

## Chapter Organization – Additional Information

1. Low Blood Glucose Kit
2. Diabetes and Extreme Weather (Hot and Cold)
3. Smoking and Diabetes
4. Alcohol and Diabetes



# Hypoglycemia low blood sugar in adults

## What are the signs?

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

Some of the signs include:



Severity



Sweating



Trembling



Palpitations



Anxiety



Hunger



Nausea



Headache



Tingling



Disturbed sleep



Weird dreams



Weakness/  
dizziness



Difficulty concentrating



Vision changes



Drowsiness



Difficulty speaking



Unconsciousness

## How to take action

### EAT fast-acting sugar



15 g of glucose in the form of glucose tablets



1 tablespoon (15 mL) of honey



1 tablespoon (15 mL) sugar in water



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



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



**WAIT 15 minutes and CHECK**



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

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

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

**Eat ONE of:**  
**Starch:**

ex. 7 crackers OR 1 slice of bread

**AND**

**Protein:**

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



### Are you Driving?

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

## Why does low blood sugar happen?

### Have you:

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

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

- Doctor • Nurse practitioner • Pharmacist
- Nurse • Dietitian

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**DIABETES CANADA**



# Low Blood Glucose or Hypoglycemia

Low Blood Glucose or Hypoglycemia happens when your blood glucose (sugar) levels reach a 4.0 or lower. Everyone can have different symptoms but the common symptoms are:

Shaky  
Hungry  
Sweaty  
Nervous  
Weak  
Light-headed  
Have a headache  
Confused  
Fast heart beat  
Numbness or tingling in tongue or lips

**Some people have no symptoms. The danger of low blood glucose is more immediate. It can result in confusion, loss of consciousness, or seizures**

## **Hypoglycemia (low blood glucose) Treatment:**

Check blood glucose. If you can't check, treat symptoms anyway by taking:

- 15 grams of glucose;
- 175 mL of juice or regular soft drink

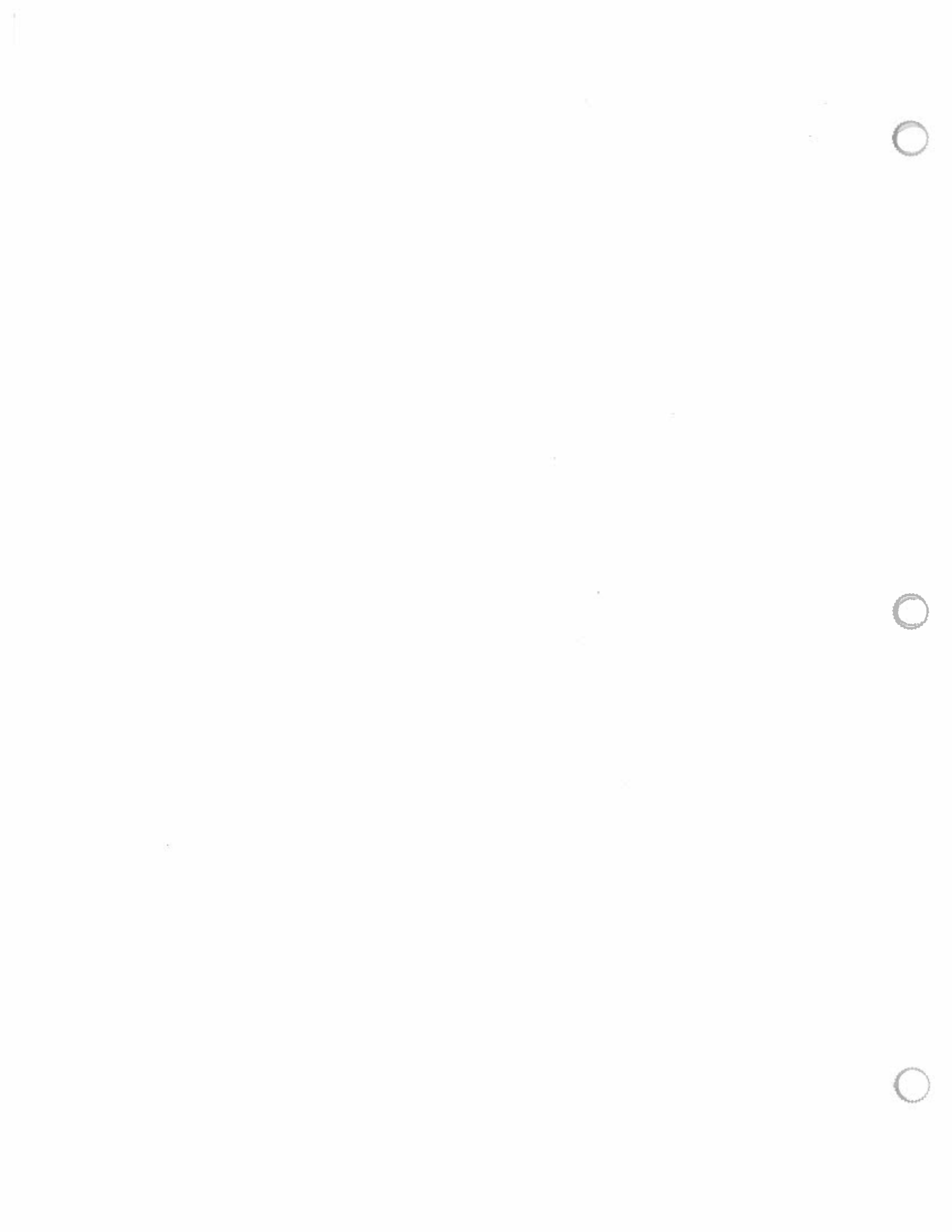
\*Low blood sugars levels can occur at any time, out of nowhere, it is best way to always be prepared for low blood sugars by having Dex 4 tablets, juice boxes or honey packs with you at all times.

\*\*Dex Tablets are great because they won't melt or freeze.

Wait 15 minutes and then check blood glucose again, if it is still less than 4.0, treat again.

## **Causes**

- **Imbalance of food, insulin and activity** (Person miscalculates or activity changes)
- **Insulin**
- **Illness**
- **Stress**
- **Non-diabetes medications**
- **Hormones**



# Diabetes and Hot Weather – Staying Safe in the Heat

Whether you are going on holiday or simply spending some time outdoors in the heat, high temperatures and the close humidity do have an influence for people with long term conditions such as diabetes.

This may partly be explained by increased activity in hot weather, but there is no doubt that the heat does affect some people with diabetes in other ways.

## What problems can hot weather cause for people with diabetes?

Dehydration can be an issue in hot weather, and higher blood glucose levels can further increase this risk.

People with diabetes may need to increase their intake of fluids in hot weather, drinking water regularly through the day.

One of the major concerns regarding diabetes and hot weather is the risk of blood sugar levels rising or falling and causing hypoglycemia or hyperglycemia.

## What are the hypo risks from hot weather?

Hot weather can increase the risk of hypoglycemia for those on blood glucose lowering medication.

The Joslin Diabetes Centre notes that the body's metabolism is higher in hot and humid weather which can lead to an increased chance of hypoglycemia.

Hypos may be slightly harder to spot in hot weather.

Don't be tempted to disregard hypo symptoms, such as sweating and tiredness, as a result of hot weather as it could be a sign of hypoglycemia.

Take extra care when driving and test your blood sugar before and after each journey and stop regularly to check your blood sugar if taking longer journeys.

To prevent hypos, be prepared to test your blood glucose more often, particularly if taking part in physical activity in hot weather.

Keep a source of fasting carbohydrate, such as glucose tablets, to hand.

To help treat hypos, buy [glucose products from the Diabetes Shop](#).

You may need to adjust your insulin levels during changes in temperature. If you are experiencing higher or lower blood sugar levels and need advice about adjusting your insulin levels, speak with a member of your healthcare team.

### **What are the symptoms of heat exhaustion?**

The NHS notes that people with diabetes are at higher risk for heat exhaustion. Heat exhaustion can occur if you get very hot and lose water and/or salts from the body.

Symptoms of heat exhaustion include:

- Sweating more than usual
- Dizziness
- Cramping muscles
- Clammy skin
- Headaches
- Fast heartbeat and
- Nausea.

By resting away from the glare of the sun and drinking more water you can avoid heat exhaustion.

### **What about hot weather and medicine?**

When carrying diabetes supplies which need to be kept cool, such as [insulin](#), the heat of summer can be a problem.

Get around this by keeping your medication away from direct sunlight and carrying cooling packs, which keep medication cool.

- View our range of [cooling wallets](#)



## **Blood testing in hot weather**

Test strips are sensitive to temperature as well. Test your blood sugar in a cool, shaded place and keep your test strips away from direct sunlight as well.

- Read more on [blood testing accuracy](#)

With good preparation, there is no reason why hot weather can't be a real pleasure!



# Diabetes and Cold Weather

Over the winter months people of all diabetes types tend to have higher HbA1c levels than during the warmer months. With snow, ice and frost all threatening, sugar levels can creep up whilst the temperature drops.

With this in mind, we've compiled some tips to help keep your blood glucose levels under control during a cold snap.

## Keep testing your blood

The cold weather can leave you with cold hands which can make blood testing more difficult. Don't let the cold put you off doing your tests though.

Regular testing will help you to catch any highs, or lows, and keep your sugar levels under control. If your hands are cold, try warming them up on a warm mug or on a radiator with a towel or thick clothing over it, before doing your test.

## Keep your activity levels up

Even just a little physical activity each day can help your glucose levels in a number of supporting ways.

- Increasing insulin sensitivity
- Keeping you warm
- Good for the mind

A little activity each day will help with insulin sensitivity (in all types of diabetes) which can help the body to better regulate sugar levels.

Particularly if you are using insulin, keep a watch of your blood sugar levels in case your insulin requirements go down. Bear in mind that activity can affect blood glucose for up to 48 hours.

A little bit of exercise helps to keep you warm. We all know that whilst exercising we heat up, but the effects don't stop as soon as we stop exercising.

We may feel cooler after stopping, if we've built up a sweat, but the longer term effects of exercise is to help with metabolism which can help to keep our body temperature up even hours after exercise and helps improve fitness levels.

If you tend to feel cold during the winter months, a little more activity in your day could be just the thing.

The saying 'healthy body, healthy mind' rings true. If you keep your body active you'll find the mind stays more active too. With a fresh feeling mind you'll be able to cope with more of the rigours of the day and be in a better position to make decisions in the management of your diabetes.

If the cold outside puts you off exercising, expend some energy inside the home. Dancing, jumping, indoor aerobics, yoga, tai chi, climbing the stairs a few times and even a bit of house work will all get your muscles working. Even games on consoles like the Nintendo Wii or Xbox Kinect can help you to get active in the comfort of your living room.

### **Keep an eye on your diet**

Colder weather can affect your diet in a number of ways. People tend to eat more during the winter, are more likely to eat 'comfort foods' and cold trips to the shops may give way to ordering takeaways.

Your body may ask for more calories to fuel itself against the cold, this is a natural response from the body, just make sure you don't over eat and stick to right foods.

The best foods are those that are the most natural.

Ready meals, takeaways and snacks tend to have short term satisfaction, often leaving you hungry again within 2 or 3 hours. Home cooked meals and natural snacks such as modest portions of fruit and nuts are a great basis for a healthy diet, regardless of the season

Visiting the shops is a good way to get some extra activity into your day, just make sure you wrap up warm and take some warm gloves for carrying those shopping bags.

### **Keep illness at bay**

Becoming ill makes diabetes harder to control.

You'll feel less well, have less energy, and just to make things worse, sugar levels often rise significantly higher in response to colds, flus and viruses.

To prevent illnesses from taking hold, keep yourself warm, eat healthily and keep a watch over your sugar levels for any rising trends in sugar levels.

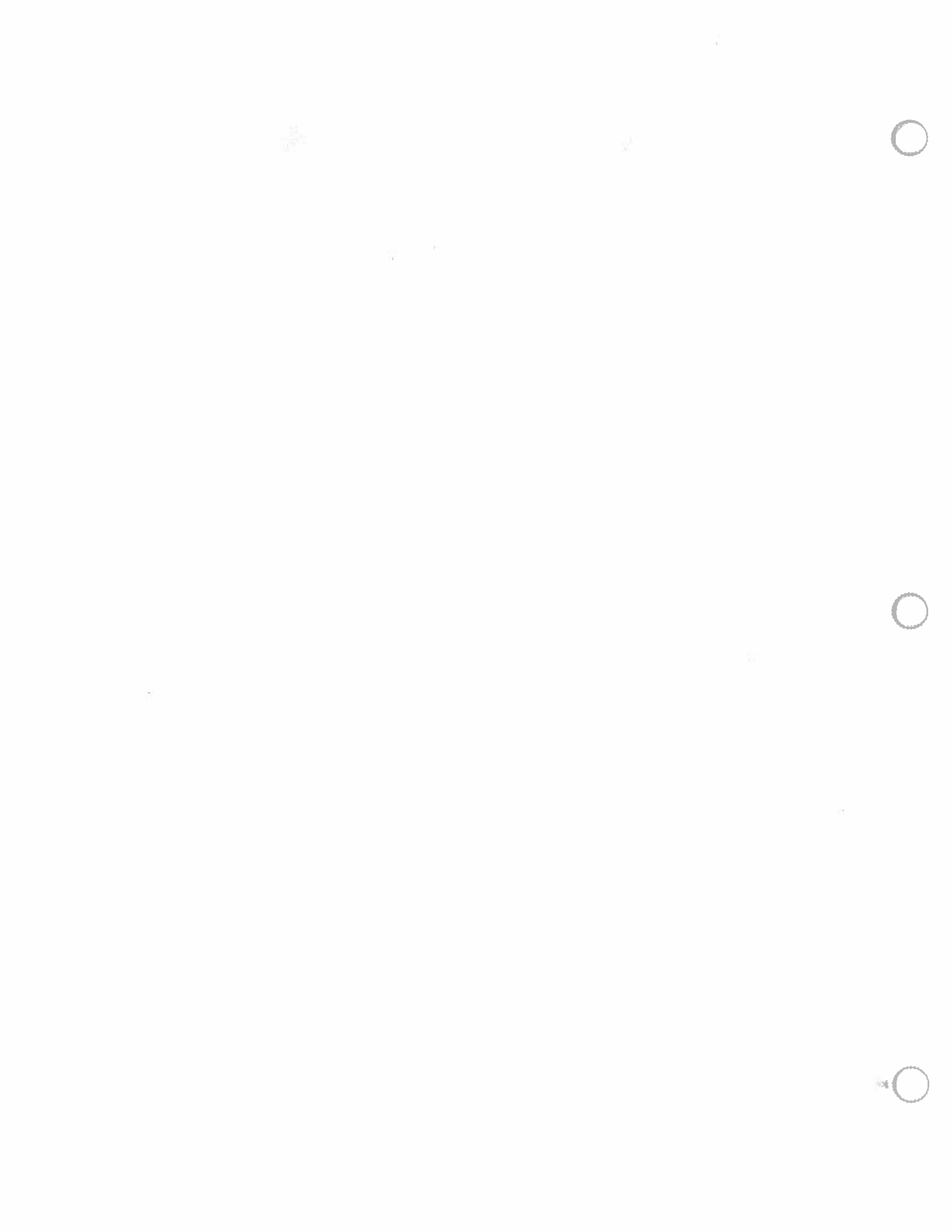
Also, to guard against catching influenza, book yourself in for a flu jab. The NHS will generally provide these for free to all diabetics.

### **Keep depression out in the cold**

The winter period sees many people feeling blue. Cold, unpleasant weather, a lack of sunlight and money worries can all contribute to a drop in mood over the colder months. If you can keep to as much of the advice above, you'll be in a good position to keep the winter blues at a greater distance.

If despite your best efforts you're finding the winter tough, one of the most highly recommended ways to keep depression under control is to reach out to others.

Having a good talk with family and friends can make a real difference to your mood, and if you want to talk about anything involving your diabetes or even to chat and joke with others with diabetes, there's always the Diabetes Forum.



# Smoking *and* diabetes

 Canadian  
Diabetes  
Association

## Why is it so hard to quit?

Simply put, nicotine is among the most addictive drugs. Smoking is not a habit or a lifestyle choice. It's an addiction that over time, changes brain chemistry. Nicotine has its effect by attaching to certain receptors in the brain, and when you become a smoker these receptors increase in number. If not regularly stimulated with nicotine, the increased receptors begin to make a person feel very unpleasant, a phenomenon known as withdrawal. Both withdrawal and the craving it causes are tied to changes in brain chemistry.

**Quitting smoking is one of the most important things individuals living with diabetes can do to help prevent or delay the onset of complications.**

## Why is smoking so bad for people with diabetes?

Smoking is bad for everyone. It increases your risk for lung cancer, heart attack and stroke. Each year, more than 45,000 Canadians die of smoking-related illnesses. People with diabetes face an even greater risk from smoking: just like high blood glucose levels, the poisonous chemicals in cigarette smoke attack blood vessels. This contributes to hardening of the arteries (or what is known as atherosclerosis) which impairs the blood's ability to carry oxygen throughout the body.

Together, the deadly combination of high blood glucose and smoking dramatically increases damage to the blood vessels that feed the heart, brain, eyes, kidneys and peripheral nerves, speeding up the long-term complications of diabetes.

## How can I quit?

The first critical step is to make the decision to quit. It may help to set a firm, short-term quit date. In the meantime, get as much information as you can from your doctor or pharmacist about options to help you quit, including medications that can increase your chances of success. Similar to the day-to-day process of managing your diabetes through diet, exercise and regular blood glucose testing, managing to quit smoking is something that is best approached by incorporating it into your daily routine.

## What can help me quit smoking?

### *Nicotine replacement therapy*

The first line of treatment is nicotine replacement therapy, whether in the form of a gum, patch or inhaler, to help ease withdrawal symptoms.

Nicotine replacement therapy is now available without a prescription in pharmacies. Talk to your healthcare provider about the potential benefit of nicotine replacement therapy.





### **Oral Medications**

Your doctor can help prescribe a medication that can help reduce your smoking cravings. Speak to your doctor if these medications are suitable for you as they might interfere with other medications or health issues.

### **Lifestyle changes**

Smoking often is associated with strong cues, so as you move toward a quit date, get a sense of where and when you smoke, and identify some strategies to bypass those situations. If you typically smoke after dinner, take a walk instead. Any setting where alcohol is involved, such as a wedding or a party, will probably be a hazard zone so just as you may plan to adjust your food intake or insulin dosage, consider in advance how you will handle these situations.

Enlist your family and friends in the effort. Make sure they understand how important it is for you to quit smoking and how hard it may be, and ask for their support. For some people, joining a support group along with others who are also trying to quit is helpful. Your doctor may have some information on groups in your community. For more information online go to [www.gosmokefree.ca](http://www.gosmokefree.ca) and [www.smokershelpline.ca](http://www.smokershelpline.ca).

### **Never quit quitting!**

Making the transition from smoker to nonsmoker is not easy, and you may have a lapse. If you do, give yourself a break. Don't focus on the one cigarette you just had, but remember the hundreds you haven't had since you quit. Manage your quitting plan much like you manage your diabetes – take it one day at a time.

The fact is, successful quitters generally make at least two or three unsuccessful attempts before they finally kick the habit, so never quit quitting!

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

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**Related articles:** *High blood pressure and diabetes, Staying healthy with diabetes*

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# Smoking and Diabetes

## Traditional (ceremonial) and non-traditional (commercial) tobacco use

Traditional use of tobacco is when it is used to:

- Pray
- Give thanks to the Creator and Mother Earth
- Communicate with the Spirits
- Purify the mind and heal the body
- Smudging
  - Pkwenezige Pigitinigewin

Non-traditional tobacco/commercial tobacco is used recreationally. Commercial tobacco contains high thousands of chemicals and high doses of nicotine which can be addictive and harmful.

Elders maintain that this type of use is disrespectful of the spiritual, medicinal, and traditional use of tobacco. The recreational use (or misuse) of tobacco is any use of tobacco in a non-traditional way. This includes:

- smoking cigarettes
- chewing tobacco
- snuff
- smoking non-traditional tobacco in non-sacred pipes
- smoking cigars

There is an important distinction between the traditional and non-traditional use of tobacco as one is respectful of First Nations customs, the other being dangerous and harmful.

## How are smoking cigarettes and diabetes related?

Smoking is a risk factor for diabetes. Smokers are 30-40% more likely to develop Type 2 diabetes than individuals who don't smoke. The more cigarettes consumed, the higher risk is for developing diabetes.

For those that already have diabetes, smoking causes troubles with insulin dosing and makes diabetes harder to control. Long term smoking and diabetes can cause serious health problems. These problems include:

- Heart and kidney disease
- Retinopathy (an eye disease that can cause blindness)
- Poor blood flow in the legs and feet that can lead to infections and ulcers
  - Smoking squeezes the blood vessels so it's difficult to get the good nutrients to heal the foot.
  - Poor blood flow can also lead to possible amputation
- Peripheral neuropathy (damaged nerves to the arms and legs that causes numbness, pain, weakness, and poor coordination)

People with diabetes who quit smoking have better control of their blood sugar levels.

### **Goal setting tips (for quitting/reducing smoking, improving eating, and exercise)**

Set **SMART goals** - Specific, Measurable, Action-based, Realistic and Time-based.

- Example of SMART goals: "At the end of two weeks, I will have replaced my after-breakfast and after-lunch cigarette with tooth-brushing, replaced my drive-to-work cigarette with listening to music, and replaced my before-bed cigarette with reading a book every day with the help of a daily nicotine patch"

To make it manageable, set no more than 3 goals. This helps create better success and minimize feelings of failure if a slip occurs.

- Example of cutting down on smoking. Minimum might be cutting down by 2 cigarettes per day, target might be to cut down on 6 per day, and outrageous might be to quit outright.

## **Helping others quit smoking**

Finding out why somebody smokes helps make a quitting plan more specific.

Using this “Why I smoke” test:

<https://fhs.mcmaster.ca/purr/documents/Smokingcessation-WHYtest.pdf>

can help people understand what someone likes about smoking. This will make goals and strategies more specific.

- Example, if somebody smokes mostly because of craving, a good approach would be to manage with nicotine replacement and replacing the craving. The wording can be adjusted so that the person doing the test understands what’s being said (it’s not standardized with a script).

When starting the quit journey, it can be helpful to find out someone’s schedule of smoking

- Example, smoking right when they wake up, then one with coffee, then after lunch, then driving to work. Knowing the smoking routine can help people make strategies to overcome these smoking times. It can also help people cut back or get ready to quit - e.g. let’s start by pushing that morning cigarette back 10 minutes to see how that goes; Let’s try skipping the cigarette in the car, we’ll do it when we get to work instead; etc. Breaking the routine can help people stop associating the cigarette with certain parts of their day (without having to quit yet and deal with the cravings, too) so when they do quit it isn’t so hard to imagine drinking coffee or driving without the cigarette.



**As a general rule, there is no need to avoid alcohol because you have diabetes.**

You *should not* drink alcohol if you:

- are pregnant or trying to get pregnant
- are breastfeeding
- have a personal or family history of drinking problems
- are planning to drive or engage in other activities that require attention or skill
- are taking certain medications. Ask your pharmacist about your medications.

**Consider the following questions when deciding what is best for you.**

	Yes	No
<b>1</b> Is my diabetes under control?	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b> Am I free from health problems that alcohol can make worse such as disease of the pancreas, eye disease, high blood pressure, high triglycerides, liver problems, nerve damage or stroke?	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b> Do I know how to prevent and treat low blood sugar?	<input type="checkbox"/>	<input type="checkbox"/>

If you answered "no" to any of these questions, you should speak to your diabetes educator or health-care professional before drinking alcohol.

If you answered "yes" to all of these questions, it is OK to drink alcohol in moderation.

**Moderate alcohol intake is limited to 2 standard drinks/ day or less than 10 drinks/ week for women; and limited to 3 standard drinks/ day or less than 15 drinks/ week for men.**

This recommendation is the same for people without diabetes. For people with high blood pressure, alcohol should be limited to 1 drink/day for women and 2 drinks/day for men.



## What is a "standard drink"?

### 1 standard drink (10 g of alcohol):



#### Beer

341 mL (12 fl.oz)  
of regular strength beer  
(5% alcohol)



#### Spirits

43 mL (1.5 fl.oz) of spirits  
(40% alcohol)



#### Wine

142 mL (5 fl.oz) of wine  
(12% alcohol)

Note: If you are carbohydrate counting, do not take insulin for the carbohydrate content of alcoholic drinks.

## Health risks of alcohol use

You may have heard that alcohol has certain health benefits. However, any pattern of drinking can be harmful. Proven ways of improving your health include: healthy eating, being active, and being a non-smoker.

### The Diabetes Canada Clinical Practice Guidelines recommend that:

- People with type 1 diabetes should be aware that moderate consumption of alcohol with, or 2 to 3 hours after, an evening meal may result in delayed low blood sugar (hypoglycemia) the next morning after breakfast, or up to 24 hours after alcohol consumption. This also applies to people with type 2 diabetes who are using insulin or insulin secretagogues.
- Alcohol should be limited to 2 standard drinks/ day or less than 10 drinks/ week for women, and limited to 3 standard drinks/ day or less than 15 drinks/ week for men.
- People with diabetes should discuss alcohol use with their diabetes health-care team.

## Risks for people with diabetes

### Alcohol can:

- affect judgement
- provide empty calories that might lead to weight gain if taken in excess
- increase blood pressure and triglycerides
- cause damage to liver and nerves including brain and sexual organs
- contribute to inflammation of the pancreas
- dehydrate the body which is very dangerous in someone with high blood sugar
- worsen eye disease

### For young people in particular, alcohol use:

- can lead to addiction
- is associated with a dramatic increase in injuries and death



## Carbohydrate and calorie content in some common alcoholic beverages and mixes

(The amounts listed are a general guide only)

Beverage	Standard serving size	Energy (kcal)	Carbohydrate content (g)
<b>Beer:</b>			
regular	341 mL (12 fl.oz)	147	12
light	341 mL (12 fl.oz)	99	6
non-alcoholic*	355 mL (~12 fl.oz)	40-80	9-17
low carb*	341 mL (12 fl.oz)	96	3
<b>Spirits/Hard liquor</b>	43 mL (1.5 fl.oz)	98	0
<b>Liqueurs &amp; Cordials</b>	43 mL (1.5 fl.oz)	155-190	10-25
<b>Wine:</b>			
regular	142 mL (5 fl.oz)	106-127	2-4
dessert	142 mL (5 fl.oz)	233-243	18-21
non-alcoholic	142 mL (5 fl.oz)	9	2
<b>Cooler:</b>			
regular	355 mL (12 fl.oz)	178-258	21-38
light*	330 mL (12 fl.oz)	100	1
<b>Mixes:</b>			
Sugar free pop	250 mL (8 fl.oz)	0	0
Regular pop	250 mL (8 fl.oz)	107	28
Club soda	250 mL (8 fl.oz)	0	0
Tonic water	250 mL (8 fl.oz)	88	23
Orange juice	250 mL (8 fl.oz)	118	27
Tomato juice	250 mL (8 fl.oz)	44	9
Tomato and clam juice	250 mL (8 fl.oz)	123	28

Reference: Canadian Nutrient File, 2018; USDA Food Composition Databases, 2018; \*Actual Label

The caloric and carbohydrate content may vary by brand, be sure to check the labels

### THE BOTTOM LINE

- If you do not drink alcohol, don't start.
- If you choose to drink alcohol, intake should be moderate (daily intake should be limited to 2-3 drinks for adult men and 1-2 drinks for adult women). When drinking alcohol, make sure you know how to prevent and treat low blood sugar.
- Heavy alcohol drinkers (more than 21 drinks/week for men and more than 14 drinks/week for women) are strongly advised to reduce the amount of alcohol they drink. Heavy alcohol use can make blood sugar control more difficult and increases other health risks.
- Talk to your diabetes educator or health-care professional if you have questions.

**Related article:** *High blood pressure and diabetes*

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

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## For those on insulin or some diabetes medications

Drinking alcohol can increase your risk of having low blood sugar. To reduce this risk, take the following steps:

### BEFORE drinking alcohol

Eat regular meals, take your medication(s), and check your blood sugar levels frequently (keep your blood glucose meter with you).

- Always have a treatment for low blood sugar with you (such as 3 glucose tablets or 150 mL regular pop or 6 Life Savers®).
- Wherever you are, make sure someone with you knows your signs and symptoms of low blood sugar and how to treat it so they can help you.
- Be aware that glucagon, a treatment for low blood sugar, will not work while alcohol is in the body. Because of this, make sure that someone knows to call an ambulance if you pass out.
- Wear diabetes identification such as a MedicAlert® bracelet.

### WHILE drinking alcohol

- Eat carbohydrate-rich foods when drinking alcohol. Some ideas:

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- Eat extra carbohydrate-rich foods if you are dancing, playing sports or doing other physical activity.
- Always pour your own drinks. Use less alcohol and stretch your drinks with sugar-free mixes.
- Drink slowly. Make your second drink without alcohol.

### AFTER drinking alcohol

- Tell a responsible person that you have been drinking. They should look for low blood sugar symptoms.

(eg.)

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- Check your blood sugar before going to bed. Eat a carbohydrate snack if your blood sugar is lower than usual.
- Set an alarm or have a responsible person wake you up through the night and early morning – a delayed low blood sugar can occur **anytime up to 24 hours** after drinking alcohol.
- You need to get up on time the next day for any food, medication or insulin you normally take. Missed medication or insulin can lead to high blood sugar, ketones and diabetic ketoacidosis (DKA).