 diabetes: the basics, Physical activity and diabetes, Managing weight and diabetes, and Just the basics (tips for healthy eating)*

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Type 1 diabetes: the basics



What is type 1 diabetes?

Type 1 diabetes is a disease in which the pancreas does not produce any insulin. Insulin is a hormone that helps your body to control the level of sugar (glucose) in your blood. Without insulin, sugar builds up in your blood instead of being used for energy. Your body produces sugar and also gets sugar from foods like bread, potatoes, rice, pasta, milk and fruit.

The cause of type 1 diabetes remains unknown. It is not caused by eating too much sugar, and is not preventable. The current thought is that type 1 diabetes occurs when the body's immune system destroys the cells that make insulin.

Insulin therapy

Insulin therapy is required for the treatment of type 1 diabetes. There are a variety of insulins available to help manage diabetes. Insulin is injected by pen, syringe or pump. Your doctor will work with you to determine:

- The number of insulin injections you need per day
- The timing of your insulin injections
- The dose of insulin you need with each injection

The insulin treatment your doctor prescribes will depend on your goals, age, lifestyle, meal plan, general health and motivation. Social and financial factors may also need to be considered.

The good news

You can live a long and healthy life by keeping your blood sugar levels in the target range set by you and your health-care provider:

You can do this by:

- Taking insulin as recommended (and other medications, if prescribed by your doctor)
- Monitoring your blood sugar levels regularly using a home blood glucose meter*
- Eating healthy meals and snacks
- Enjoying regular physical activity
- Aiming for a healthy body weight
- Managing stress effectively

*Discuss with your health-care provider how often you should measure your blood sugar level

Get the support you need

A positive and realistic attitude toward your diabetes can help you manage it. Talk to others who have type 1 diabetes or their caregivers. Ask your local Diabetes Canada branch about additional resources, joining a peer-support group or taking part in an information session.



Who can help you?

Your health-care team is there to help you. Depending on your needs and the resources available in your community, your team may include a family doctor, diabetes educator (nurse and/or dietitian), endocrinologist, pharmacist, social worker, exercise physiologist, psychologist, foot-care specialist, eye-care specialist. They can answer your questions about how to manage diabetes and work with you to adjust your food plan, activity and medications.

Remember, you are the most important member of your health-care team

Complications of diabetes

Over time, high blood sugar levels can cause complications such as blindness, heart disease, kidney problems, nerve damage and erectile dysfunction. Fortunately, good diabetes care and management can prevent or delay the onset of these complications.

You can reduce your chances of developing these complications if you:

- Keep your blood sugar within your target range*
- Avoid smoking
- Keep your cholesterol and other blood fats within your target range*
- Keep your blood pressure within your target range*
- Take care of your feet
- Have regular visits with your doctor, diabetes team, dentist and eye-care specialist

*Discuss your target ranges with your health-care provider

Related articles: *Managing your blood sugar, Physical activity and diabetes, Just the basics (tips for healthy eating), Cholesterol and diabetes, High blood pressure and diabetes, Smoking and diabetes, Foot care: a step toward good health, and Staying healthy with diabetes*

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Risk factors for type 2 diabetes

- Being 40 years of age or older;
- Having a close relative (parent or sibling) who has type 2 diabetes;
- Being a member of a high-risk population, such as those of African, Arab, Asian, Hispanic, Indigenous or South Asian descent, low socioeconomic status;
- Having a history of prediabetes (impaired glucose tolerance or impaired fasting glucose);
- Having some evidence of the complications of diabetes, such as eye, nerve or kidney problems;
- Having heart disease;
- Having a history of gestational diabetes mellitus;
- Having high blood pressure;
- Having high cholesterol;
- Being overweight, especially around your abdomen.
- Having a history of giving birth to a baby that weighed over 4 kg (9 lb) at birth;
- Having obstructive sleep apnea;
- Having a history of using glucocorticoid medication

What is type 2 diabetes?

Type 2 diabetes is a disease in which your pancreas does not produce enough insulin, or your body does not properly use the insulin it makes.

As a result, sugar (glucose) builds up in your blood instead of being used for energy. Your body gets sugar from foods like bread, potatoes, rice, pasta, milk and fruit. To use this sugar, your body needs insulin. Insulin is a hormone that helps your body to control the level of sugar in your blood.

The good news

You can live a long and healthy life by keeping your blood sugar levels in the target range set by you and your health-care provider. You can do this by:

- Eating healthy meals and snacks
- Enjoying regular physical activity
- Monitoring your blood sugar using a home blood glucose meter*
- Aiming for a healthy body weight
- Taking diabetes medications including insulin, if prescribed by your doctor
- Managing stress effectively

*Discuss with your health-care provider how often you should measure your blood sugar level



Get the support you need

A positive and realistic attitude towards your diabetes can help you manage it. Talk to others who have diabetes. Ask your local Diabetes Canada branch about joining a peer-support group or taking part in an information session.



Who can help you?

Your health-care team is there to help you. Depending on your needs and the resources available in your community, your team may include a family doctor, diabetes educator (nurse and/or dietitian), endocrinologist, pharmacist, social worker, exercise physiologist, psychologist, foot-care specialist, eye-care specialist. They can answer your questions about how to manage diabetes and work with you to adjust your food plan, activity and medications.

Remember, you are the most important member of your health-care team

Complications of diabetes

Type 2 diabetes is a progressive, life-long disease. It may become more difficult to keep your blood sugar levels within your target range. High blood sugar levels can cause complications such as blindness, heart disease, kidney problems, nerve damage and erectile dysfunction. Fortunately, good diabetes care and management can prevent or delay the onset of these complications.

You can reduce your chances of developing these complications if you:

- Keep your blood sugar within your target range*
- Avoid smoking
- Keep your cholesterol and other blood fats within your target range*
- Keep your blood pressure within your target range*
- Take care of your feet
- Have regular visits with your doctor, diabetes team, dentist and eye-care specialist

*Discuss your target ranges with your health-care provider

Related articles: *Managing your blood sugar, Managing weight and diabetes, Physical activity and diabetes, Just the basics (tips for healthy eating), Cholesterol and diabetes, High blood pressure and diabetes, Smoking and diabetes, Foot care: a step toward good health, and Staying healthy with diabetes*

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Me, My Health and My Diabetes Team

Know your team. Stay Connected. Prepare for your Diabetes Care. Live Well.

My Team	Name	Telephone/Fax Numbers	Address/E-mail
Family Doctor/Nurse Practitioner			
Nurse			
Dietitian			
Pharmacy/Pharmacist			
Social Worker/ Mental health specialist			
Eye doctor (Optometrist/Ophthalmologist)			
Diabetes doctor (Endocrinologist)			
Kidney doctor (Nephrologist)			
Heart doctor (Cardiologist)			
Physical activity expert (Exercise physiologist, kinesiologist)			
Naturopathic care provider			
Other			





My Diabetes Care: Not just about blood sugars

What is this form for? ALL members of your diabetes team need to be on the same page:

SHARE TO IMPROVE YOUR CARE!

How to use this form. Complete it with EACH member of your diabetes team (pharmacist, nurse, dietitian, etc.). Keep one copy for yourself and have a copy faxed/scanned to your primary care provider. Your primary care provider can review it with you at your next visit, and make changes to your care if need.

Patient Name:	_____
Date:	_____
DOB:	_____

My Diabetes Vital signs: ABCDESSS	Current Status	Comments or Advice
A 1 C 7% or less or personalized target of _____ %		
B blood pressure less than 130/80 mmHG		
C cholesterol (LDL) less than 2.0 mmol/L		
D drugs for decreasing heart disease risk (if applicable) • ACEI/ARB: <input type="checkbox"/> Prescribed <input type="checkbox"/> Taking <input type="checkbox"/> Recommended • Statin: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> • ASA: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> • SGLT2i or GLP1ra: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
E exercise goals and healthy eating		
S self-management support • Set a personalized goal • Identify barriers to achieving goals (pain, stress, mental health, financial and/or other concerns)		
S screening or monitoring for complications • Heart: ECG every 3-5 years if required • Foot: Yearly exam or more if required • Kidney: Yearly blood/urine tests or more if required • Eye: Yearly exam or more if required	Date last completed _____ _____ _____	Overdue <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
S smoking cessation (if applicable)		

Contact info/office stamp of health-care provider(s) completing this form.

A1C The A1C is a blood test that will help you know whether your blood sugar has been at target over the past 3 months. A lower A1C will reduce your risk of heart disease, stroke, kidney disease, eye problems, nerve damage, and foot problems. The goal for most people with diabetes is to have an A1C of 7% or less but you should talk to your doctor about the A1C target that is right for you. A higher A1C target may be safer for certain people. Targets and medications should be adjusted to prevent low blood sugars. You should have this blood test done every 3 months when blood sugar targets are not being met or when you are making changes to your diabetes management.

Blood Pressure Higher blood pressure can damage your blood vessels, and cause heart disease, stroke, kidney disease and eye problems. The target blood pressure for most people with diabetes is less than 130/80 mmHg. A higher blood pressure may be safer for certain people if they are at risk of falls. Your blood pressure should be checked regularly. Ask your health-care provider if checking your blood pressure at home might be helpful.

Cholesterol (LDL) This blood test measures the amount of bad cholesterol (fat) in your blood. Bad cholesterol can narrow your arteries causing heart disease and stroke. A lower cholesterol will reduce your risk of heart attack and stroke. The target for most people with diabetes is less than 2.0 mmol/L. Cholesterol should be tested yearly or as indicated by your health-care provider. More frequent testing may be necessary for people taking cholesterol medications.

Drugs to Protect your Heart Diabetes causes many people to end up with heart disease. Research shows that certain drugs can reduce this risk even if your blood pressure and/or LDL-cholesterol are already at target. These include specific blood pressure pills (ACEI/ARB) and cholesterol-lowering medication (statins). If you are not taking these, you can ask your prescriber if you might benefit. If you already have heart disease or have had a stroke, adding aspirin and certain blood sugar lowering medications (SGLT2i or GLP1ra) can be added to protect you from further damage and complications.

Exercise Goals and Healthy Eating Physical activity often improves blood sugar control and helps with weight loss but has many other health benefits even if weight and blood sugar control do not change. Avoid sitting for long periods of time. 150 minutes per week of aerobic exercise (like walking) is recommended. Using a step monitor (pedometer) can be helpful in tracking your activity. In addition to aerobic exercise, 2 sessions per week of strength training (like exercises with weights) is also helpful. Food is key in the management of diabetes and reducing the risk of heart attack and stroke. A registered dietitian can help you develop a personalized meal plan that considers your culture and nutritional preferences to help you achieve your goals.

Self Monitoring of Blood Glucose (SMBG) Checking your blood sugar (also known as self-monitoring of blood glucose) or using a flash glucose meter or a continuous glucose monitor will determine if you have a high or low blood sugar and show you how your lifestyle (eating, drinking, physical activity, stress) and medication(s) affect your blood sugar levels. This may help you and your diabetes health-care team make changes to your health behaviour plans, your medications and your targets. Whether to check - and how often - depends on your goals and the medications you are taking. For most people, target levels when you check your blood sugar are: between 4 and 7mmol/L before meals, between 5 and 10mmol/L two hours after you start eating a meal.

Foot Checkup Diabetes can cause nerve damage and poor blood flow or circulation to the legs and feet. As a result, people with diabetes are more likely to have a wound on their foot and less likely to feel it. Diabetes can interfere with healing of foot injuries and if untreated, even small foot injuries can become infected. This can lead to serious complications such as amputation. A regular foot exam is important to check for changes in your feet like shape, sensation, ulcers and infection. You can prevent problems and keep your feet healthy by managing your diabetes, checking your feet every day for changes, caring for your nails regularly, wearing properly fitted shoes and see your health-care provider if you experience any problems or notice any changes with your feet or legs (swelling, warmth, redness, pain).

Kidney Function: Urine and blood tests The eGFR is a blood test and the ACR is a urine test. These are used to see how well the kidneys are working. An eGFR of less than 60 mL/minute or an ACR of more than 2 may suggest that you have kidney disease. These tests for your kidneys should be checked once per year or more if you have kidney disease. Control of blood sugar and blood pressure help prevent kidney damage.

Eye Exam Over time, diabetes can cause changes to blood vessels in the retina (back of the eye) that can cause them to bleed or leak fluid, which can affect your vision. People with diabetes should get a comprehensive dilated eye exam regularly with experienced vision care professionals (optometrists or ophthalmologists). With good blood sugar control, regular eye exams and early treatment, the risk of vision loss is reduced.

Both type 1 and type 2 diabetes are serious conditions, and can lead to the same complications. But you can do many things to stay well. Talk to your doctor about all of the following points. They are important for basic diabetes care. Your doctor and your health-care team will work with you to ensure you get the best care. The important first steps are:

- Eat according to a healthy meal plan.
- Increase your physical activity.
- Learn as much as possible about diabetes.

Are you heading in a healthy direction?

Keeping your blood pressure and blood sugar at target will help you avoid diabetes complications such as heart attack, stroke, and damage to your eyes, nerves and kidneys.

Refer to the back page of this brochure to find your recommended target range and use this resource to help you prepare for regular diabetes-focused visits with your health-care provider.

Blood sugar

You and your health-care team should set goals for your blood sugar levels. It is important to recognize that you may need to add pills and/or insulin to your lifestyle changes (healthy eating and increased activity), to achieve your blood sugar targets. A blood glucose meter will help you track your blood sugar levels.

Blood pressure

High blood pressure can lead to eye disease, heart disease, stroke and kidney disease. You may need to change your eating and exercise habits and/or take pills to keep your blood pressure below 130/80 mm Hg.

Cholesterol

High cholesterol and other fats in the blood can lead to heart disease and stroke. You may need to change your eating and exercise habits and/or take pills to keep your blood fats at healthy levels.

Healthy eating

Ask your doctor to refer you to a registered dietitian to learn about healthy eating. You should follow diabetes-friendly diets (Mediterranean style) or diets emphasizing specific foods (low-glycemic-index foods).

Physical activity

Both aerobic and resistance exercise are important for people living with diabetes. If you have diabetes, you should do at least 150 minutes of moderate to vigorous intensity aerobic exercise per week. You may need to start with as little as 5 to 10 minutes per day of brisk walking. In addition, resistance exercise (such as weight training) should be performed 2-3 times per week. If you are just starting to be active, check with your doctor first.





Weight

Reaching and maintaining a healthy weight will help you control your blood sugar, blood pressure and blood fat levels.

Eye disease

You need to be seen by an eye-care specialist who will dilate your pupils and check for signs of eye disease. Your regular doctor cannot do this special test in his or her office. Ask for a referral to an eye-care specialist.

Foot care

Take off your shoes and socks at every visit (even if your doctor or health-care team forget to ask you). Ingrown toenails, cuts and sores on the feet can lead to serious infections. Learn about proper foot care.

Depression and anxiety

These are common feelings in people with diabetes and can negatively affect your diabetes control. Speak to your doctor or health-care team if you feel you might have depression or anxiety.

Smoking

Smoking and diabetes are a dangerous mix. If you are serious about quitting, your doctor or health-care team can help. If you do not succeed the first time, keep trying; your health is worth it.

Kidney disease

The earlier you catch signs of kidney disease the better. You must have your urine tested regularly for early signs of kidney disease. Your doctor may prescribe pills to delay more damage to your kidneys.

Nerve damage

Tell your doctor or health-care team if your hands or feet ever feel numb or feel the sensation of having “pins and needles”.

Problems with erection

Trouble getting and maintaining an erection is a common problem in men with diabetes. Do not be shy about talking to your doctor or health-care team about it. They may be able to suggest ways to solve the problem.

Stay healthy by asking the right questions. Be an informed patient. Know what tests you need to check for the complications of diabetes. Talk to your doctor and diabetes educators about these tests.

Tests for diabetes care

The following are important tests for basic diabetes care. Your doctor may recommend some tests more often than indicated. Target blood sugar and blood pressure levels may differ, depending on your health.

When	What test?
At diagnosis	Type 2: <ul style="list-style-type: none"> • ACR*/Kidney test: urine test performed at the lab • Eye examination: through dilated pupils by an eye-care specialist • Nerve damage test: using a 10-g monofilament or 128-Hz tuning fork • Cholesterol and other blood fat tests: a blood test
Approximately every 3 months	Type 1 and 2: <ul style="list-style-type: none"> • A1C blood test**(goal: 7.0% or below for most people with diabetes) • Blood pressure (goal: below 130/80 mm Hg) • Review of home blood sugar monitoring record
Every year	Type 1 and 2: <ul style="list-style-type: none"> • ACR*/Kidney test: urine test performed at the lab (at least once a year and for type 1: once a year if you have had diabetes for at least 5 years) • Foot exam at every visit and right away for an ingrown toenail or any cut or sore that doesn't heal • Meter check against the results of a blood test at the lab at least once a year • Cholesterol and other blood fat tests^
Every 1 to 2 years	Eye examination by an eye specialist Type 2: <ul style="list-style-type: none"> • every 1–2 years (if no eye disease present)† Type 1: <ul style="list-style-type: none"> • once a year if you are over age 15 and have had diabetes for at least 5 years
Regularly/Periodically	Type 1 and 2: <ul style="list-style-type: none"> • Questions about erection problems • Questions about depression and/or anxiety • Questions about healthy eating and physical activity

* Albumin/creatinine ratio (ACR)

** A1C targets for pregnant women, older adults and children 12 years of age and under are different.

^ More often if treatment is initiated

† More often if eye disease is present.

Your diabetes-focused visit

It is important that certain visits with your health-care team focus specifically on your diabetes.

How to prepare

- Have laboratory tests done prior to your visit.
- Bring blood sugar records with you (written down or printed from meter).
- Bring a list of all medications including non-prescription drugs and let team know which need to be refilled.
- Write down any questions about your diabetes.
- Save any non-urgent, non-diabetes questions for another visit. This will ensure that your diabetes gets the full attention it deserves.



For young children and pregnant women, the timing and type of test may be different.

A

A1C (measure of blood sugar levels over time)

B

Blood pressure

C

Cholesterol

D

Drugs to protect your heart

E

Exercise goals and healthy eating

S

Self-management support

S

Screening or monitoring for complications

S

Smoking cessation

Do you know your ABCDES3?

If you have diabetes, you are at increased risk for heart disease and stroke, and other complications such as eye and kidney disease, nerve damage and foot problems. Keeping your blood sugar, blood pressure and cholesterol in a healthy range can reduce your risk of complications. Learn your diabetes ABCDES3. Talk to your doctor about Diabetes Canada's recommendations for diabetes management, what targets are healthy for you, and how to achieve and maintain them over time.

ABCDES3	Recommended targets	My goals
A1C*	7.0% or below (for most people with diabetes)	
Blood pressure	Below 130/80 mm Hg	
Cholesterol	LDL: below 2.0 mmol/L	
Drugs	Speak to your health-care team about medication to protect against heart attack and stroke	
Exercise goals and healthy eating	<ul style="list-style-type: none"> • Increase your physical activity • Eat according to a healthy plan 	
Self-management support	<ul style="list-style-type: none"> • Set a personalized goal • Identify barriers to achieving goals (pain, stress, mental health, financial and/or other concerns) 	
Screening or monitoring for complications	<ul style="list-style-type: none"> • Heart: ECG every 3-5 years if required • Foot: Yearly exam or more if required • Kidney: Yearly blood/urine tests or more if required • Eye: Yearly exam or more if required 	
Smoking cessation	Stop smoking	

* A1C targets for pregnant women, older adults and children 12 years of age and under are different.

Related articles: *Managing your blood sugar, A prescription for maintaining healthy eyes, Smoking and diabetes, Cholesterol and diabetes, High blood pressure and diabetes, Managing weight and Diabetes*

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Lows and highs: blood sugar levels

What is **LOW** blood sugar?

When the amount of blood glucose (sugar in your blood) has dropped below your target range (less than 4 mmol/L), it is called low blood sugar or hypoglycemia.

What are the signs of a **LOW** blood sugar level?

You may feel:

- Shaky, light-headed, nauseated
- Nervous, irritable, anxious
- Confused, unable to concentrate
- Hungry
- Your heart rate is faster
- Sweaty, headachy
- Weak, drowsy
- A numbness or tingling in your tongue or lips
- Nausea

Low blood sugar can happen quickly, so it is important to treat it right away. If your blood sugar drops very low, you may need help from another person. Very low blood sugar can make you:

- Confused and disoriented
- Lose consciousness
- Have a seizure

What causes a **LOW** blood sugar level (hypoglycemia)?

Low blood sugar may be caused by:

- More physical activity than usual
- Not eating on time
- Eating less than you should have
- Taking too much medication
- The effects of drinking alcohol

How do I treat **LOW** blood sugar?

If you are experiencing the signs of a low blood sugar level, check your blood sugar immediately. If you don't have your meter with you, treat the symptoms anyway. It is better to be safe.

Eat or drink a fast-acting carbohydrate (15 grams):

- 15 g of glucose in the form of glucose tablets
- 15 mL (1 tablespoon) or 3 packets of sugar dissolved in water
- 150 mL (2/3 cup) of juice or regular soft drink
- 6 LifeSavers® (1 = 2.5 g of carbohydrate)
- 15 mL (1 tablespoon) of honey (do not use for children less than 1 year old)

Wait 15 minutes, then check your blood sugar again. If it is still low:

- Treat again; wait 15 minutes, check your blood sugar. Continue these steps until your blood sugar is above 4

When your blood sugar is above 4:

- If your next meal is more than one hour away, or you are going to be active, eat a snack, such as half of a sandwich or cheese and crackers (something with 15 grams of carbohydrate and a protein source)
- Wait 40 minutes after treating a low blood sugar before driving

Think about why your blood sugar went low and make the necessary changes to avoid low blood sugar again.

Make sure you always wear your MedicAlert® identification, and talk to your doctor or diabetes educator about prevention and emergency treatment for severe low blood sugar.

What is **HIGH** blood sugar?

When your fasting blood glucose (sugar in your blood) is at or above 11 mmol/L, you may:

- Be thirsty
- Urinate more often than usual, especially during the night
- Be tired

What causes **HIGH** blood sugar (hyperglycemia)?

High blood sugar can result when food, activity and medications are not balanced. High blood sugar may happen when you are sick or under stress.

What do I do if I have **HIGH** blood sugar?

Follow the treatment recommended by your doctor, diabetes educator or other member of your health-care team. If this happens often, you may need to call or see your doctor to:

- Adjust your meal plan
- Adjust your physical activity
- Adjust your medication and/or insulin



Related article: *Diabetes, Type 1 the basics, Type 2 the basics, Hypoglycemia and Staying healthy with diabetes*

**DIABETES
CANADA**

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Diabetes Canada is making the invisible epidemic of diabetes visible and urgent. Eleven million Canadians have diabetes or prediabetes. Now is the time to End Diabetes - its health impacts as well as the blame, shame and misinformation associated with it. Diabetes Canada partners with Canadians to End Diabetes through education and support services, resources for health-care professionals, advocacy to governments, schools and workplaces, and, funding research to improve treatments and find a cure.

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Hypoglycemia low blood sugar in adults

What are the signs?

Each person will have their own way of recognizing low blood sugar.

Some of the signs include:



Severity



Sweating



Trembling



Palpitations



Anxiety



Hunger



Nausea



Headache



Tingling



Disturbed sleep



Weird dreams



Weakness/
dizziness



Difficulty concentrating



Vision changes



Drowsiness



Difficulty speaking



Unconsciousness

Why does low blood sugar happen?

Have you:

- Eaten less than planned?
- Eaten later than normal?
- Taken more medication than planned?
- Been more active than planned?
- Drunk any alcohol within the past 24 hours?

Fear of "lows" is common and normal. If you are having lows, speak with your diabetes team:

- Doctor • Nurse practitioner • Pharmacist
- Nurse • Dietitian

How to take action

EAT fast-acting sugar



15 g of glucose in the form of glucose tablets



1 tablespoon (15 mL) of honey



1 tablespoon (15 mL) sugar in water



2/3 cup (150 mL) of juice or regular soft drink



15 g fast-acting sugar (e.g. 6 Life Savers® or 2 rolls Rocket Candy)



WAIT 15 minutes and CHECK



If blood sugar is **ABOVE** 4.0mmol/L **AND** next meal is **in the hour**



If blood sugar is **ABOVE** 4.0mmol/L **AND** next meal is **LONGER than 1 hour away**

If blood sugar is **BELOW** 4.0mmol/L **REPEAT steps above**



Eat ONE of:

Starch:
ex. 7 crackers OR 1 slice of bread

AND Protein:

ex. 1 piece of cheese OR 2 tablespoons of peanut butter



Are you Driving?

After treating a low, **Wait** until your blood sugar is above 5 mmol/L to start driving. Your brain might need up to 40 minutes to recover before you can safely drive again.

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