

YOUR GUIDE TO **DIABETES**

- What is diabetes?
- Type 2 diabetes prevention
- Prevention checklist
- Living with diabetes
- Complications
- Terms to know
- Resources



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TO PROMOTE AND PROTECT THE HEALTH OF CANADIANS THROUGH LEADERSHIP,
PARTNERSHIP, INNOVATION AND ACTION IN PUBLIC HEALTH.

—PUBLIC HEALTH AGENCY OF CANADA

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Your Guide to Diabetes

- ▶ Diabetes affects roughly two and a half million Canadians. Left untreated, diabetes can lead to many serious complications, including: heart disease, kidney disease, vision loss, and lower limb amputation.
- ▶ The Public Health Agency of Canada (PHAC) estimates that 5 million Canadians over the age of 20 are currently pre-diabetic. An additional 1 million new cases of pre-diabetes are expected by 2016. Pre-diabetes is a key risk factor for type 2 diabetes, and if left untreated more than half of the people with pre-diabetes will develop type 2 diabetes within 8 to 10 years.
- ▶ Although diabetes can lead to serious complications and premature death, there are steps that can be taken to prevent or control the disease and lower the risk of complications. This guide is intended to help you understand diabetes, how certain types can be prevented or managed, and how to live with the condition.



Did You Know?

You may be pre-diabetic and not know it. Pre-diabetes occurs when blood sugar levels are high, but not high enough to diagnose diabetes. Talk to your health care provider to learn more.

What is diabetes?

Diabetes is a chronic disease that results from the body's inability to sufficiently produce and/or properly use insulin, a hormone that regulates the way glucose (sugar) is stored and used in the body. The body needs insulin to use sugar as an energy source.

There are several forms of diabetes: type 1, type 2 and gestational diabetes.

What is pre-diabetes?

Pre-diabetes occurs when blood glucose (sugar) levels are higher than normal, but not high enough for a diagnosis of diabetes. Glucose is the main sugar found in the blood and the body's main source of energy.

If left untreated, more than half of the people with pre-diabetes will have type 2 diabetes within 8 to 10 years.

Pre-diabetes can be prevented, and is most common in people over the age of 40 and in people who are overweight.

Pre-diabetes can be managed, or in some cases reversed, through healthy lifestyle choices.

Understanding type 1, type 2, and gestational diabetes

	TYPE 1 DIABETES	TYPE 2 DIABETES (MOST COMMON)	GESTATIONAL DIABETES
WHAT HAPPENS?	<ul style="list-style-type: none"> ➤ The body can no longer produce insulin. 	<ul style="list-style-type: none"> ➤ The body does not make enough insulin and/or does not respond well to the insulin it makes. 	<ul style="list-style-type: none"> ➤ High blood sugar (hyperglycemia) occurs during pregnancy, but usually disappears within six weeks of delivery.
DEVELOPS WHEN?	<ul style="list-style-type: none"> ➤ Usually develops in childhood or early adolescence. 	<ul style="list-style-type: none"> ➤ Most common in people over the age of 40 and in people who are overweight. 	<ul style="list-style-type: none"> ➤ Develops during pregnancy, affecting 4 per cent of all pregnant women.
ACTIONS	<ul style="list-style-type: none"> ➤ Healthy lifestyle choices can reduce the risk of serious complications. ➤ Requires multiple injections to regulate insulin levels. 	<ul style="list-style-type: none"> ➤ Healthy lifestyle choices can reduce the risk of serious complications. ➤ May require medication to regulate blood glucose levels. 	<ul style="list-style-type: none"> ➤ May be managed through healthy lifestyle choices. ➤ May require medication to regulate blood glucose levels.
RISKS	<ul style="list-style-type: none"> ➤ Can lead to many complications, including: heart disease, kidney disease, vision loss and lower limb amputation. 	<ul style="list-style-type: none"> ➤ Can lead to many complications, including: heart disease, kidney disease, vision loss and lower limb amputation. 	<ul style="list-style-type: none"> ➤ Increases the risk of both the mother and child developing type 2 diabetes.

Type 2 Diabetes Prevention

What is type 2 diabetes?

Type 2 diabetes occurs when the body no longer produces enough insulin, or has difficulty using the insulin it produces, causing sugar to build up in the blood.

Over time, this damages blood vessels and nerves and can result in severe complications including: blindness, heart disease, stroke, kidney failure, nerve damage, amputation, and erectile dysfunction.

Adopting a healthier lifestyle can help prevent or control type 2 diabetes, and can significantly reduce your risk of heart disease, and stroke. It can also contribute to your overall well-being and quality of life.



Did You Know?

Nine out of ten Canadians with diabetes have type 2 diabetes. Seniors represent almost 45 per cent of the total number of people with the disease, and this number is expected to rise as Canada's population continues to age.

How is diabetes diagnosed?

Diabetes is diagnosed by measuring blood glucose (sugar) levels. However, there are a variety of different ways to test for diabetes. Your healthcare provider can identify which test is best for you.

Who is at-risk?

If you have one or more of the following factors, you may be at risk of developing type 2 diabetes:

- Pre-diabetes
- Overweight or obesity
- Age (people 40 years of age or older are at higher risk)
- High blood pressure
- Physically inactive
- Family history of diabetes
- Member of some ethnic populations including South Asian, East Asian, Aboriginal and Black
- History of gestational diabetes

Did You Know?

You can have type 2 diabetes, but may not notice any signs or symptoms. Regular check-ups with your healthcare provider are important to prevent or manage diabetes.



What are the symptoms of type 2 diabetes?

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

If you have any of these symptoms, you may wish to visit your healthcare provider. Good management can prevent or delay complications associated with the disease.

Prevention Checklist

While you can't change some risk factors (age, family history, ethnic background, etc.), other risk factors for diabetes may respond to lifestyle changes.

KNOW YOUR BODY MASS INDEX (BMI)

Being overweight or obese puts you at risk for developing type 2 diabetes. BMI is an easy way to estimate excess fat. Even a small change in body weight can reduce your risk of diabetes.

BMI scores of:

Below 18.5 = Underweight

18.5–24.9 = Normal

25.0–29.9 = Overweight/Pre-obese

30.0 and over = Obese

To calculate your BMI, go to the inside back cover of this guide or visit www.publichealth.gc.ca/CANRISK to complete the Canadian diabetes risk questionnaire.



✔ MEASURE YOUR WAIST CIRCUMFERENCE

The risk of developing type 2 diabetes is higher if fat is stored around the abdomen (rather than the hips and thighs). BMI assessments do not take into account where fat is stored. Men with a waist circumference of 102 cm (40 inches) or more and women with a waist circumference of 88 cm (35 inches) or more are at higher risk. Measure after breathing out (do not hold your breath). This is not the same as the waist size on your pants.

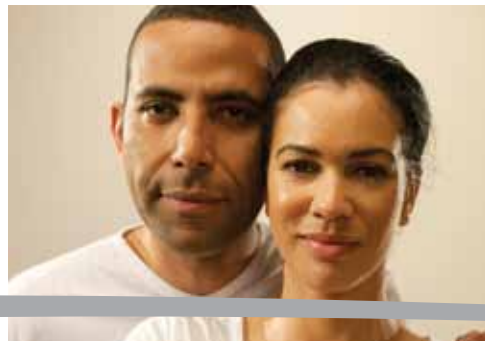
✔ EAT A HEALTHY, BALANCED DIET

By adding more fruits and vegetables to your diet, in addition to eating foods that are rich in fibre and low in sugar and fat, can help you maintain or lose weight.

In addition to monitoring the foods you eat, you should also monitor portion size, while still ensuring that they contain enough healthy nutrients. Health Canada's *Eating Well With Canada's Food Guide* can help you make healthy choices. Visit www.healthcanada.gc.ca/foodguide to learn more.

Did You Know?

Your waist circumference is important to know (this is not the same as the waist size of your pants).



☑ BE PHYSICALLY ACTIVE

Increasing physical activity, which can help control weight, can also reduce your chances of developing type 2 diabetes. Visit PHAC's website for more information about how to be more active:

www.publichealth.gc.ca/paguide

☑ MANAGE HIGH BLOOD PRESSURE, CHOLESTEROL AND GLUCOSE (SUGAR) LEVELS

Studies show that managing your blood pressure, cholesterol, and glucose (sugar) levels can substantially reduce the risk of diabetes complications such as heart disease and stroke. A healthcare provider can help to create a plan to monitor and manage your blood pressure, cholesterol and glucose.



Living With Diabetes

Living with diabetes involves working with healthcare providers to monitor and manage blood glucose (sugar), blood pressure and cholesterol levels to reduce the risk of complications.

This should be paired with healthy lifestyle choices, including a healthy diet and physical activity.

For all types of diabetes, education helps ensure that people living with the disease gain the skills, knowledge and resources needed to help them manage their condition.



Did You Know?

Steps can be taken to prevent or control diabetes and lower the risk of complications.

Living with Type 1 Diabetes:

Life with type 1 diabetes poses lifelong challenges for every member of the family.

People with type 1 diabetes should:

- Test blood glucose (sugar) levels three or more times per day and adjust their insulin through injections or an insulin pump.
- Ensure insulin doses are balanced with food intake and level of daily activity. People with type 1 diabetes may experience low and high blood sugar levels, which should be carefully monitored and managed.

While living with type 1 diabetes requires a certain amount of daily structure, newer pumps and insulin products have provided more flexibility in the management of this condition.

A healthcare provider can provide advice to help properly manage blood glucose levels.



Living with Type 2 Diabetes:

People with type 2 diabetes can help regulate blood glucose (sugar) levels and reduce the risk of complications by:

- Losing excess weight
- Maintaining a healthy diet
- Being physically active

Oral medications and/or insulin may be prescribed to help regulate blood sugar levels.

Living with Gestational Diabetes:

Gestational diabetes occurs during pregnancy, and usually disappears within six weeks of delivery. Women with gestational diabetes can often keep blood glucose (sugar) levels within an acceptable range by eating well and exercising regularly. In some cases, women with gestational diabetes will need oral medications or insulin injections.



Who is at risk?

Pregnant women with one or more of the following factors:

- 35 years of age or older
- Obesity
- Gestational diabetes during a previous pregnancy
- Previously given birth to a baby weighing more than 4 kg (9 lbs)
- Parent, brother or sister with type 2 diabetes
- Polycystic ovary syndrome (PCOS)
- Acanthosis nigricans (darkened patches of skin in the neck, underarm and groin area)

How is gestational diabetes diagnosed?

Gestational diabetes is regularly diagnosed by measuring blood glucose (sugar) levels. There are different ways to test for diabetes. Your healthcare provider can identify which test is best for you.



Did You Know?

Gestational diabetes develops during pregnancy, affecting four per cent of all pregnant women. You can help manage gestational diabetes by eating well and exercising regularly.

Complications

What are common complications from living with diabetes?

CARDIOVASCULAR DISEASE

- Over time, diabetes can damage arteries, which may result in high blood pressure.
- If not controlled, this can lead to stroke, heart failure or heart attack.
- People with diabetes need to keep their blood pressure and cholesterol under control.

KIDNEY DISEASE

- Kidney damage can develop in some people with diabetes.
- If left untreated, this can lead to more severe kidney damage or kidney failure.
- If you have diabetes, you should have your kidney function tested regularly.



Did You Know?

A healthcare provider can help with monitoring blood glucose (sugar) levels, as well as ensuring that necessary preventive care treatments and advice are received in a timely manner.

VISION LOSS

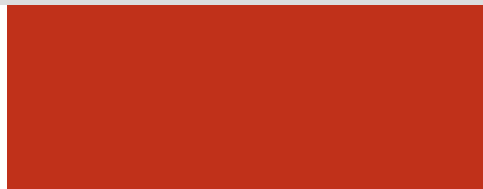
- Diabetic eye disease (diabetic retinopathy) can lead to loss of vision and blindness.
- Regular eye exams can help find problems that can be treated if found early.

LOWER LIMB AMPUTATION

- Over time, diabetes can damage sensory nerves, especially in the hands and feet.
- As a result, people with diabetes may not feel a foot injury, such as a blister or cut. Even a small injury, if left untreated, can quickly become infected. This can lead to serious complications such as amputation.
- People with diabetes should regularly check their feet and skin for ulcers and wounds (such as blisters and cuts).

OTHER COMPLICATIONS

People with diabetes are likely to develop other conditions such as dental disease and mental illness (depression).



For those diagnosed with diabetes, you can reduce the risk of complications:

- Monitor blood glucose (sugar) levels with appropriate testing and an A1C blood test every three months to measure the average amount of sugar in your blood
- If you smoke, it's never too late to quit
- Be physically active
- Eat a healthy, balanced diet in accordance with Health Canada's *Eating Well with Canada's Food Guide*
- Maintain a healthy cholesterol level
- Control blood pressure
- Examine feet and skin every day
- Have an eye exam at least once a year
- Have a kidney function test at least once a year
- Visit your healthcare provider regularly



Diabetes – Terms to Know

A1C

A1C also known as HbA1c, is a blood test that shows the average amount of sugar in your blood over three months. It shows how well you are controlling your diabetes.

ACANTHOSIS NIGRICANS

Acanthosis nigricans is a skin condition, which leads to dark markings found typically around the neck, underarms or groin area. It is most often associated with obesity and may occur at any age.

BLOOD GLUCOSE

Blood glucose is the main sugar found in the blood and the body's main source of energy. The A1C blood test is used to measure a person's average blood glucose level over 2 to 3 months. Type 2 diabetes is usually diagnosed based on elevated fasting blood glucose (7.0 millimole/litre (mmol/L) or greater).

BLOOD LIPID

Blood lipid is a term for fat in the blood and is measured with a lipid profile blood test. The lipid profile test measures total cholesterol (the fat produced by the liver and found in some foods), triglycerides (the storage form of fat in the body), high-density lipoprotein (HDL) cholesterol (or "good" cholesterol), and low density lipoprotein (LDL) cholesterol (or "bad" cholesterol).

BLOOD PRESSURE

Blood pressure is the force of blood on the inside walls of blood vessels. It is measured by analyzing both the systolic (the pressure when the heart pushes blood out into the arteries) pressure and the diastolic (pressure when the heart is at rest) blood pressure.

CARDIOVASCULAR DISEASE

Cardiovascular disease is a term that refers to diseases of the circulatory system including the heart and blood vessels.

DIABETIC RETINOPATHY

Diabetic retinopathy is an eye disease that results from damage to the small blood vessels in the retina, which may lead to loss of eyesight. It affects the back part of the eye that contains the cells that respond to light. There are some treatments if the disease is caught early, one of which is laser therapy.

DIALYSIS

Dialysis is a treatment for kidney failure which removes wastes and water from the blood.

END-STAGE RENAL DISEASE

End-stage renal disease is kidney failure requiring dialysis or a transplant to survive.

IMPAIRED FASTING GLUCOSE

Impaired fasting glucose is defined as blood glucose levels of 6.1 to 6.9 mmol/L from a fasting blood test.

INSULIN

Insulin is a hormone which regulates the way glucose is stored and used in the body.

INSULIN RESISTANCE

Insulin resistance occurs when normal levels of insulin are insufficient to produce a normal insulin response in muscles, fat and the liver. It is associated with obesity, particularly abdominal obesity. Insulin resistance leads to elevated blood glucose and triglyceride levels and is a characteristic of both metabolic syndrome and type 2 diabetes.

POLYCYSTIC OVARY SYNDROME

Polycystic Ovary Syndrome, sometimes called Polycystic Ovarian Disease, is a hormonal disorder that causes the ovaries to produce higher than normal amounts of androgens (male hormones) that interferes with egg production. As a result, the ovary produces a cyst instead of an egg. Women with polycystic ovary syndrome tend to be insulin resistant.

VASCULAR DISEASES

Vascular Diseases are conditions that affect the blood vessels that carry blood throughout the body. Atherosclerosis, hardening of the arteries caused by the build up of fatty deposits, is a common form of vascular disease.

For More Information

The Public Health Agency of Canada
www.publichealth.gc.ca

Canadian Diabetes Association
www.diabetes.ca

Diabète Québec
www.diabete.qc.ca/en/

Juvenile Diabetes Research Foundation Canada
www.jdrf.ca

Kidney Foundation of Canada
www.kidney.ca

The Canadian National Institute for the Blind
www.cnib.ca

The Canadian Association of Wound Care
www.cawc.net

The Canadian Institutes of Health Research –
Institute of Nutrition, Metabolism and Diabetes
www.cihr.ca

Health Canada – Aboriginal Diabetes Initiative
<http://www.hc-sc.gc.ca/fniah-spnia/diseases-maladies/diabete/index-eng.php>

BMI CHART

HEIGHT

feet/
inches

cm

6'4"	192.5	12	13	13	14	15	16	17	18	18	19	20	21	22	22	23	24	24	26	26	27	28	29	29	30	31	32	33	34	34
6'3"	190	12	13	14	15	16	16	17	18	19	20	20	21	22	23	24	24	25	26	27	28	29	29	30	31	32	33	34	34	34
6'2"	187.5	13	13	14	15	16	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	29	30	31	32	33	34	34	36	
6'1"	185	13	14	15	15	16	17	18	19	20	21	22	22	23	24	25	26	27	28	29	29	30	31	32	33	34	34	36	37	
6'0"	182.5	13	14	15	16	17	18	19	20	20	21	22	23	24	24	26	27	28	29	29	30	31	32	33	34	34	36	37	38	
5'11"	180	14	15	15	16	17	18	19	20	21	22	23	24	24	26	27	27	28	29	30	31	32	33	34	34	36	37	38	39	
5'10"	177.5	14	15	16	17	18	19	20	21	22	23	23	24	25	26	27	28	29	30	31	32	33	34	34	36	37	38	39	40	
5'9"	175	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	34	36	37	38	39	40	41	
5'8"	172.5	15	16	17	18	19	20	21	22	23	24	24	26	27	28	29	29	31	32	33	34	34	36	37	38	39	40	41	42	
5'7"	170	15	16	17	18	19	20	21	22	24	24	26	27	28	29	29	31	32	33	34	34	36	37	38	39	40	41	42	43	
5'6"	167.5	16	17	18	19	20	21	22	23	24	25	26	27	29	29	31	32	33	34	34	36	37	38	39	40	41	42	43	45	
5'5"	165	16	17	18	19	21	22	23	24	24	26	27	28	29	30	32	33	34	34	36	37	38	39	40	42	43	44	45	46	
5'4"	162.5	17	18	19	20	21	22	23	24	26	27	28	29	30	31	33	34	34	36	37	38	39	41	42	43	44	45	46	47	
5'3"	160	17	18	20	21	22	23	24	25	27	28	29	30	31	32	34	34	36	37	38	39	41	42	43	44	45	46	48	49	
5'2"	157.5	18	19	20	21	23	24	24	26	27	29	29	31	32	33	34	36	37	38	40	41	42	43	44	46	47	48	49	50	
5'1"	155	18	20	21	22	23	24	26	27	28	29	31	32	33	34	36	37	38	40	41	42	43	45	46	47	48	50	51	52	
5'0"	152.5	19	20	21	23	24	25	27	28	29	31	32	33	34	36	37	38	40	41	42	43	45	46	47	49	50	51	52	54	
4'11"	150	20	21	22	24	24	26	28	29	30	32	33	34	36	37	38	40	41	42	44	45	46	48	49	50	52	53	54	56	
4'10"	147.5	20	22	23	24	26	27	28	29	31	33	34	35	37	38	40	41	42	44	45	46	48	49	51	52	53	55	56	57	
4'9"	145	21	22	24	25	27	28	29	31	32	34	35	37	38	39	41	42	44	45	47	48	49	51	52	54	55	57	58	59	
4'8"	142.5	22	23	24	26	28	29	31	32	33	34	36	38	39	41	42	44	45	47	48	50	51	53	54	56	57	59	60	62	
WEIGHT (kg)		44	47	50	53	56	59	62	65	68	71	74	77	80	83	86	89	92	95	98	101	104	107	110	113	116	119	122	125	
WEIGHT (lbs)		97	103	110	117	123	130	136	143	150	156	163	169	176	183	189	196	202	209	216	222	229	235	242	249	255	262	268	275	



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