

# Living Healthy with Diabetes

REXALL RESOURCE



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Based on the Canadian Diabetes Association 2008 Clinical Practice  
Guidelines for the Prevention and Management of Diabetes in Canada

## Introduction

Living with a diagnosis of diabetes can be challenging. You may find yourself overwhelmed at times, trying to stay on top of your self-management routine and managing your condition with lifestyle changes, medication therapy and healthy eating.

By picking up this resource, you are taking a step in the right direction towards improving your health and wellness. With a variety of helpful tips and strategies, you can use this resource as a guide to assist you as you take control of your condition.

The information provided in this resource is based on the 2008 updated Clinical Practice Guidelines from the Canadian Diabetes Association. These updated guidelines are based on the latest research and trends in the area of diabetes management and are considered a trusted and valuable resource in providing direction for people living with diabetes.

You can consult this guide when you are seeking to learn more about improving your self-management strategies so that you can reach your healthcare goals. You are encouraged to monitor your condition and use the diary log to record some of your important healthcare readings, such as your A1C level (this is a blood test that reflects your average blood glucose control over a three-month period), or your total cholesterol measurement.

By taking ownership of your condition and sticking closely to your self-management routine, you can achieve your healthcare goals and enjoy an active and productive lifestyle.

## Diabetes Complications: Knowing Your Risk

Diabetes can be a serious disease leading to long-term complications to your overall health. Proper control of your blood glucose can help lower your risk and/or help to slow or even prevent the development of these complications.

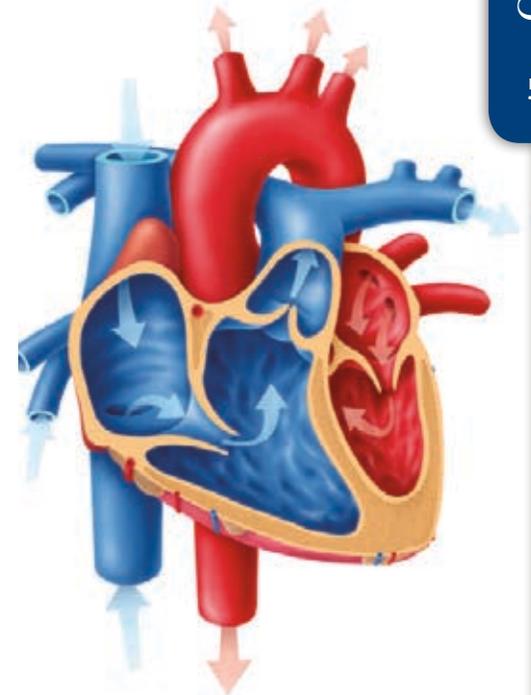
### Cardiovascular Disease (heart or blood vessel disease)

Cardiovascular disease is the leading cause of death in Canada. People with diabetes are at greater risk of developing cardiovascular disease than people without diabetes. There are two reasons for this:

- 1) Elevated blood glucose levels can damage blood vessels. They thicken and stiffen the blood vessel walls, impairing circulation.
- 2) People with diabetes tend to have high blood lipid (fat) levels. These lipids can lead to the accumulation of plaque, which can then block arteries, sometimes completely. This condition is also known as atherosclerosis (hardened arteries). Possible symptoms of cardiovascular disease that may indicate a serious problem requiring immediate medical attention include:

- Dizzy spells or nausea
- Headaches, especially at the back of your head
- Chest pain or pressure
- Shortness of breath, especially with physical activity
- Irregular or rapid heartbeats
- Numbness or weakness in an arm or leg, especially if it is located only on one side of your body
- Leg cramps (including those that may go away with rest)
- Unexplained sweating
- Swelling of legs, ankles and feet

These symptoms may also be caused by other medical conditions. Be sure to discuss them with your doctor.



The relationship between your blood glucose level and your risk for cardiovascular disease is still being studied, but it is generally understood that having high blood glucose levels for a prolonged period of time can increase your vascular-related risks. Your doctor can help you determine what a healthy blood glucose level is for your specific situation, taking into account many different factors (e.g., how long you've been diagnosed with diabetes, your age, your weight, other health conditions). The Canadian Diabetes Association recommends an A1C target of 7.0% or less for all people diagnosed with diabetes, but this target may be revised by your doctor after consideration is given to other factors. Whatever your target might be, it is important that you strive to achieve it and monitor your blood glucose level as required in order to make any necessary adjustments.

To ensure that your cardiovascular risk factors are minimized, it is recommended that you are assessed periodically by your doctor. This assessment for cardiovascular risk factors can include:

- A history of your cardiovascular health (family history, chest pain)
- Blood pressure
- Duration of diabetes
- Whether you are considered obese
- Blood glucose control
- A test using an electrocardiogram (ECG)
- Your lipid profile, including cholesterol and triglycerides



Cardiovascular risk factors may be reduced through lifestyle changes, such as increasing your activity level and consuming a healthier diet that limits sources of harmful fats. If your doctor has determined that you are at high risk for cardiovascular complications, you may be advised to take further action to minimize your risk. Some possible strategies for people with diabetes include:

- Achieving and maintaining a healthy body weight through increased exercise and eating well
- Improving your blood glucose control
- Quitting smoking
- Improving your blood pressure control (your blood pressure should be measured at each check-up)

People diagnosed with diabetes who are considered to be at high risk for a cardiovascular event (e.g., over 45 years old for men and over 50 for women; more than 15 years' duration of diabetes; high blood pressure) may also require additional therapy to reduce their risk. This may involve medications that can help keep your blood running smoothly, or those that reduce the build-up of unhealthy fats in your bloodstream. Some types of medications that may be prescribed to help you minimize your cardiovascular risk include:

- Angiotensin-converting enzyme (ACE) inhibitors
- Angiotensin II antagonist (ARB)
- Acetylsalicylic acid (ASA) or other anti-platelet medication
- Lipid-modifying medications such as fibrates, cholesterol absorption inhibitors, or statins

## Eye Disease

As a person with diabetes, you have a greater-than-normal risk of eye disease including cataracts, glaucoma, macular edema and diabetic retinopathy. Retinopathy is a type of eye disease affecting the retina, an important membrane at the back of the eye that receives images and allows them to form properly. If retinopathy progresses, it can ultimately lead to blindness, which is why eye screening tests are so important for people with diabetes.

If you are diagnosed with type 1 diabetes and you're over 15 years old, it is recommended that you be screened for retinopathy within five years of your initial diagnosis. If you are a person with type 2 diabetes, retinopathy screening should begin at diagnosis. Re-screening will depend on whether retinopathy is present and how far it may have advanced, but generally, people with type 1 and type 2 diabetes will be re-screened for eye problems once yearly.

## Nephropathy (kidney disorder)

Diabetic nephropathy (also known as chronic kidney disease or CKD) is a kidney disorder that is characterized by protein leaking into the urine and gradual worsening of your kidney function. Nearly half of all people with diabetes have chronic kidney disease. High blood pressure often accompanies diabetic nephropathy and these are both considered risk factors for the development of cardiovascular disease.

### Symptoms of nephropathy:

People with nephropathy may not have any symptoms. In fact, some people who have not yet been diagnosed with type 2 diabetes already have advanced nephropathy by the time they are diagnosed. This is why screening for nephropathy is so important. During the early stages of nephropathy, small amounts of a blood protein called albumin can be detected in the urine, which indicates a condition known as microalbuminuria.

## Diabetic Neuropathy (nerve damage)

Approximately 40-50% of people with diabetes will develop temporary or permanent damage to nerve tissue within 10 years of a diagnosis of diabetes. Nerve damage is caused by decreased blood flow, high blood glucose levels, high triglyceride levels, smoking, high blood pressure and a high body mass index (an indication of whether you are overweight). It is more likely to develop and advance if blood glucose levels are poorly controlled.

### Symptoms of neuropathy:

- Numbness, tingling, aching or throbbing in the arms, legs, hands or feet
- Cuts, bruises, calluses or injuries to feet or hands that aren't painful and take a long time to heal
- Foot sores or infections
- Greater sensitivity of the skin
- Sudden loss of balance or light-headedness
- Problems controlling bladder function
- Frequent bladder infections
- Digestive problems, including nausea, bloating, vomiting, constipation and diarrhea
- Excessive sweating at night or while eating
- Sexual dysfunction (e.g. erectile dysfunction)

## Preventing and Managing Diabetes Complications

Since many factors other than diabetes contribute to the risk of complications, controlling these factors can help to reduce your risk and slow their progression. Here are some things you can do to control your risk:

**Blood glucose:** Know your target blood glucose level and maintain your blood glucose level within your ideal normal range. For most people with diabetes, your target will be an A1C of 7.0% or less. This should be measured every three months by your doctor to ensure that you are meeting this target. To help you achieve this target, it is recommended that you keep your daily blood glucose readings in a healthy range: before you eat, this range will ideally be between 4.0 and 7.0 mmol/L. Two hours after you eat, you will be striving for a range between 5.0 and 10 mmol/L. If you are consistently at your target, your doctor may reduce the frequency of the A1C measurement to once every six months.

**Blood pressure:** Strive to control your blood pressure and check it as indicated by your healthcare professionals. You should have your blood pressure checked at each of your medical appointments. The usual target blood pressure for someone with diabetes is less than 130/80 mmHg (2008 Canadian Hypertension Recommendations). Having high blood pressure is a modifiable risk factor – it can be lowered through changes to your lifestyle, such as reducing your consumption of salt, quitting smoking and/or minimizing or moderating your consumption of alcohol. If you are unable to achieve a blood pressure reading of less than 130/80, your doctor may prescribe anti-hypertensive medication(s) to help get your blood pressure to a healthier level.

**Cholesterol and other blood lipid levels:** Diet and nutrition are important to a healthy cardiovascular system and therefore to overall health. The general target lipid values for someone with diabetes are LDL < 2.0 mmol/L, triglycerides < 1.5 mmol/L, total cholesterol-to-HDL ratio < 4.0. For screening, all people with diabetes should have their fasting (before eating) lipid levels calculated at the time of diagnosis and then every one to three years, depending on your particular situation. If you have been diagnosed with dyslipidemia, more frequent testing might be called for by your healthcare professional. If lifestyle changes do not help to get you closer to these target numbers, medication may be prescribed, often in combination.

**Other changes in your lifestyle:** Limiting your alcohol and salt intake, increasing your activity level where appropriate, quitting smoking and achieving and maintaining a healthy body weight.

## Regular screening:

**Eyes:** Problems may also arise without causing symptoms or pain or affecting your vision, so it is important to have an ophthalmologist (medical eye specialist) or optometrist test your vision once a year, or more often if you have already developed any health conditions related to your eyes.

**Kidney disease:** Have your urine tested and report any symptoms to your doctor as soon as you notice them. If you are an adult who has been diagnosed with type 1 diabetes for more than five years, you should be screened every year. For people with type 2 diabetes, screening for CKD should occur at diagnosis and on a yearly basis from that point onwards. For people who have already been diagnosed with both diabetes and CKD, a referral to a specialist may be required to prevent any further loss of kidney function.

**Neuropathy and circulation:** If you notice any of the symptoms of neuropathy listed previously, you are advised to tell your doctor as soon as you notice them. Ensure that you inspect your feet daily (see the Foot Care section of this booklet for more information).

## A note about blood glucose levels:

### Low blood glucose emergencies (hypoglycemia)

Be sure to learn the symptoms of low blood glucose (i.e., lower than 4 mmol/L), which is a particular concern for people with type 1 diabetes who use insulin or those patients with type 2 diabetes who take oral medication that causes the body to produce more insulin or who use insulin.

#### The signs and symptoms of low blood glucose (hypoglycemia) include:

- Nervousness or feeling shaky
- Sweating, headache or weakness
- Unusual hunger
- Confusion or disorientation
- A sense of numbness or tingling on your tongue or lips

There are many reasons why your blood glucose level is too low and some common causes include:

- Consuming alcohol
- Engaging in more physical activity than you are used to
- Not eating on time or missing a scheduled meal
- Eating less than you normally do

If you are experiencing any of the symptoms of low blood glucose, it is important that you test your level right away and take the necessary steps to get your blood glucose back into a safer range:

Eat or drink a fast-acting source of carbohydrate (15 grams), preferably in the form of glucose or sucrose tablets. If you do not have tablets, you can use one of: 15 mL, 3 teaspoons or 3 packets of table sugar dissolved in water; 175 mL of juice or a regular soft drink; 6 Lifesavers® candies, chewed and swallowed; or 15 mL of honey.

Once you have consumed the source of carbohydrate, wait 15 minutes and then test your blood glucose level again. If your level is still below 4 mmol/L, repeat the same process until the level is above 4 mmol/L.

Once your level is into a safer range, you will want to consider your next meal or snack. If it is more than an hour away, or if you plan on doing physical activity, eat a snack that contains 15 grams of carbohydrate and a source of protein, such as cheese or peanut butter with crackers. Protein and carbohydrates can help to prevent your blood glucose from dropping over the next couple of hours.

### High blood glucose emergencies (hyperglycemia)

People with diabetes have to be careful to monitor their blood glucose levels to ensure they do not get too high. Hyperglycemia (when your blood glucose level is very high, generally higher than 11 mmol/L) can occur when your food-energy balance is a bit off, possibly due to a lack of activity, or perhaps because you are feeling ill.

Very high blood sugar can lead to serious complications, such as diabetic ketoacidosis, which is considered a medical emergency that should be treated immediately.

#### Some symptoms of hyperglycemia are:

- Extreme thirst or hunger
- Urinating more often than is usual
- Feeling very tired

If you are experiencing any of these symptoms, make sure you test your blood glucose right away and contact your healthcare provider, as you may have to make some adjustments to your regimen, such as adjusting your medication, insulin, and/or meal plan, or increasing your activity level.

# Blood Glucose Monitoring

## Why is it important to monitor your blood glucose?

Monitoring your blood glucose is an essential part of managing diabetes. It has been shown that paying close and regular attention to your daily blood glucose can help you achieve and maintain an ideal glycemic number for your individual situation. The 2008 Clinical Practice Guidelines now recommend that all people with diabetes should be taught how to self-manage the condition, including self-monitoring of blood glucose (SMBG). Regular consultation with a diabetes educator can be helpful in learning how to get the most from SMBG. Your Rexall family pharmacist is also a useful resource to learn more about SMBG, offering pointers and tips that can assist you in understanding what your numbers mean.

Self-monitoring allows you to see how your body handles food, exercise, medication, stress, illness and changes in body weight. You can use this information to make large-scale decisions, such as whether to continue with a particular workout program, or small decisions, such as whether to eat a snack at a given time. It also tells you if your blood glucose level is too high or too low, both of which are conditions that can pose serious threats to your health. Some meters are programmed to sound an alarm when glucose readings are too high or too low. The availability of continuous glucose monitors is another useful option for people with diabetes.

## When should I test my blood glucose?

You and your doctor will determine the number of times a day to check your blood glucose, depending on the treatment plan prescribed for you. For those people with diabetes who use insulin, SMBG is considered an essential part of management and should be performed at a minimum of three times daily, including both preprandial (before eating) and postprandial (after eating) measurements. For people with type 2 diabetes who use once-daily insulin in addition to medication, testing blood glucose at least once daily is recommended, but there may be benefits to testing more often (e.g., 3-4 times daily). Vary the time of testing so that you get a complete picture of how your body uses its energy, both before you eat and after you eat.

If you are feeling ill, it is important that you check your blood glucose frequently and around the clock, even as much as once every two to four hours, to be sure that you are not experiencing blood glucose that is too high or too low.



## How do I test my blood glucose at home?

Blood glucose monitors are available from the pharmacy for home use. Ask your diabetes educator or Rexall family pharmacist to help you select a meter that is right for you. There are many meters available that offer handy features and technical tools to help you better understand what the readings mean. For example, some meters can be connected to a personal computer and will automatically provide an average of a number of your previous readings. These can then be printed out and discussed when you attend your next appointment with a healthcare professional.



## Useful Tips

- Test your monitor frequently for accuracy.
- Take the meter with you to the lab or to the doctor's office to compare blood glucose results taken at the same time. This should be done at least yearly, or more often if your blood glucose results don't seem to agree with readings from your doctor's blood glucose meter. This is done by performing a blood glucose test with your meter within 5 minutes of the lab taking your blood for a blood glucose test. Comparing your blood glucose readings with your A1C measurement can be helpful to understand what these two numbers mean to your self-management routine. For example, if you are regularly on-target with your blood glucose readings but your A1C is above-target, this could mean that you are obtaining incorrect readings from your meter (this could be related to a number of things, such as the meter's calibration or the time at which you are doing most of your testing).
- Check the expiration dates written on the side of your test strips and control solution.
- Some people with diabetes are concerned about painful pricks from the lancet when they are taking a small sample of blood for testing. You can minimize pain by varying the fingertips that you prick, or by using the sides of your fingertip, where there are more blood vessels and fewer nerve endings. You can also get the blood flowing to your fingertips by gently massaging the finger or by letting your arm hang at your side for a moment before you test.

Most blood glucose meters only require a very small amount of blood to get an accurate reading. Before you prick your fingertip, wash your hands with warm water and soap (not alcohol) and try not to lance too deeply. Most lancing devices have a depth adjustment that will allow you to alter how far the lancet goes into the skin. Making an adjustment can alter the level of discomfort.

Lancets are now made very thin for comfort but that means they dull with a single use. Use a new lancet each time you test your blood glucose – do not re-use lancets.

## Blood glucose readings: what do they mean?

The reason for monitoring your blood glucose is to provide you with feedback to make decisions about your self-management and to help you understand why your blood glucose changes based on, for example, food intake, activity levels, stress, or illness. Although target blood glucose levels may vary amongst individuals (depending on factors such as age, size, duration of diabetes, other risk factors), in most cases the range for people with diabetes is between 4 mmol/L to 7 mmol/L before meals (fasting plasma glucose) and between 5 mmol/L and 10 mmol/L within two hours after meals (2-hour postprandial glucose). However, if your A1C is above the target 7%, the recommended range for 2-hours post-meals would be between 5 mmol/L and 8 mmol/L.

# Medications for Lowering Your Blood Glucose

Currently, there are many effective treatments available to help you manage diabetes. They work in different ways, but they all serve to regulate your blood glucose levels.

For people living with type 1 diabetes, using insulin is an essential component to manage the condition. Type 2 diabetes is generally managed by healthy eating, exercise and medications taken by mouth. Sometimes, people living with type 2 diabetes will need insulin to better control their blood glucose.

## About Insulin

Insulin is a natural hormone made in your pancreas (an organ that produces enzymes and hormones). Insulin helps to keep your blood glucose in the "normal" range by moving glucose from your blood into your body's cells. If your body cannot generate its own natural insulin or the insulin it does produce is not used effectively by your body, it may be necessary to use insulin in order to achieve and maintain your target glucose levels.

Think of insulin as a hormonal key that unlocks the body's cellular ability to use food energy. Insulin allows your muscles and other tissues to absorb and use glucose in the blood. Most foods, once ingested, are converted into glucose, a type of sugar that the body converts into energy. Without insulin, we cannot draw the energy we need from food.





### Insulin can be injected with a needle or a pen, or it can be administered by a pump.

The use of insulin pumps (called continuous subcutaneous insulin infusion) has gained in popularity in recent years because of its perceived simplicity and convenience. You will require some training on how to use it and areas to watch out for, such as potential infections at the infusion site, where to wear it, correctly programming it, and maintaining it. Ask your doctor about this form of insulin delivery to determine if it is right for you.

Insulin is usually injected where there is a layer of fat, free of large blood vessels and major nerves, such as the upper arms, abdomen, thighs and buttocks.

When kept in the refrigerator, unopened vials of insulin can be used until the expiration date on the package or vial. Both open and unopened bottles can be stored at room temperature for up to one month. Remember to keep insulin vials away from direct sunlight or extremes in temperature.

The following chart† provides an overview of the different types of insulin and their typical time of action.

Insulin type	Onset of action	Peak of action	Duration of action
Rapid-acting insulin analogues (clear) Insulin aspart (NovoRapid®) Insulin lispro (Humalog®) Insulin glulisine (Apidra®)	10 - 15 min 10 - 15 min 10 - 15 min	1 - 1.5 hr 1 - 2 hr 1 - 1.5 hr	3 - 5 hr 3.5 - 4.75 hr 3 - 5 hr
Short-acting insulins (clear) Humulin-R® Novolin® ge Toronto	30 min	30 min	30 min
Intermediate-acting (cloudy) Humulin-N® Novolin® ge NPH	1 - 3 hr	5 - 8 hr	Up to 18 hr
Long-acting basal insulin analogues (clear) Insulin detemir (Levemir®) Insulin glargine (Lantus®)	90 min	N/A	Up to 24 hr (detemir 16-24 hr, glargine 24 hr)
Premixed regular insulin – NPH (cloudy) Humulin® 30/70 Novolin® ge 30/70, 40/60, 50/50			A single vial or cartridge contains a fixed ratio of insulin (a percentage of rapid-acting or short-acting insulin to a percentage of intermediate-acting insulin)
Premixed insulin analogues (cloudy) Biphasic insulin aspart (NovoMix® 30) Insulin lispro/lispro protamine (Humalog® Mix25 and Mix5)			A single vial or cartridge contains a fixed ratio of insulin (a percentage of rapid-acting or short-acting insulin to a percentage of intermediate-acting insulin)

†Chart adapted from the Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada.

## Medications Taken By Mouth

For people with type 2 diabetes who are unable to reach their targeted glucose level within two to three months of lifestyle management, oral antidiabetic medications or insulin may be prescribed in order to promote better glucose control. In addition to insulin, there are several different classes of prescription medications that are taken orally to treat type 2 diabetes. The following chart is a brief overview of these medications.

Class of Drug	Examples	How it Works	Notes
Biguanides	Metformin, Glucophage®	Works to improve insulin sensitivity in muscle and reduces glucose output from liver	Causes glucose to be used more effectively and decreases glucose production in the liver
Insulin secretagogues	Glyburide, Gliclazide, Repaglinide, Nateglinide	Works at the pancreas and stimulates insulin production	Often the first medication used; can cause low blood glucose so careful attention must be paid to the timing of food intake
Alpha-glucosidase inhibitors	Acarbose	Works on enzymes in the digestive system to slow rate of absorption of carbohydrate and glucose	Often used in combination with other medication

### Important reminders:

As with most medications, there are advantages and disadvantages and individual results will vary. There can also be side effects. Ensure that if you have been prescribed medication to help control your condition, you take it as prescribed and you do not switch or stop taking your medication. Your healthcare provider(s) can help you determine a drug therapy that works for you.

If your doctor indicates that your medication therapy might need to be more aggressive in order to lower risk factors and reduce blood glucose levels, he/

Class of Drug	Examples	How it Works	Notes
Thiazolidinediones (TZDs)	Rosiglitazone, Pioglitazone	Insulin sensitizer	Concern over cardiovascular risks and certain side effects means that this medication should only be used in select patients
Incretin agent	Sitagliptin	Inhibits activity of an enzyme that in turn inactivates hormone activity, with the result of increased insulin release and decreased glucagon secretion	Newer medication; may decrease fasting and postprandial glucose levels
Antiobesity agents	Orlistat, Sibutramine	Works on enzymes in the digestive system to slow rate of absorption of carbohydrate and glucose	Often used in combination with other medication

she may prescribe several oral medications at once, known as combination therapy. This can include the use of insulin for people with type 2 diabetes, or combining two or more oral antihyperglycemic agents with complementary ways of working to control your blood glucose and/or other health risk factors.

Your healthcare provider can advise you on a therapeutic approach that will work best for you, considering all of your individual factors.

# Sick Day Planning

People living with diabetes are encouraged to take special care of their health during times of illness. When you are feeling sick, it is critical that you pay close attention to your blood glucose and that you monitor this level frequently, as often as once every two hours. You may find during sick days that your blood glucose fluctuates more than is usual – you can discuss with your healthcare provider a plan of action for sick days, including what over-the-counter products (e.g., cold and flu relief, pain management, nausea) may be safe and appropriate for you to take to ease some of your symptoms. Your Rexall family pharmacist can help you choose the right medication, tell you the best times to take it, and inform you about any possible side effects or interactions with any of your usual medications. It is important to talk with your pharmacist before buying non-prescription medications.

Consider the following information as it relates to your diabetes self-management and sick day planning:

- Get a flu shot annually.
- Make sure you test your blood glucose every two to four hours. If you notice that your levels are very high or very low, you may need to talk to your doctor about how to adjust your self-management plan during times of illness.
- If you are able to eat, follow your standard meal plan and try to drink extra sugar-free fluids and water.
- You should continue to take your medication and/or insulin, even if you do not feel well enough to eat.
- If you are unable to eat in accordance with your regular meal plan, you can still give your body some nutrition by consuming carbohydrates in the form of liquid, such as unsweetened fruit juice, apple sauce, or fruit-flavoured yogurt.

## Try to give your body the rest that it needs to recuperate.

- If you are vomiting, it may be advisable to contact your healthcare provider, especially if you vomit twice or more within a 12-hour period. Even if you are vomiting, it is still recommended that you take your medication(s) as prescribed.
- People with type 1 diabetes are advised to perform ketone testing if your blood glucose is very high during periods of illness, in order to prevent the development of diabetic ketoacidosis (DKA), a very serious condition where the pH balance of your blood is dangerously low. Testing ketones can be

done using a urine or a blood test – blood testing may be preferred due to the possibility that it can detect abnormalities earlier. Ask your doctor about how to test your ketones and when it is recommended. DKA is treated in the hospital by restoring your body's metabolic balance with the administration of fluids, electrolytes, insulin and glucose.

- Avoid using high doses of acetylsalicylic acid (Aspirin™) or ASA products unless you have been advised by your doctor to take this medication as an anti-platelet therapy. Taking more than 10 regular-strength tablets daily can result in low blood glucose, especially if you are taking medication to control diabetes.

### If you are having a difficult time eating, consider having on hand some fluids and foods that will give you a 10-15 gram source of carbohydrate:

1 double-stick popsicle	1 slice dry toast (not light bread)
1 cup Gatorade®	1/2 cup cooked cereal
1 cup milk	1/3 cup frozen yogurt
1 cup soup	1/2 cup regular ice cream
1/2 cup fruit juice	1/2 cup sugar-free pudding
1/2 cup regular soft drink (not diet)	1/2 cup regular (not sugar-free) Jell-O®
6 saltines	1/2 cup custard
5 vanilla wafers	1/2 cup mashed potatoes
4 Lifesavers®	1/4 cup sherbet
3 graham crackers	1/4 cup regular pudding

## Over the counter treatment of common ailments

In addition to sick day planning strategies, from time to time you may find it necessary to consider over-the-counter healthcare products to help you relieve the symptoms of some common conditions. Make sure that you talk to the pharmacist before you take any over-the-counter products to treat an illness. Some products contain ingredients that can affect your blood glucose levels. It is important to read the labels of these products to determine if they have sugar and/or alcohol. An over-the-counter product that contains a small amount of sugar may be acceptable, but it is always a good idea to double-check with your Rexall family pharmacist before you take over-the-counter products.

## Heartburn

Occasional heartburn can be treated with non-prescription products, but if this is a persistent problem accompanied by abdominal pain, you should visit your doctor.

## Diarrhea

Be sure to replace lost fluids to avoid the risk of dehydration. Medications such as loperamide, kaolin and attapulgitte are safe for short-term use, but if diarrhea is severe or persists for several days, contact your doctor.

## Constipation

If you suffer from constipation, try changing your diet to add more fibre and water. Talk to your Rexall family pharmacist when selecting a product.

## Cough

If you have a deep cough and congestion, drink more water to thin the phlegm. Choose a sugar-free and alcohol-free cough syrup. If you are considering using a decongestant, be aware that some can have the effect of raising your blood glucose level.

## Motion Sickness/Nausea

Dimenhydrinate does not usually affect blood glucose and can be taken safely for motion sickness or nausea. However, it does cause drowsiness and may be a problem for people with other medical conditions, so be sure not to drive or operate any machinery if you do not know how this medication affects you.

## Runny Nose and Allergies

Antihistamines, which relieve allergy symptoms such as sneezing, runny nose and itchy eyes, have no effect on blood glucose levels and can be taken safely by people with diabetes. Decongestants may potentially cause problems with blood glucose control. Check with your doctor or pharmacist first.

## Sore Throat

Always choose sugar-free lozenges. They may be sweetened with aspartame, sorbitol, or xylitol, so use them in moderation – limit your intake to four to six lozenges per day. You can also relieve a sore throat by gargling with salt water. Try dissolving one-quarter teaspoonful (1 mL) of salt in one full cup of water (250 mL). There are products available that are made specifically for people with diabetes.

## Foot and Skin Problems

Take special care when treating foot problems. Your doctor should treat any change in skin colour or plantar warts. Never use corn or callus pads containing strong chemicals without consulting your doctor. Epsom salts dissolved in warm water provide excellent relief for tired feet. Look for the information on caring for your feet that appears in this resource.

## Vitamins and Minerals

Multivitamins and mineral supplements are generally safe to take, but avoid flavoured vitamins because they may contain sugar. If testing urine for glucose, remember that an intake of more than 500 mg of vitamin C can affect the test results (most people with diabetes no longer use urine testing for glucose – self-monitoring of small blood samples has been shown to provide more reliable results). You should always discuss with your doctor any vitamin and mineral supplements you may be considering, especially if you are taking other medications.



## Diabetes and Complementary/Alternative Therapies:

### What Should You Know?

Being proactive with your health is to be encouraged. With a variety of healthcare information at your disposal, it can be hard to determine what is effective and what is unproven.

Many people with diabetes use alternative or complementary therapies to manage their condition. Although many complementary therapies can appear harmless, those that promise the world (such as those that promise to “cure” diabetes) can be misleading.

In fact, some seemingly beneficial products that are billed as healthy supplements can actually be harmful to take for people with diabetes (e.g. certain supplements can raise or lower your blood glucose level).

Before you take any additional products, whether they are over-the-counter, natural, vitamins, or nutritional, make sure that you discuss with a healthcare provider how they might interact with your diabetes self-management plan. Never begin a supplemental therapy without first talking to your doctor, who can advise you on the appropriateness of complementary therapy.

Complementary or alternative medicine is currently not recommended for people with diabetes due to a lack of evidence that supports its use in diabetes therapy.

In some cases, you may be advised to supplement your nutrition with certain products that can increase your vitamin or mineral intake. For example, Health Canada has recently recommended that all Canadian adults over age 50 take a daily 10 µg (400 IU) supplement of vitamin D.

## Making Sense of Nutrition:

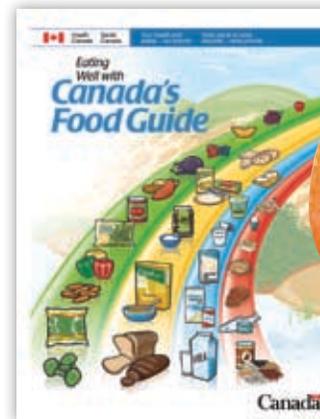
### What the Guidelines Say

“Guidelines for the Nutritional Management of Diabetes Mellitus in the New Millennium” is a nutritional guideline that is derived from Eating Well with Canada’s Food Guide and Beyond the Basics: Canada’s Guidelines for Healthy Eating. Both Health Canada and the Canadian Diabetes Association have published helpful resources that provide recommendations on healthy, nutritious eating for Canadians of different ages.

Some highlights of Eating Well with Canada’s Food Guide include:

- Enjoy a variety of foods from the four food groups: Vegetables and Fruit, Grain Products, Milk and Alternatives, Meat and Alternatives.
- Choose lower-fat foods more often.
- Choose whole grain and enriched products more often.
- Choose dark-green and orange vegetables (e.g., asparagus, arugula, broccoli, Brussels sprouts, collards, green peas, kale, spinach, carrots, sweet potatoes, winter squash) and orange fruit (e.g., apricots, cantaloupe, mango and papaya) more often.
- Choose leaner meats, poultry and fish as well as dried peas, beans and lentils more often.

People with diabetes should continue to enjoy the foods they prefer, in moderation and with appropriate portions. Eating a variety of foods from each of the food groups ensures a healthy mix of vitamins and minerals that are important for good health.



## Timing of food intake and portions

- Eat three meals per day at regular times and space meals between four and six hours apart. You may benefit from a healthy snack.
- Consistency in meal patterns may help control blood glucose and weight. Inclusion of snacks as part of a meal plan should be individualized based on metabolic control and treatment regimen, and be balanced against the potential risk of weight gain. While small frequent meals may reduce swings in blood glucose levels, frequent food intake may also lead to excess energy intake.
- Be aware of your portion sizes. Learn what serving sizes are suitable for you and choose portion sizes that help you reach or maintain a healthy weight.

## Look for the right type of food

- Fill ½ your plate with vegetables, ¼ plate with protein and ¼ plate with grains and starches.
- Have balanced meals with carbohydrate, protein and a small amount of fat.
- Choose starchy foods at each meal such as bread, cereal, pasta, rice or potato.
- Eat more high-fibre foods (whole grain breads and cereals, lentils, dried beans and peas, brown rice, vegetables and fruits).
- High-fibre foods can help you feel full and may also lower blood glucose and cholesterol levels. Most high-fibre foods also have a low Glycemic Index.

- Include small amounts of protein in your meal plan each day, such as chicken, fish, meat, egg, peanut butter or cheese.
- Have a glass of milk and a piece of fruit to complete your meal.
- Have a small amount of unsaturated fat (2-3 tbsps or 30-45 mL) each day. Choose non-hydrogenated margarine, oil, salad dressing and mayonnaise.
- Choose lower-fat dairy products, leaner meats and foods prepared with little or no fat.

## Limiting your intake

- Limit sugars and sweets such as sugar, regular pop, desserts, candies, jam and honey.
- Sucrose intake of up to 10% of total daily energy is acceptable as there is no evidence this has any negative effect on glycemic control. Intake greater than 10% may increase blood glucose and triglyceride levels in some individuals.
- Limit intake of salts, alcohol and caffeine (caffeine may have an impact on your blood glucose, although it is not clear that it affects everyone the same way).
- Limit the amount of high-fat food you eat such as fried foods, chips and pastries. Use added fats (such as dressings or gravies) in small amounts.

A major goal of diabetes management is to improve blood glucose control by balancing food intake with other lifestyle measures and medications.

## Recommended Daily Servings Of Food Groups

Age and Gender	Vegetables and Fruit	Grain Products	Milk and Alternatives	Meat and Alternatives
<b>Examples of a Single Serving</b>	Fresh, frozen or canned vegetables (125 mL); 100% juice (125 mL)	Cooked rice, bulgur or quinoa (125 mL)	Fortified soy beverage (250 mL); yogurt (175 g)	Cooked legumes (175 mL); shelled nuts and seeds (60 mL)
<b>Children</b>				
Girls and Boys				
Age 2 - 3	4	3	2	1
Age 4 - 8	5	4	2	1
Age 9 - 13	6	6	3 - 4	1 - 2
<b>Teens</b>				
Age 14 -18				
Females	7	6	3 - 4	2
Males	8	7	3 - 4	3
<b>Adults</b>				
Age 19-50				
Females	7 - 8	6 - 7	2	2
Males	8 - 10	8	2	3
Age 51+				
Females	7	6	3	2
Males	7	7	3	3

People with diabetes are encouraged to follow Eating Well with **Canada's Food Guide**, which is a great reference to help you choose the foods that suit your needs. This resource is available through Health Canada's web site at: <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>. You can also obtain a copy by calling 1-800-622-6232.

## NUTRITION GUIDELINES

- Carbohydrates**
- Carbohydrates from whole grain products, legumes, vegetables, fruits, and dairy products should provide 45–60% of daily energy needs.
  - People who use insulin should adjust insulin based on the carbohydrate content of their meals. This will involve learning how to count intake of carbohydrates to match insulin.
  - Adding foods that are high in carbohydrates, low in fat and high in fibre (such as legumes, barley and pasta) may be helpful in optimizing blood glucose control. If you are counting carbohydrates, it is important to subtract the amount of fibre from total carbohydrates consumed.
  - Replacing high-Glycemic Index carbohydrates with low-Glycemic Index carbohydrates may lead to improvements in blood glucose control.

- Sugars**
- Naturally occurring and added sugars should be included as part of the daily carbohydrate allowance.
  - For most people with diabetes, up to 10% of their daily energy can come from added sugars (such as table sugar and sugar sweetened products) without affecting blood glucose or lipid control. However, sucrose intake of more than 10% of your total daily energy intake may increase your blood glucose and triglycerides. Ask your dietitian to help you determine how to obtain this amount in your diet.

- Sweeteners**
- If you are considering adding sweeteners to your food, speak to your dietitian or Rexall family pharmacist about various options, and about how they may affect your blood glucose and lipid levels.
  - Sweeteners may be used moderately as part of a well balanced diet.
  - Use of saccharin and cyclamate is not recommended during pregnancy and lactation.
  - Aspartame should not be used by people with phenylketonuria.

- Fibre**
- A total dietary fibre intake of at least 25–50 g per day from a variety of sources (including soluble fibre) is recommended for adults. There is evidence that a high fibre diet can help you reduce certain health risk factors, such as high cholesterol.

### Fibre Continued

- For children, the usual recommendation for daily fibre intake was equal to their age plus 5 (e.g., a 5-year-old child should eat 10 grams of fibre daily). However, some feel that this is still not enough fibre. Some general nutritional guidelines for fibre and children are as follows:

<b>1 to 3 year-olds:</b>	19 g of fibre each day
<b>4 to 8 year-olds:</b>	25 g of fibre each day
<b>9 to 13 year-old girls:</b>	26 g of fibre each day
<b>9 to 13 year-old boys:</b>	31 g of fibre each day
<b>14 to 18 year-old girls:</b>	26 g of fibre each day
<b>14 to 18 year-old boys:</b>	38 g of fibre each day

### Protein

- The recommended daily intake of protein is based on the person's body weight, and should be at least 0.86 g per kg of body weight per day.
- Protein should provide 15-20% of daily energy needs.
- Vegetable protein should be considered as an alternative to animal protein for lowering cholesterol and managing kidney disease.

### Fats

- High-fat diets can affect glucose control, and increase the risk of obesity, high cholesterol and heart disease.
- A maximum total daily intake of fats is 35% of the person's daily energy needs.
- Saturated fats: maximum limit is 7% of daily energy needs.
- Limit polyunsaturated fat to less than 10% of daily energy intake.
- Try using monosaturated fats such as plant oils (e.g., peanut, olive and canola oils) where possible.
- Cut back on processed foods containing saturated fats and trans-fatty acids (e.g., butter, margarine, fast foods, store bought pastries).
- Eat foods rich in omega-3 fatty acids (e.g. salmon, mackerel) at least once a week.

### Vitamins & Minerals

- Most people can get the vitamins and minerals they need from a well-balanced diet.
- Regular use of vitamin or mineral supplements is not recommended, except in cases of inadequate food intake or other special needs. Talk to your doctor or pharmacist to determine whether or not you should be taking any supplements.

## A note about the Glycemic Index (GI):

When choosing carbohydrates, it is helpful to consider the Glycemic Index. This is a classification of carbohydrate foods according to their effect on blood sugar levels.

Foods with a high GI such as white bread and refined breakfast cereals are digested and absorbed quickly, causing a rapid increase in blood sugar and insulin levels.

Foods with a low GI such as pumpernickel bread, multi-grain and whole grain rye bread, oatmeal, oat bran, All-Bran® barley, sweet potato, legumes, apples, pears, yogurt and converted rice are digested and absorbed slowly, producing more gradual rises in blood sugar and insulin levels.

Choosing the lower GI foods helps moderate blood sugar levels and may help regulate appetite and weight. These foods are generally higher in fibre, lower in fat and nutrient rich – all important elements when it comes to both health and weight.

There are a number of factors that decide what the GI of a food will be. These include:

- **How a food is prepared (cooking can alter the GI).**
- **How long a food is cooked (overcooked vegetables digest more rapidly than undercooked, al dente).**
- **The degree of processing.**
- **The form a food is in (juice raises blood sugar more quickly than fresh fruit).**
- **Food combinations can also make a difference. For example, when you put butter on your baked potatoes, the fat slows digestion and alters the GI.**

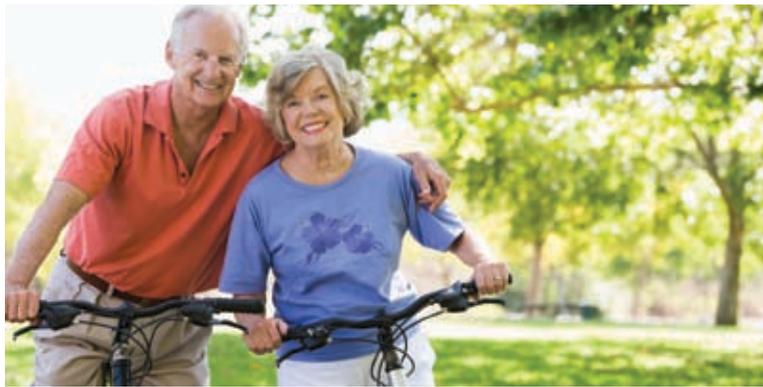


# Diabetes and Exercise

## Why should I exercise?

Regular physical activity can help you control your blood glucose, achieve a healthy weight and minimize your risk of developing diabetes complications. Moderate to high levels of physical activity are associated with reductions in complications. If you have been given the green light by your healthcare provider to pursue an exercise regimen, you can start slowly and set reasonable goals for yourself to achieve. Be aware that depending on your individual situation, certain types of exercise may not be appropriate (for example, if you have certain cardiovascular risk factors, high-impact cardio exercise might not be appropriate).

The Canadian Diabetes Association recommends increasing your activity levels, especially if you are obese or have other health risks that would benefit from more exercise. Generally, 150 minutes per week of low-to-moderate intensity exercise (such as brisk walking or swimming) is recommended for most people with diabetes. For people with diabetes without contraindications, resistance training using weights three times a week is encouraged.



## What should I know and do before I start?

- Consult with your doctor to see if there is any reason why you shouldn't exercise.
- It is a good idea to check your blood glucose immediately before and after exercising. If you take insulin, you should keep monitoring your blood glucose for up to 12 hours after exercising.
- Usually blood glucose levels go down with exercise. However, after short, brief periods of intense exercise such as competitive track and field or competitive basketball, the body may increase blood glucose production causing levels to rise.

- In case of an emergency involving low blood sugar, carry some sources of fast-acting glucose such as glucose or sucrose tablets containing 15 g of carbohydrate (fast-acting glucose tabs are the preferred choice). These are available at locations where you usually buy your diabetes supplies.
- Keep a diary and record your blood glucose levels and how you feel. After a few weeks, you'll see how your body responds to physical activity.
- Examine your feet before and after exercise. Look for blisters or reddened areas on your feet. If you notice any cuts, sores or pain, visit your doctor.
- Avoid exercising during extreme weather conditions such as sub-zero temperatures or high humidity. These conditions can cause added stress to your lungs and heart.

## What should I keep handy in my gym bag?

- Keep a snack in your gym bag to prevent your blood glucose from dropping too far. Add glucose or sucrose tablets containing 15 g of carbohydrate to be prepared should your blood glucose drop too low. Be sure to store an extra bottle of fluid in case you need it. It is important to stay well-hydrated when you are exercising.
- If you jog or exercise away from home, don't forget to carry your medical identification bracelet or card with you.
- Remember to buy running shoes that fit and are comfortable. Cotton socks should be worn. Check the insides of your shoes and replace them regularly.

## Tips for a successful exercise program

- Develop a plan.
- Keep it simple and fun.
- Go at your own pace and set reasonable short-term goals.
- Look into purchasing a pedometer to track how many steps you take in a day. There is evidence that taking about 10,000 steps a day can help you achieve some of your healthcare goals. Using a pedometer also allows you to see where you can make simple gains in your exercise regimen.
- Don't overdo it, especially during the first few weeks, in case you burn out.
- Once you're comfortable with your program, gradually increase your pace and the number of times you work out each week.
- Relax and enjoy!



# Diabetes in Special Populations – Prediabetes, Children and the Elderly

Diabetes care can present some unique challenges when it comes to certain populations, such as in children and the elderly, or in patients who have yet to be diagnosed with diabetes but who have risk factors that may lead to a diagnosis of diabetes.

## Prediabetes

In some cases, many years before being “officially” diagnosed with diabetes, people have developed certain risk factors (obesity, imbalanced lipid levels, high blood glucose) that are labelled generally as prediabetes. This predisposes a person to a diagnosis of diabetes. It is important to note that not all people with prediabetes will progress to type 2 diabetes.

The term prediabetes covers two conditions: Impaired Glucose Tolerance (IGT) and Impaired Fasting Glucose (IFG), which occur when there is a problem using the glucose and insulin that is produced by the body. The classification of prediabetes is based on one’s blood glucose levels, which are higher than what is considered “normal,” but not yet high enough to be considered diabetes.

It is thought that type 2 diabetes may be prevented from fully developing with the appropriate interventions, such as increased activity levels, improved nutrition, or through medication(s).

People with a fasting blood glucose level of 6.1 to 6.9 mmol/L (or a lower range if there are additional risk factors) have impaired fasting glucose and are considered to have “prediabetes” and treatment (including lifestyle intervention) is recommended to reduce risk factors and to possibly prevent an eventual progression to diabetes.

## Diabetes care in the elderly

For people with diabetes who are over the age of 60, there are special considerations for managing the condition in addition to the standard approaches that would be just as applicable in a younger person with the condition.

In elderly patients who are otherwise healthy, blood glucose targets should be the same as for younger people. However, for elderly people who have other health-related issues or a limited life expectancy, blood glucose targets might be less stringent.

The choice of medication to improve blood glucose levels may also be somewhat different in elderly people with diabetes, often due to side effects that can be more pronounced in this population. For example, sulfonylureas are to be used with caution in elderly people because the risk of low blood glucose is much higher. Pre-mixed insulin and pre-filled insulin pens are considered optimal in elderly people with reduced dexterity and for their ability to reduce dosing errors.

Exercise (aerobic and/or resistance training) may be of benefit to elderly patients with type 2 diabetes and is recommended unless otherwise contraindicated.

## Diabetes care in pregnancy

All pregnant women who are between 24 and 28 weeks gestation should be screened for gestational diabetes, which is high blood glucose that first appears during pregnancy. Some women are at a higher risk than others for the development of gestational diabetes. Risk factors for gestational diabetes include:

- A previous diagnosis of gestational diabetes
- Being over age 35
- Obesity
- A history of polycystic ovary syndrome

If gestational diabetes is diagnosed, it is important for you to carefully manage this condition to minimize the risk of any complications to you or to your baby. This can involve improvements to your nutritional intake, managing your weight and pursuing regular physical activity.

Recommended blood glucose levels for women with gestational diabetes are lower than for other populations. The recommended blood glucose target ranges for most women with gestational diabetes are as follows:

- Fasting: 3.8-5.2 mmol/L
- One hour-post-meal: 5.5-7.7 mmol/L
- Two hours post-meal: 5.0-6.6 mmol/L

Blood glucose monitoring during pregnancy is very important and you may be required to monitor it more frequently than you are used to.

If you are unable to achieve your targeted blood glucose level, insulin may be required in order to help you. There are some kinds of insulin that are considered safe to use during pregnancy. Oral medications are not recommended for use during pregnancy. Your healthcare provider can discuss management options that promote optimal blood glucose levels throughout your pregnancy.



## Diabetes in children

There are many special considerations for managing diabetes in young children and adolescents.

Type 1 diabetes is most commonly associated with childhood, although the prevalence of type 2 diabetes in children is growing rapidly, partly due to lifestyle considerations (e.g., more sedentary lifestyles, childhood obesity, fewer opportunities for physical activity).

Emphasizing the importance of blood glucose control should be a priority for parents of children with diabetes. The earlier children develop an appreciation for blood glucose and its role in self-management, the more likely they are to maintain good self-care habits in the future.

Blood glucose levels in children may fluctuate more than in adults for a few different reasons, such as changes in eating habits or activity levels, or an increase in growth hormone due to growth spurts.

One major concern for children with diabetes is low blood glucose, which may occur more frequently in children because they do not recognize the signs of it developing and they may not be able to properly treat it. Parents should be prepared to administer an injection of glucagon in the event of very low blood glucose in young children. Your healthcare provider and your certified diabetes educator can offer you guidance on glucagon administration.



Diabetic ketoacidosis (DKA) is also a serious concern in young children with diabetes and it often results from inadequate insulin or from poor sick day management. It is important to ensure that your child is getting adequate insulin and carbohydrates, especially during times of illness. DKA in children will usually be treated in a hospital.

Children (especially if they are very young) and their families should receive intensive counselling on how insulin works and how to use it. It is also advisable to discuss a diabetes management plan with your child's caregiver (e.g., babysitters, sports coaches, teachers) so that there is a plan in place in case of an emergency situation. Most school boards have specific policies related to children with diabetes, but it is still important to communicate with school personnel and to ensure that you are comfortable with how the school makes arrangements for children with diabetes.

Blood glucose targets for children with type 1 diabetes are graduated; children under 6 years should aim for an A1C of less than 8.5%; children between 6 and 12 years should strive for a target A1C of less than 8.0%; adolescent children are encouraged to achieve the same A1C as adults (7.0%).

New recommendations for children with new-onset diabetes indicate that they should be started on two daily injections of short-acting insulin or rapid-acting insulin, combined with an intermediate or long-acting insulin. Insulin therapy for children should be reassessed at each diabetes-related healthcare appointment.



# Emergencies

## Prepare for the Unexpected:

Preparing for the unexpected is particularly important for people diagnosed with diabetes and you can save yourself time and stress by stocking up on key supplies and organizing your diabetes self-management plan just in case of an emergency.

What follows is a basic checklist of items that you may want to have handy in case of an emergency that will allow you to continue your self-management routine without missing a beat:

- Place a document outlining important contact information (your physician, your diabetes educator, your pharmacy, the closest emergency department) in a visible and accessible place, such as on your refrigerator.
- Keep an extra copy of your prescription(s) handy and make sure that you have a two-week supply of all of your medications, including insulin and any over-the-counter products that you may take. It is also helpful to have a copy of relevant health-related information, such as your health insurance or benefits card.
- If you use an insulin pump, keep extra pump supplies (extra batteries, back-up tubing).
- Wear medical identification jewellery at all times indicating that you are a person diagnosed with diabetes.
- Have extra ketone testing strips handy, especially if you are a person with type 1 diabetes.
- Make sure that you have an ample quantity of quick-acting carbohydrate in case of a low blood sugar emergency.
- Keep a blood sugar log book or a diary to record your blood glucose levels. Ask your Rexall family pharmacist for a Rexall Record – Diabetes.
- Have a sharps disposal container.
- Stock up on some non-perishable food basics that can get you through the emergency, such as:
  - A box of unsweetened cereal and a large box of saltine crackers
  - 6-pack of sugar-free pop
  - 6-pack of canned fruit juice or a sports drink
  - A jar of peanut butter
  - A small box of powdered milk
  - 2 packages of cheese and crackers
  - A few cans of tuna, salmon, chicken or nuts

# Travelling

Visit your healthcare professional(s) if you are travelling to another country. You may need vaccinations so talk to your doctor as soon as you start planning your trip.

Ask your doctor for a letter stating that you have diabetes. The letter should also describe your diabetes treatment plan and the things you need to bring with you to manage your diabetes.

Ask the pharmacy where you normally obtain your medications to provide a list of all your medications and their doses. Ensure you have a large enough supply of all your prescription and over-the-counter medications to care for your diabetes and other medical conditions while you are away.

## Arrange health insurance for when you arrive at your destination:

Most employee health plans offer international coverage, as do many credit card companies, financial institutions and private insurers. Be aware that some insurance policies have very specific requirements for people diagnosed with diabetes. In some cases, you may need to demonstrate through your medical history that your health condition is considered under control before you will obtain coverage.



## Know what to pack:

**Proper clothing and shoes:** It's a good idea to pack an extra pair of comfortable shoes, as well as socks and a pair of rubber sandals for beach wear or water use. Make sure that you always have something on your feet if you are swimming, especially if you swim in the ocean or lakes, where small, sharp objects in the sand can damage your feet.

### Medical and diabetes supplies:

- Identification (e.g., MedicAlert™ bracelet, wallet card) to let strangers know that you have diabetes in case of emergency.
  - A list of emergency phone numbers and addresses written in a way that any stranger could use them. Include your phone number and address as well.
  - All medications and supplies to last for the entire length of your trip, plus one week extra.
- \* **Pack your diabetes supplies in your carry-on luggage** – this way you will have them in the event that your checked luggage is lost or stolen. If you are travelling by air, you may have to provide medical documentation of your condition in order to bring certain supplies in your carry-on luggage. Insulin should never be placed in your checked baggage because of extreme temperature and pressure differences.

**Eyewear:** Bring an extra pair of eyeglasses and/or contact lenses, with an extra prescription. Also pack your sunglasses!

**Sun protection:** Bring sunscreen lotion with at least SPF 15. Ask your Rexall family pharmacist to help you select one that is suitable for you. Also ask your pharmacist about spending time in the sun, as this can be a problem if you are taking certain medications.

**Insect repellent:** Bring along insect repellent containing DEET if you plan to visit a place that has lots of mosquitoes and insects.

**Travel with a companion:** Make sure he or she knows about your diabetes and how to help you in case of a problem. This person will ideally know the signs of a low or high blood sugar emergency and will be able to take appropriate action in the event you are unable to do so yourself.

\* **Have your companion carry an extra set of your diabetes supplies.**

## Find out about meals, food and drinks:

If you are flying, when you buy your ticket request a meal for people with diabetes or low-calorie meal from the airline. In many cases, you will find that you can eat the standard airline food if you are strategic about portions and you ensure it will fit into your daily meal plan.

Make sure you take snacks along in case some foods you eat are too low in calories, or if there is a delay with your flight (e.g., pack fruit juices, granola bars and cookies).

The dry air found in airplanes causes dehydration. Drink plenty of water to counter its effects. Avoid coffee and tea – they can actually promote dehydration.

## Prepare for time-zone changes:

If you are travelling to a different time zone, ensure that you know how to adjust your diet and exercise plan, as well as the timing and dose of your medication. Talk to your doctor and diabetes educator about how to adjust your insulin schedule. A good general rule to follow is that when you travel east, your day becomes shorter and you may need to take fewer units of intermediate- or long-acting insulin. When travelling west, your day becomes longer and you may have to take extra units of short-acting insulin and extra food.

\* **People who use an insulin pump must remember to reset the pump's clock to the new time zone of the destination.**

## Find out about injecting your insulin when flying:

If you need to inject your insulin when flying, inject only about half the air you normally would into the vial when preparing the insulin injection. The cabin's air pressure is lower than the pressure on the ground, so you won't need as much pressure inside your vial. Also be aware that many insulin manufacturers recommend that insulin not be put through x-ray scanners at airport security, although this generally should not impact its quality. If your insulin has been exposed to an x-ray for a long period of time, you should visually inspect it for any signs of change, such as cloudiness. If you notice that your insulin does not seem to be affecting your blood glucose levels as it normally does, this might mean that the insulin has lost its potency and should be replaced.

\* **Don't take your mealtime insulin unless you are sure your meal will be served immediately.**

## Plan proper rests and breaks:

Make sure you get plenty of sleep while travelling. Two 30–45-minute naps are better than staying awake for the entire trip.

## Learn to avoid deep vein thrombosis (DVT):

DVT is the formation of a blood clot in the leg. This condition is caused mainly by dehydration and immobility, rather than by simply sitting down for too long.

Learn to recognize the most common symptoms of DVT:

- Pain and sensitivity in the calves
- Leg swelling, particularly on one side. Do not confuse this with normal swelling caused by gravity that many people experience while flying, which disappears after landing.
- An increase in the skin temperature of the leg
- Dilation of the veins under the skin of the leg

Make sure to get up, stretch and walk around at least once an hour.

## Things to do once you arrive at your destination

Find out what healthcare facilities are available:

- If you're staying in a hotel, ask the concierge where the nearest hospital is located. Consider a university health centre or call the nearest Canadian embassy for a diabetes specialist if necessary.

## Healthy eating in restaurants:

- Check out different menus. Choose places that offer healthy, balanced meals.
- Learn to reduce your fat intake. Fat—found in sauces, salad dressings, chips and buttered bread—contains a lot of calories. Use these types of fats sparingly: it can help to measure them out by a spoonful.
- Know when to stop. To prevent overeating, avoid large portions, be creative, and leave food on your plate once you meet your calorie needs. When in doubt, use the plate method for portion control, where  $\frac{1}{4}$  of the plate is meats or alternatives,  $\frac{1}{4}$  is grains or starches, and  $\frac{1}{2}$  is vegetables.

# Alcohol and Diabetes

## Can a person with diabetes drink alcohol?

This is a common question, and the answer is... it depends. When diabetes is well under control, blood glucose levels seem to be unaffected by moderate amounts of alcohol on an occasional basis. However, a person with diabetes should still take the necessary precautions when drinking alcohol to prevent dangerous situations from arising.

## Know how alcohol affects you

The greatest danger with drinking and diabetes is the risk of hypoglycemia or low blood glucose. Symptoms of hypoglycemia need to be recognized and treated as soon as possible.

## Calories from alcohol are fattening

A typical drink adds 100–150 calories to your diet. If you have type 2 diabetes and are overweight, the main treatment goal is to lose excess body fat. By losing weight, not only do you better control your diabetes, but you may also lower your blood pressure and blood fat levels, thus reducing the risk of diabetes complications.

## Tips for drinking alcohol

- Always drink alcohol in moderation. The limit is one to two drinks a day to a maximum of nine drinks per week for women, or 14 drinks a week for men.
- Alcohol should be limited to no more than 5% of the total energy intake or 2 drinks per day, whichever is less.
- Never drink on an empty stomach. It is a good strategy to always check your blood glucose more frequently if you are going to be consuming alcohol. Make sure you do not border on hypoglycemia before starting to drink. Have your drink during or after meals.
- If you take insulin, don't forget that alcohol can increase your risk of low blood glucose over the next 24 hours.
- Avoid sweet mixes, sweet wines or liqueurs, which are often high in sugar content. Choose sugar-free mixes and drinks.
- Wear visible diabetes identification whenever you drink away from home.
- It is critical for people with diabetes to be aware of the possibility of an effect from drinking alcohol known as hypoglycemia unawareness. This means that from drinking alcohol, your blood glucose drops low but you do not realize it (partly due to the effects of the alcohol). You may experience morning low blood glucose from alcohol that was consumed the previous night, as opposed to a few short hours after consuming it. Frequently monitoring your blood glucose and possibly increasing your intake of carbohydrate can help prevent morning hypoglycemia.
- If possible when you are drinking alcohol, have a friend with you who knows the signs of low blood glucose and knows how to treat it.

# Diabetes Foot Care: Keeping Feet Healthy

For people with long-term diabetes, blood circulation to and from the feet decreases, slowing the healing process for foot injuries. Because nerves in the feet may not be as sensitive as in other areas of the body, or because your circulation may be impaired, you may not feel small foot injuries and hence you may not know to attend to them right away. Untreated foot injuries can become infected or ulcerated and can lead to serious consequences, such as amputation.

Spending just a few minutes each day caring for your feet can prevent future problems. People with diabetes should have their feet inspected by a health professional at least once a year starting at puberty, and more frequently for people at high risk (e.g., previous ulcerations, neuropathy, vascular problems). If you are at high risk for foot ulcers, you should have your footwear professionally fitted by a foot care specialist. Any infections to the foot should be treated aggressively and immediately by an expert.

Here are a few simple things you can do every day to protect your skin and feet:

## Foot Care Tips:

**Purchase shoes with care:** Buy your shoes in the afternoon, since feet swell over the course of the day. Choose shoes made from natural materials, such as leather. Buy shoes that are comfortable, fit properly, and are wide enough, long and high enough so that they do not put pressure on any part of your foot. Avoid sandals with straps that run between the toes.

- **Safety** – It is best to choose a shoe with a non-skid, shock-absorbing sole thick enough to protect you from pebbles and rough surfaces. Break in new shoes slowly. The shoe's upper surface should be strong enough to protect your feet from blows. It is recommended that you change shoes frequently in order to vary the pressure points.
- **Support** – Make sure that your heel and instep are held comfortably in place so your foot doesn't slide within the shoe. This means that you need a firm heel as well as laces or Velcro straps to keep the foot in proper position. Shoes are more comfortable when the toe is rounded. In order to distribute weight evenly between the heel and toe, the heel must be wide and about one inch high. A good way to see if you are getting a good fit from your shoes is to use a simple test: stand on a piece of paper and trace the shape of your foot. Do the same thing with the shoe and compare the two tracings. You will note if there are any discrepancies, such as your foot being much narrower than your shoe.



## Wear appropriate footwear:

- Wear shoes or slippers at all times. Do not go barefoot, even around the house.
- Examine the insides of your shoes daily to make sure there are no rough or sharp spots and that no objects have fallen inside.
- Wear comfortable-fitting socks or pantyhose: Do not wear them if they are tight-fitting or are knee-highs.

**Avoid exposing your feet to direct heat sources:** Don't use heating pads or hot-water bottles. Don't get too close to space heaters or fireplaces. Before putting your feet in hot water, test the temperature with an elbow to make sure it isn't too hot.

**Avoid prolonged exposure to the cold:** Keep your feet warm by wearing thermal socks and insulated boots. Wear socks to bed if your feet become cold at night.

**Walk to increase circulation in your legs and feet:** Exercise can also help control blood glucose levels. Don't walk with bare feet; you could get a splinter, cut yourself or even be burned by asphalt heated by the sun.

**Don't smoke:** Smoking interferes with blood flow to your feet.



# APPENDIX B

## Diabetes Management Recording Table

Date			
<b>Body Weight</b>			
lbs or kg			
Body Mass Index*(BMI) Ideally 18.5-25 kg/m <sup>2</sup>			
Waist Circumference** (WC)			
<b>Blood Pressure</b>			
Target: <130/80mmHg or as recommended by your doctor			
<b>Blood Lipids</b>			
Total cholesterol/HDL ratio			
Triglycerides			
LDL			
HDL			
<b>Blood Glucose Control</b>			
Hemoglobin A1C (%)			
Fasting blood glucose (mmol/L)			


### BMI as it relates to health risks:

Classification	BMI	Risk of developing health problems
Underweight	Less than 18.5	Increased
Normal weight	18.5-24.9	Least
Overweight	25-29.9	Increased
Obese	30-34.9	High
	35-39.9	Very high
	Over 40	Extremely high

\*BMI = divide your weight in kilograms by your height in square metres Automatic calculation available online at: <http://ww2.heartandstroke.ca/page.asp?PageID=1192>

**Waist circumference cut-off points	Risk of developing health problems
Men: greater than 102 cm	Increased
Women: greater than 88 cm	Increased

Note: these values are not specific to each individual. For example, a person with a small waist circumference who has other health risk factors can still be at an increased risk for other health problems. Similarly, a person with a high BMI is not necessarily at high risk (some professional athletes have high BMIs). Also, these values may shift when accounting for differences in ethnicity.



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