



Helping all people
live healthy lives

Guide to Healthy Living with Diabetes

Table of Contents

| | |
|---|----|
| Introduction | 3 |
| Hyperglycemia and hypoglycemia | 4 |
| About blood glucose levels | 6 |
| Food and diabetes | |
| • Planning meals and snacks | 7 |
| • Guide to dining out | 11 |
| Exercise and diabetes | 14 |
| Being prepared: Diabetes supplies checklist | |
| • Home supplies checklist | 16 |
| • Travel preparation checklist | 17 |
| • Sick days | 18 |
| • Sick days checklist | 19 |
| Foot care | 20 |
| Daily logbook | 24 |

Introduction

Diabetes is a condition that causes the body to lose its ability to make or use insulin. In **Type I diabetes**, the pancreas stops producing enough insulin. In **Type II diabetes**, the body either does not make enough insulin or does not properly use the insulin it makes.

Without insulin, the body can't take glucose (a type of sugar produced from digested food) and convert it into energy. High levels of blood glucose caused by diabetes can lead to many long-term health problems, including a high risk of heart attack and stroke, kidney and eye damage, and serious skin or healing conditions.

This "Guide to Healthy Living with Diabetes" booklet is intended to help you understand how eating, exercise and medications affect your blood glucose levels, and what you need to do to remain active and healthy while living with diabetes.

Hyperglycemia and hypoglycemia

Changes and imbalances in your health, diet, exercise, or medications may cause your blood sugar levels to rise or fall. If you learn how to recognize the first signs, you can treat yourself quickly or get help before your condition worsens.

HYPERGLYCEMIA (HIGH BLOOD GLUCOSE) – Blood glucose levels above 11 mmol/L

| CAUSES | FIRST SIGNS | WHAT TO DO |
|--|---|--|
| <ul style="list-style-type: none"> Stress from an illness (e.g. infections, fevers) Emotional stress (e.g. conflicts with family, problems at school or work) Pregnancy Eating too much food Not exercising as much as planned Not enough insulin (Type I diabetes) Insulin is not effective (Type II diabetes) | <ul style="list-style-type: none"> Increased thirst Urinating more often Tiredness | <ul style="list-style-type: none"> Test blood glucose level frequently. If it is over 13.3 mmol/L, test your urine for ketones. If blood glucose is under 13.3 mmol/L and there are no ketones in your urine, try exercising. If ketones are present, do not exercise. Call your healthcare professional immediately. Drink fluids without sugar if you are able to swallow. |
| | <p>SIGNS OF SEVERE HIGH BLOOD GLUCOSE (KETOACIDOSIS)</p> <ul style="list-style-type: none"> Heavy, laboured breathing Breath that smells fruity Very dry mouth High levels of ketones in the urine Nausea, vomiting or abdominal pain | |

HYPOGLYCEMIA (LOW BLOOD GLUCOSE) – Blood glucose levels below 4 mmol/L

| CAUSES | FIRST SIGNS | WHAT TO DO |
|--|--|---|
| <ul style="list-style-type: none"> Not eating enough food Missed or delayed meal Exercising without taking precautions Exercising more than usual Taking too much insulin | <ul style="list-style-type: none"> Sweating Headache Heart beating quickly Hunger Shakiness, light-headedness and weakness Fatigue Mood changes | <ul style="list-style-type: none"> Test your blood glucose level. Eat or drink a form of sugar. <ul style="list-style-type: none"> 2-3 BD™ Glucose Tablets 3/4 cup of juice or soda 1 tsp of honey Wait 10-15 minutes, then test again. Repeat if it remains too low. |
| | <p>SIGNS OF SEVERE LOW BLOOD GLUCOSE</p> <ul style="list-style-type: none"> Confusion or disorientation Unconsciousness Seizures | <p>Tell friends and family what to do if you become unconscious:</p> <ul style="list-style-type: none"> Call your healthcare professional. Never give you fluids or food by mouth. Give Glucagon according to package instructions. |

About blood glucose levels

Although it is normal for blood glucose levels to change throughout the day, they should stay within a certain target range, as shown in the table at right.

It's very important to test your blood glucose on a regular basis, as recommended by your doctor or nurse, to see how factors like meals, physical activity, medication and overall health affect blood glucose levels.

Most people will need to check their blood glucose levels at least daily. Depending on the type of diabetes you have and its severity, you may need to test two to three or more times a day. Keep a record of your blood glucose measurements so you can identify patterns and discuss them with your doctor or nurse.

In addition to daily blood glucose testing, you may need a lab test (glycosylated hemoglobin, or A1C) at certain times throughout the year. An A1C test result of more than 7% means that your diabetes is not well controlled.

| NORMAL AND TARGET BLOOD GLUCOSE LEVELS (mmol/L)* | |
|--|--------------|
| NORMAL RANGE | TARGET RANGE |
| BEFORE EATING | |
| 4.0 – 6.0 | 4.0 – 7.0 |
| 2 HOURS AFTER EATING | |
| 5.0 – 8.0 | 5.0 – 10.0 |
| * CDA Practice Guidelines | |

Food and diabetes

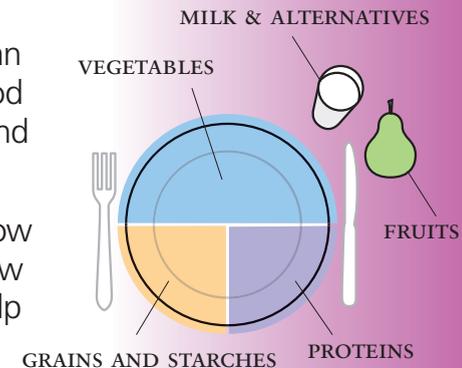
Planning meals and snacks

No matter what meal plan you and your doctor or dietician have created, once you understand how foods affect blood glucose levels, it will be easier for you to make changes and substitutions when needed.

One way of looking at your meal plan is by getting to know and understand the glycemic index (GI). By choosing a low glycemic rating more often rather than a high one will help you to:

- Control your blood glucose levels
- Control your cholesterol levels
- Control your appetite
- Lower your risk of getting heart disease

The glycemic index is a scale that ranks carbohydrate rich foods by determining how much it raises your blood glucose levels compared to glucose or white bread.



Below is a chart which will help you determine the foods that are better than others.

| Low Glycemic Index | Medium Glycemic Index | High Glycemic Index |
|--------------------|---------------------------|---------------------|
| Skim Milk | Brown rice | Baked white potato |
| Soy Beverage | Raisins | Instant rice |
| Sweet Potato | Whole wheat and Rye bread | Bagels (white) |
| Lentils | Pineapple | Soda crackers |
| Oat bran bread | Banana | French fries |
| Kidney beans | Watermelon | Ice cream |
| Pumpernickel bread | | |

Here are a few tips to choose from when considering a low glycemic food at each meal.

- Watch your portion size. The bigger the portion, regardless of its GI rank, will increase your blood levels
- Eat whole grain and oat bran breads more often than white bread
- Decrease the amount of processed, refined starchy foods due to their higher GI
- Try new foods with a low GI.

So follow your meal plan, read food labels, and know your **Food Groups** to help you plan healthy meals and snacks.

Grains & Starches (carbohydrates)

- Whenever possible it is recommended to choose whole grains. Low fiber foods have a high glycemic index which raise blood glucose levels. Choose more often whole wheat bread, cooked oatmeal, and less often, Bagels (white), croissants and tortilla's with white flour. A portion is about the size of your 2 fists.

Fruits (Carbohydrates)

- These generally cause a quick rise in blood glucose levels. Examples include strawberries, apples and watermelons. A portion is about the size of your fist.

Vegetables

- Most are low in carbohydrates. Good, low carbohydrate options include green beans, broccoli and spinach. A portion is as much as you can hold in both hands.

Milk and Alternatives (carbohydrates)

- Low fat dairy choices do not raise blood glucose levels as much or as quickly as other foods. Examples include milk and soy milk. A portion is equal to one glass of milk.

Meat & Alternatives (proteins)

- Examples include cheeses, salmon, chicken, ground beef, lentils and peanut butter. One portion is the size of your palm and the thickness of your little finger.
- Choose low fat sources more often. Examples are low fat cheeses, lean meats.

Fats

- “Bad” fats include **saturated fats** and **trans fats**.
 - **Saturated fats** include red meat, high-fat dairy products like whole milk and butter, and some oils like palm, coconut oils and the skin found on chicken.
 - **Trans fats** include hard margarines, fried foods and desserts like cookies and cakes.
 - Foods high in hydrogenated fat are often also high in saturated and trans fats.
- “Good” fats are **monounsaturated** and **polyunsaturated**. They include avocados, fish and oils like sesame, olive and canola oils.
- Limit fats in your diet. A portion size is equal to the tip of your thumb.

Extras

- Limit snacks and sweet high in simple carbohydrates (contain refined sugars and very few vitamins and minerals), like cookies, regular soft drinks, jams and ice cream.
- You may consume low-calorie, low carbohydrate extras such as coffee, tea and diet soft drinks.

Guide to dining out

With the following tips, you can enjoy dining out with no worries.

Before you go:

- Follow your meal plan. Carry a copy if it helps
- Know portion sizes
- If you are unsure about the menu, phone the restaurant or look up their menu on the internet if it's available. Ask whether they can prepare your food to follow your meal plan.

*At the restaurant:**Appetizers*

Choose clear soups, unsweetened juice, fresh fruit and vegetables. Avoid thick creamy soups and foods marinated in oil.

Breads

Choose whole wheat grain pita breads, rolls and bread sticks. Avoid sweet or fried options like cakes, Danishes and doughnuts.

Eggs

Choose poached, boiled, scrambled and omelette over creamed, fried and devilled eggs.

Meats, Fish, Poultry, Seafood

Choose from boiled, baked braised or roasted meats. Avoid fatty, fried and breaded foods. Remove visible fat and skin.

Starchy Foods

Choose plain corn, rice and pastas over fatty choices like creamed corn or pasta salad. Potatoes are good, but avoid choices such as French Fries, hash browns and scalloped potatoes.

Vegetables

Choose raw, stewed, stir fried, steamed, boiled and plain baked vegetables. Limit those that are creamed, au gratin, fried or candied.

Desserts

Choose fresh fruit, a scoop of ice cream, and light cakes such as sponge cake. Limit pudding, pastries and sweetened or canned fruit.

Drinks

Choose water, club soda, coffee, tea, sugar-free soft drinks and low-fat milk. Limit chocolate milk, regular soft drinks and milkshakes. Drink alcohol in moderation, and only with meals.

- If you take insulin, don't exceed two/drinks day (or 14 drinks/week for men, 7 drinks, one drink/day for women). And keep glucose tablets on hand in case of hypoglycemia.
- If you take oral agents (pills), ask your doctor, nurse or pharmacist about possible drug and alcohol interactions.

Exercise and diabetes

Regular physical activity will help lower blood glucose levels, improve blood glucose control and may even lower your need for insulin.

See your doctor before starting or changing an exercise plan. Follow these tips and guidelines to maintain healthy blood glucose levels while keeping active:

- **Add exercise to your lifestyle.**
- **Time exercise with your meals and injections.** Try to exercise 15-30 minutes after a meal, when blood glucose is high. Avoid exercising when insulin activity is high and blood glucose is low. Remember:
 - *Blood glucose levels can continue to drop after exercise.*
 - *Afternoon or evening exercise causes more of a drop than morning exercise.*
- **Don't inject insulin into areas used during exercise.** Muscles absorb insulin faster when they are working, so use a non-exercised injection area, like your abdomen when you walk. (Always have glucose tablets on hand, in case of hypoglycemia.)

- **Test your blood glucose before and after exercise.** If levels are low, or if you're planning a heavy workout, have a snack.
- **Dress right.** Wear comfortable clothes, thick socks and supportive shoes. Dress appropriately for the weather.
- **Don't overdo it.** You should be able to carry on a conversation while you exercise, and not feel aches and pains later. Never exercise when sick, or if your condition is not well controlled.
- **Choose aerobic exercises** like walking, bicycling and swimming to keep heart, lungs and circulation healthy. Try to exercise for a total of 30 minutes, 4 days/week. Slowly add to your program as your fitness improves.
- **Add resistance/strength-training** like weight lifting and stair climbing 2-3 days/week.
- **If you feel symptoms of hypoglycemia or hyperglycemia,** stop exercising. Have a snack for low blood glucose, and advise your doctor if the situation recurs.

Being prepared: Diabetes supplies checklist

Use these checklists to make sure you have all the supplies you need for good diabetes control, whether you're at home, sick or travelling. Be sure to check and restock your supplies regularly.

Home supplies checklist

| | AMOUNT | DATE RESTOCKED |
|---|--------|----------------|
| <input type="checkbox"/> INSULIN SYRINGES AND NEEDLES OR INSULIN PEN DEVICE | _____ | _____ |
| <input type="checkbox"/> LANCETS AND LANCING DEVICE | _____ | _____ |
| <input type="checkbox"/> ALCOHOL SWABS | _____ | _____ |
| <input type="checkbox"/> BLOOD GLUCOSE MONITOR AND TESTING STRIPS | _____ | _____ |
| <input type="checkbox"/> INSULIN AND/OR ORAL AGENTS (PILLS) | _____ | _____ |
| <input type="checkbox"/> GLUCOSE TABLETS | _____ | _____ |
| <input type="checkbox"/> THERMOMETER | _____ | _____ |
| <input type="checkbox"/> URINE KETONE TESTING STRIPS | _____ | _____ |
| <input type="checkbox"/> PREFILLED GLUCAGON SYRINGE (IF NEEDED) | _____ | _____ |
| <input type="checkbox"/> REGULAR SOFT DRINKS, INCLUDING GINGER ALE AND COLAS | _____ | _____ |
| <input type="checkbox"/> INSTANT SOUP BROTH | _____ | _____ |
| <input type="checkbox"/> 1 BOX EACH OF SUGAR-FREE AND REGULAR GELATIN DESSERT | _____ | _____ |

Travel preparation checklist

If you're prepared, travel can be safe and hassle-free.

BEFORE-YOU-GO CHECKLIST

- CHECK-UP WITH VACCINATIONS AT LEAST 4 WEEKS BEFORE
- REVISED MEAL/MEDICATION PLANS (I.E., IF CROSSING TIME ZONES)
- DOCTOR'S NOTE TO TRAVEL WITH DIABETES SUPPLIES
- LIST OF MEDICATIONS
- TRAVEL COMPANION KNOWS HOW TO INJECT INSULIN/GLUCAGON
- IDENTIFICATION WITH MEDICAL INFORMATION, DOCTOR'S PHONE NUMBER, EMERGENCY CONTACT
- TRAVEL INSURANCE COVERS DIABETES CARE
- SOME MEDICATIONS/SUPPLIES IN CARRY-ON LUGGAGE
- INFORMATION ON MEDICAL FACILITIES IN TRAVEL AREA
- IF FLYING, REMEMBER TO INJECT HALF THE AIR YOU NORMALLY WOULD WHEN PREPARING YOUR INJECTION, TO HELP ACCOUNT FOR THE AIR PRESSURE IN THE PLANE.

Sick days

Blood glucose levels rise when you're sick, so try to stick to your meal plan and always take medication as prescribed.

If you can't eat and your blood glucose > 14 mmol/L:

- **Drink:** Sugar free liquids and broths (1 cup/hour), OR
- **Eat:** Ice chips, sugar-free ice pops, sugar-free gelatin dessert

If you can't eat and your blood glucose < 4.0 mmol/L:

- **Drink:** Fruit juice, non-diet ginger ale, cola (1 cup/hour), OR
- **Eat:** Ice pops, gelatin dessert, soups, glucose tablets

If blood glucose is high and you have ketones in your urine, consult your doctor.

Refer to the *Home supplies checklist*, but add **medicine for vomiting** on sick days. Use the *Sick days checklist* on the next page to monitor your progress, and in case you need to advise your doctor.

Sick days checklist

| | | |
|--|------------------------------|---|
| <input type="checkbox"/> BLOOD GLUCOSE <i>(test every 2–4 hours; call your doctor if two readings in a row are very high, or if > 14.0 mmol/L for 24 hours)</i> | <input type="text"/> TIME | <input type="text"/> READING (MMOL/L) |
| | Target range? | Yes No |
| <input type="checkbox"/> KETONES IN URINE <i>(test every 4 hours; call your doctor if ketones are present)</i> | <input type="text"/> TIME | Ketones? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <input type="checkbox"/> INSULIN | <input type="text"/> TIME | <input type="text"/> DOSE |
| <input type="checkbox"/> ORAL AGENTS (PILLS) | <input type="text"/> TIME | <input type="text"/> DOSE |
| <input type="checkbox"/> TEMPERATURE | <input type="text"/> TIME | <input type="text"/> TEMP (°C) |
| <input type="checkbox"/> OTHER SYMPTOMS (I.E., VOMITING) <i>(call your doctor)</i> | <input type="text"/> TIME | <input type="text"/> SYMPTOM |

Foot care

Reduced blood flow to the feet and legs, foot infections, ulcers, injury, or nerve damage from high blood glucose can be very serious problems for people with diabetes. So take extra care with your feet: See your doctor regularly, get a yearly foot check up and follow these simple steps to reduce your risk of foot problems.

- **Check your feet every day.** Look and feel for open sores, cuts, color changes, deformities or feelings like tingling or numbness.
- **Keep them clean.** Wash every day with soap and lukewarm water. Avoid soaking your feet.
- **Moisturize every day.** If your skin is very dry, you may need specialized treatment, like emollient or urea-containing creams.



- **Cut toenails straight across to avoid ingrown toenails.**
- **Wear comfortable shoes and socks that fit you well.** Get professionally fitted shoes and custom shoe inserts if needed.
- **Keep feet dry, especially between toes.**
- **If you have any foot problems, see your doctor immediately.**



- **Don't go barefoot.**



- **Avoid strong heat.** Don't use a heating pad or hot water bottle on your legs or feet.



- **Keep blood flowing.** Don't cross your legs. Wear loose clothes, and avoid items like garters, girdles, tight socks or knee-highs.



- **Don't cut corns or calluses off your feet.**



- **Use a pumice stone to slough away dead skin.**

- **Prevent foot problems before they begin.** Control your other risk factors, such as smoking, drinking alcohol, and high cholesterol.

- **Keep to your target weight.**

- **Ask your doctor about medications.**

Daily logbook

A daily logbook like the one below can help you keep track of your diabetes self-care regimen.

| DAY/DATE <input type="text"/> | INFORMATION (FOODS, MEDICATION DOSE, ETC.) | TIME | BLOOD GLUCOSE (MMOL/L) | | COMMENTS (DIET, EXERCISE, KETONES, STRESS FEELINGS, GENERAL HEALTH) |
|----------------------------------|---|-------|---------------------------|-------|--|
| | | | BEFORE | AFTER | |
| BREAKFAST | _____ | _____ | _____ | _____ | _____ |
| LUNCH | _____ | _____ | _____ | _____ | _____ |
| DINNER | _____ | _____ | _____ | _____ | _____ |
| SNACKS | _____ | _____ | _____ | _____ | _____ |
| INSULIN | _____ | _____ | _____ | _____ | _____ |
| ORAL MEDICATION (PILLS) | _____ | _____ | _____ | _____ | _____ |



Think Twice. Use Once. 



NEW needle



USED needle



MULTIPLE USED needle

- **Inaccurate doses:** Reused needles can leak fluid or allow air into the cartridge. This can affect the concentration of insulin and lead to inaccurate doses.
- **Painful injections:** New needles have a silicone coating, which is removed with use. Without this layer of lubrication, injection can be painful.
- **Broken needles:** Thin needles are weakened by reuse and can actually break, leaving fragments of metal in the skin.

BDdiabetes.ca



One needle fits all.

BD Ultra-Fine™ Pen Needles are:

Compatible with most insulin pens available

Shortest of any Pen Needle on the market eliminating "pinch-up" when using the Ultra-Fine™ III Mini

Comfort when injecting thanks to BD Medical's innovation



Treating diabetes for over 80 years.

