

Are you at risk for diabetes?

The following questions will help you to find out if you are at higher risk of having type 2 diabetes. You can have undiagnosed type 2 diabetes without having any obvious warning signs or symptoms. Knowing your risk can help you make healthy choices now that will reduce your risk or even prevent you from developing diabetes.

Please answer the questions as honestly and completely as you can. If you wish, a friend or family member can help you to complete this form. Answer all questions. Enter your scores for each question in the box on the right-hand side and then add them up to calculate your total risk score.

This questionnaire is intended for adults aged *18 to 74 years.

1. Select your age group:

- ☐ *18-44 years
- ☐ 45-54 years
- ☐ 55-64 years
- ☐ 65-74 years

0 points
7 points
13 points
15 points

* The original CANRISK tool was specifically created for adult populations aged 40-74. Scores for ages 39 and younger are based solely on the CTFPHC Recommendations on screening for Type 2 diabetes in adults.

AS YOU GET OLDER, YOUR RISK OF DEVELOPING DIABETES GOES UP.

2. Are you male or female?

- ☐ Male
- ☐ Female

6 points
0 points

3. How tall are you and how much do you weigh? Use **Appendix 1 (BMI Chart)** on the last page to answer the question below. Select your BMI group from the following choices:

- ☐ White (BMI less than 25)
- ☐ Light grey (BMI 25 to 29)
- ☐ Dark grey (BMI 30 to 34)
- ☐ Black (BMI 35 and over)

0 points
4 points
9 points
14 points

4. Using a tape measure, place it around your waist at the level of your belly button. Measure after breathing out (do not hold your breath). Then check the box that contains your measurement (note: this is not the same as the "waist size" on your pants).

MEN

- ☐ Less than 94 cm or 37 inches
- ☐ Between 94-102 cm or 37-40 inches
- ☐ Over 102 cm or 40 inches

WOMEN

- ☐ Less than 80 cm or 31.5 inches
- ☐ Between 80-88 cm or 31.5-35 inches
- ☐ Over 88 cm or 35 inches

0 points
4 points
6 points

BODY SHAPE AND SIZE CAN AFFECT YOUR RISK OF DIABETES.

5. Do you usually do some physical activity such as brisk walking for at least 30 minutes each day? This activity can be done while at work or at home.

- ☐ Yes
- ☐ No

0 points
1 point

SCORE

Add up your points from questions 1 to 12 to determine your Total Risk Score:

0-32 POINTS LOW TO MODERATE RISK	1-17% chance of being diagnosed with diabetes over the next 10 years*	The CTFPHC recommends <u>not routinely screening</u> for type 2 diabetes.
33-42 POINTS HIGH RISK	33% chance of being diagnosed with diabetes over the next 10 years*	The CTFPHC recommends <u>screening every 3-5 years</u> with A1C.†
43+ POINTS VERY HIGH RISK	50% chance of being diagnosed with diabetes over the next 10 years*	The CTFPHC recommends <u>annual screening</u> with A1C.†

* The 10-year predictive value of CANRISK has been based on the predictive value of the FINDRISC calculator.

Recommendations are for screening adults without symptoms of type 2 diabetes using blood tests. These recommendations do not apply to adults already diagnosed with type 2 diabetes, those at risk for type 1 diabetes, or those with symptoms of diabetes.

Symptoms of diabetes include: unusual thirst, frequent urination, weight change (gain or loss), extreme fatigue or lack of energy, blurred vision, frequent and recurring infections, cuts and bruises that are slow to heal, and/or tingling or numbness in the hands or feet.

† WHAT IS A1C?

The A1C test is a simple lab test that reflects your average blood glucose level over the last 3 months. A small blood sample to check your A1C can be taken at any time of the day.

Be informed!

TALK TO YOUR HEALTH CARE PROVIDER ABOUT WHEN AND HOW OFTEN YOU SHOULD BE SCREENED FOR TYPE 2 DIABETES.

SCREENING FOR TYPE 2
D I A B E T E S
IN THE ADULT POPULATION
2012

INSTRUCTIONS

- 1 Using the Risk Calculator below, determine your patient's risk. Then continue to page 2 for further instructions. Please note that there is a corresponding **Type 2 Diabetes Risk Calculator for Patients**.

Please note: Recommendations are presented for screening *asymptomatic* adults for type 2 diabetes using blood tests. These recommendations do not apply to adults already diagnosed with type 2 diabetes, those at risk for type 1 diabetes, or those with symptoms of diabetes. Symptoms of diabetes include: unusual thirst, frequent urination, weight change (gain or loss), extreme fatigue or lack of energy, blurred vision, frequent and recurring infections, cuts and bruises that are slow to heal, and/or tingling or numbness in the hands or feet.

TYPE 2 DIABETES RISK CALCULATOR FOR CLINICIANS¹

1. How old is your patient?

- ☐ 18-44 years (0 POINTS)
☐ 45-54 years (2 POINTS)
☐ 55-64 years (3 POINTS)
☐ 65 years and older (4 POINTS)

2. What is your patient's body-mass index

(BMI)/BMI category? - (See Appendix 1 for a BMI chart or visit www.bmi-calculator.net for a BMI calculator.)

- ☐ Normal (Lower than 25.0 kg/m²) (0 POINTS)
☐ Overweight (25.0-29.9 kg/m²) (1 POINT)
☐ Obese (30.0 kg/m² or higher) (3 POINTS)

3. What is your patient's waist circumference?

Waist circumference is measured below the ribs (usually at the level of the navel).

MEN

- ☐ Less than 94 cm (less than ~37 inches) (0 POINTS)
☐ 94-102 cm (~37-40 inches) (3 POINTS)
☐ More than 102 cm (more than ~40 inches) (4 POINTS)

WOMEN

- ☐ Less than 80 cm (less than ~31 inches) (0 POINTS)
☐ 80-88 cm (~31-35 inches) (3 POINTS)
☐ More than 88 cm (more than ~35 inches) (4 POINTS)

4. Is your patient physically active for more than 30 minutes every day? This includes physical activity during work, leisure, or regular daily routine.

- ☐ Yes (0 POINTS)
☐ No (2 POINTS)

5. How often does your patient eat vegetables and fruits?

- ☐ Every day (0 POINTS)
☐ Not every day (1 POINT)

6. Has your patient ever taken medication for high blood pressure on a regular basis?

- ☐ No (0 POINTS)
☐ Yes (2 POINTS)

7. Has your patient ever been found to have high blood glucose (e.g. in a health examination, during an illness, during pregnancy)?

- ☐ No (0 POINTS)
☐ Yes (5 POINTS)

8. Have any members of your patient's immediate family or other relatives been diagnosed with diabetes (type 1 or type 2)? This question applies to blood relatives only.

- ☐ No (0 POINTS)
☐ Yes: grandparent, aunt, uncle, or first cousin (3 POINTS)
(but not own parent, brother, sister, or child)
☐ Yes: parent, brother, sister, or own child (5 POINTS)

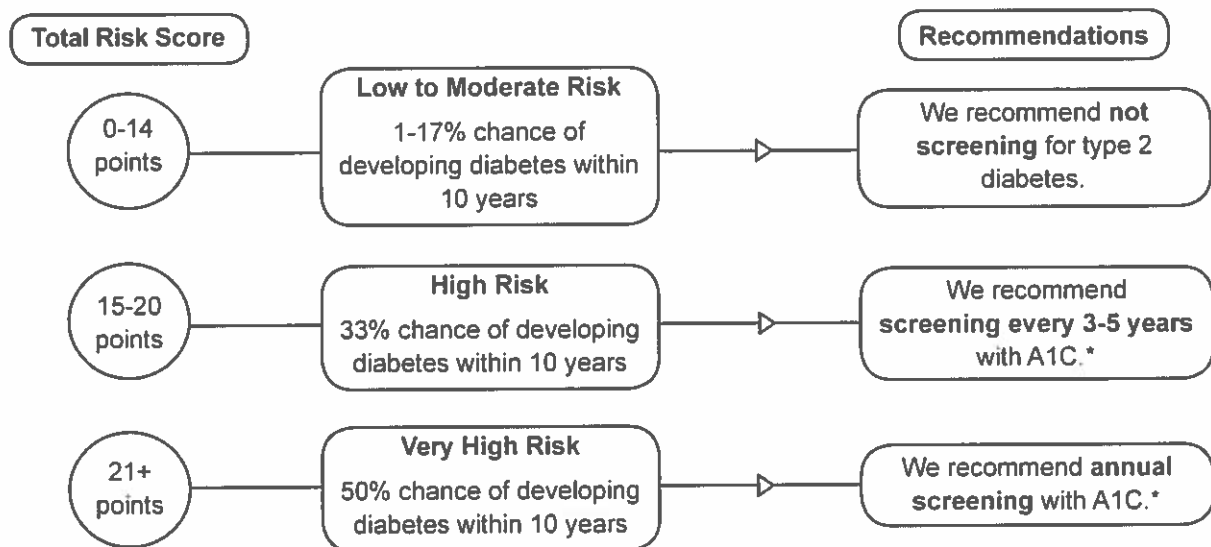
¹Source: Finnish Diabetes Risk Score (FINDRISC) questionnaire by Adjunct Professor Jaana Lindstrom, Diabetes Prevention Unit, Department of Chronic Disease Prevention, National Institute for Health and Welfare, Helsinki, Finland and Professor Jaakko Tuomilehto, Center for Vascular Prevention, Danube-University Krems, Krems, Austria

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**SCREENING FOR TYPE 2
D I A B E T E S
IN THE ADULT POPULATION
—2012—**

INSTRUCTIONS

- 2 Add up points from the previous page to determine your PATIENT'S TOTAL RISK SCORE: ____ POINTS
- 3 Use your patient's results from the risk calculator in the flow chart below to determine the Canadian Task Force on Preventive Health Care (CTFPHC)'s screening recommendations.



RISK CALCULATOR

The CTFPHC selected FINDRISC as the preferred risk questionnaire because it has been validated, has similar test accuracy to the Canadian Diabetes Risk Questionnaire: CANRISK. Its use has led to improved patient important outcomes (e.g. reduced incidence of diabetes when combined with an educational intervention). Patient important outcomes are outcomes that are of particular relevance to and valued by patients, including things like quality of life, pain control or other symptom relief, etc. The literature review did not identify any studies reporting on the impact of CANRISK on patient important outcomes. CANRISK has only been validated in a cross sectional convenience sample of patients and is longer than FINDRISC.

There is no evidence to guide the optimal frequency of risk calculation. Based on evidence for screening interval, the CTFPHC suggests risk calculation at least every 3-5 years for adults 18+ years of age.

FINDRISC QUESTIONNAIRE: www.diabetes.fi/files/1100/Type2diabetesRiskTest_.jpg

CANRISK QUESTIONNAIRE: www.phac-aspc.gc.ca/cd-mc/diabetes-diabete/canrisk/canrisk-eng.php

SCREENING TEST

*The CTFPHC selected A1C as the preferred screening test, but noted that the fasting glucose measurement and the glucose tolerance test are acceptable alternatives. A1C is commonly referred to as glycated hemoglobin, glycosylated hemoglobin, hemoglobin A1c, HbA_{1c}, Hb_{1c}, or HbA1c. A1C of 6.5% is recommended as the cut point for diagnosing diabetes but a value less than 6.5% does not exclude diabetes diagnosed using glucose tests. A1C should be measured using a standardized, validated assay.

SCREENING FOR TYPE 2
D I A B E T E S
IN THE ADULT POPULATION
—2012—

FREQUENTLY ASKED QUESTIONS
FOR CLINICIANS

How were the type 2 diabetes screening recommendations created?

The guidelines for type 2 diabetes were led by six members of the Canadian Task Force on Preventive Health Care (CTFPHC), who established the key research questions and data analysis plan for a systematic review on diabetes screening.

The Evidence Review and Synthesis Centre gathered a team of methodologists and clinical experts to independently perform a systematic review to answer these key questions. The team created the analytical framework and summarized evidence using a systematic review and quantitative summary of relevant, available evidence; narrative summaries were developed when quantitative synthesis was not feasible. Contextual questions were addressed by targeted literature searches. Where possible, literature searches were updates of previously published reviews from the U.S. Preventative Services Task Force. Randomized controlled trials, observational studies with comparison groups, and modeling studies were used to determine harms and benefits of screening.

After reviewing the evidence, the Diabetes Screening Working Group independently developed recommendations by consensus. The Grades of Recommendation Assessment, Development and Evaluation (GRADE) system was used to assess the quality of evidence available and to rate the strength of recommendations. The strength of the recommendations in the grade system is based on the following criteria:

- Quality of supporting evidence
- Degree of uncertainty about the balance between desirable and undesirable effects associated with screening
- Degree of uncertainty or variability in patient values and preferences
- Degree of uncertainty about whether the intervention represents a wise use of resource.

Recommendations were then revised and approved by the entire Task Force. In addition to Task Force workgroup members, a content expert was part of the evidence review team.

The research questions, systematic review, and recommendations underwent internal and external peer review by experts in the field and by stakeholders and partners.

What is the Finnish Diabetes Risk Score (FINDRISC) questionnaire and why did the CTFPHC select it as the preferred risk questionnaire?

The CTFPHC's Type 2 Diabetes Risk Calculator is adapted from the FINDRISC questionnaire and contains the same eight questions related to age, BMI, waist circumference, physical activity, diet (fruits and vegetables), use of antihypertensive medications, history of having elevated blood glucose, and family history of diabetes.

A recent systematic review of high methodological quality identified seven validated diabetes risk calculators, including FINDRISC, to be the most promising for adaptation and use in routine clinical practice.

The CTFPHC selected FINDRISC as the preferred risk questionnaire because:

- It has been validated internally and externally in the most countries: Finland, Holland, Denmark, Sweden, UK, and Australia.
- Preliminary results of a study using FINDRISC to identify people at high risk for type 2 diabetes combined with an educational intervention showed a reduced incidence in type 2 diabetes after 12 months.

What is the Canadian Diabetes Risk Assessment Questionnaire (CANRISK)?

CANRISK includes the eight original questions in the validated FINDRISC calculator, but also adds questions about the patient's ethnicity, sex, level of education, and history of macrosomia. CANRISK predicts the likelihood that a person will be found to have either prediabetes or diabetes today, based on the Oral Glucose Tolerance Test and the World Health Organization's diagnostic standards.

To date, the CANRISK has only been validated in a cross sectional convenience sample of patients, it has not been tested in randomized clinical trials. For this reason, the FINDRISC was selected over the CANRISK. Although not fully validated to date, CANRISK is an acceptable alternative to FINDRISC.

Why is A1C selected as the preferred screening test?

A recent high quality systematic review examined how A1C performed in diagnosing type 2 diabetes compared to other measures of plasma glucose. Recommendations are based on the quality of evidence assessed by GRADE. Analysis of the evidence indicated a range of A1C levels between 5.8-7.3% associated with retinopathy. The papers reported equal or almost equal sensitivity and specificity for A1C compared to glucose measurement as a predictor of prevalent retinopathy.

The Canadian Task Force on Preventive Health Care (CTFPHC): Putting Prevention into Practice

The CTFPHC is an independent panel of fourteen clinicians and methodologists with expertise in prevention, primary care, literature synthesis, critical appraisal, and the application of evidence to practice and policy. The CTFPHC makes recommendations about clinical maneuvers aimed at primary and secondary prevention.



Frequently Asked Questions for Patients

Information about Diabetes

What is type 2 diabetes?

Type 2 diabetes is a disease in which your body cannot produce enough insulin or properly use the insulin it makes. Insulin is a hormone that controls the amount of glucose (sugar) in your blood, and if you have type 2 diabetes, glucose builds up in your blood rather than being used for energy. Type 2 diabetes can be managed, but if untreated or not properly managed, it can have serious health complications, including:

- Heart and blood vessel disease
- Nerve damage
- Eye disease
- Kidney disease
- Alzheimer's disease
- Skin and mouth conditions (bacterial and fungal infections and gum infections)
- Hearing problems
- Osteoporosis

What are the differences between type 1, type 2, and gestational diabetes?

Type 1 diabetes occurs when the pancreas is unable to produce any insulin and generally begins in childhood or adolescence. Type 2 diabetes occurs when the pancreas does not produce enough insulin or properly use the insulin it makes and generally occurs in adulthood. Gestational diabetes is a temporary condition that occurs during pregnancy and can increase your risk of type 2 diabetes later in life.

What causes type 2 diabetes?

When many lifestyle factors start affecting the function of your pancreas, this can increase your risk of developing type 2 diabetes. These lifestyle factors include being overweight, having high blood pressure, and having high cholesterol. Genetic factors also contribute to having diabetes; people with a family history of the disease have an increased risk of developing diabetes.

What is body-mass index (BMI) and how is it related to type 2 diabetes?

BMI is a measure of body fat based on a formula that calculates the ratio of your height and weight. It can tell you if your body weight is in the overweight or obese category. Being overweight or obese can increase your risk of developing type 2 diabetes.

What are the symptoms of type 2 diabetes?

Common symptoms of diabetes include:

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



Is it possible to have diabetes without having any symptoms?

Yes, type 2 diabetes often develops in middle age over a period of months to years, and the symptoms may be non-existent or very mild; some people may just feel that they are getting “old.”

Is type 2 diabetes life-threatening?

Type 2 diabetes can be managed, but if untreated or not properly managed, it can have serious health complications, including:

- Nerve damage, causing pain, tingling, or a loss of feeling
- Digestion problems due to nerve damage
- Kidney damage or kidney failure
- Increased risk of heart attack and stroke
- Vision problems, including trouble seeing (especially at night), light sensitivity, or blindness
- Sores and infections in the feet or skin, leading to amputations of the limbs

Can type 2 diabetes be prevented?

Sometimes the development of type 2 diabetes can be slowed down or prevented by making lifestyle changes, especially through modest weight loss (about 5% if you are overweight) and by increasing physical activity; however, not everyone will avoid developing diabetes. A lot also depends on family history and other factors, but positive lifestyle habits will decrease the need for medication and increase quality of life. Other positive lifestyle habits include:

- Eating a healthy diet, which includes adequate fruits, vegetables, and fibre and minimizes fat, salt, and alcohol intake
- Ensuring adequate control over blood pressure and cholesterol
- Not smoking

Screening for Type 2 Diabetes

Should I get screened for type 2 diabetes?

To view the Canadian Task Force on Preventive Health Care (CTFPHC)'s screening recommendations for adults *without* symptoms of diabetes, please consult our **Type 2 Diabetes Risk Calculator for Patients**. Your risk level is calculated based upon factors such as:

- Age
- BMI category
- Waist circumference
- Physical activity
- Diet (fruits and vegetables)
- Use of high blood pressure medications
- History of having elevated blood glucose
- Family history of diabetes

Why are these recommendations important?

Type 2 diabetes is a serious condition that affects the whole body and reduces quality of life through immediate symptoms like fatigue, weight changes, and excess thirst. It also increases the risk of complications such as:

- Heart disease
- Kidney failure
- Blindness
- Nerve damage
- Amputations of limbs

However, it has been demonstrated that people who manage and control their diabetes in its early stages can minimize the risk of these complications.



What are the benefits of screening for type 2 diabetes?

Early diagnosis of type 2 diabetes allows for early management with diet, exercise, and medication (if necessary) that can delay the onset or reduce the risk of developing diabetic complications.

Are there any harms associated with screening for type 2 diabetes?

Some people may be anxious about being tested for type 2 diabetes, and people who are diagnosed may experience anxiety related to their diagnosis.

What is the best way to screen for type 2 diabetes?

The CTFPHC selected the A1C test as the preferred screening test because the small blood sample needed can be taken at any time of the day and it is as accurate as other tests. The A1C test is a simple lab test that reflects your average blood glucose level over the past 3 months. A small blood sample to check your A1C can be taken at any time of the day. The test is commonly used to diagnose type 1 and type 2 diabetes and to assess how those already diagnosed with diabetes are managing the disease. You can eat and drink normally prior to the test, as it does not require fasting. Acceptable alternative tests are the fasting glucose measurement and the glucose tolerance test.

Treatment for Type 2 Diabetes

How is type 2 diabetes treated?

Type 2 diabetes can be treated with:

- Physical activity
- Medication and/or insulin
- A healthy diet
- A combination of these treatments

The type of treatment you engage in depends on your blood glucose levels. All people with type 2 diabetes should follow a healthy lifestyle. Some may require oral medication as well to better control their blood glucose levels. Insulin is prescribed to patients when their type 2 diabetes becomes more severe.

Can type 2 diabetes be cured?

No, but it can be managed with a healthy lifestyle and medication.

My older relative had diabetes and it was not treated. What has changed?

Well-designed, long-term studies have conclusively shown that uncontrolled diabetes places people at very high risk for health complications, while controlled diabetes is protective.

The Canadian Task Force on Preventive Health Care (CTFPHC): Putting Prevention into Practice

The CTFPHC is an independent body of fourteen primary care and prevention experts who recognise and support the need for evidence informed preventive activities in primary care in Canada. We develop and disseminate clinical practice guidelines for primary and preventive care, based on the systematic analysis of scientific evidence. To learn more about the CTFPHC, visit our website at www.canadiantaskforce.ca.

You can also email the CTFPHC at info@canadiantaskforce.ca



Should you be screened for type 2 diabetes?

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

**Determine your risk level by using our Risk Calculator (below)
and use your results in the flow chart on page 2.**

A **Type 2 Diabetes Risk Calculator for Clinicians** is available if you require help from your healthcare provider answering some of the questions.

Please note: These recommendations are for screening adults without symptoms of diabetes.

They **do not** apply to those already diagnosed with type 2 diabetes, those at risk for type 1 diabetes, or those with symptoms of diabetes.

Symptoms of diabetes include: unusual thirst, frequent urination, weight change (gain or loss), extreme fatigue or lack of energy, blurred vision, frequent and recurring infections, cuts and bruises that are slow to heal, and/or tingling or numbness in the hands or feet.

It is important to recognize, however, that many people who have type 2 diabetes may display no symptoms.¹

Please speak to your family physician or primary health care provider if you are experiencing one or more of these symptoms.

Type 2 Diabetes Risk Calculator for Patients²

1. How old are you?

- ☐ 18-44 years (0 POINTS)
- ☐ 45-54 years (2 POINTS)
- ☐ 55-64 years (3 POINTS)
- ☐ 65 years and older (4 POINTS)

2. What is your body-mass index (BMI) category? - (See Appendix 1 for a BMI chart.)

- ☐ Normal (0 POINTS)
- ☐ Overweight (1 POINT)
- ☐ Obese (3 POINTS)

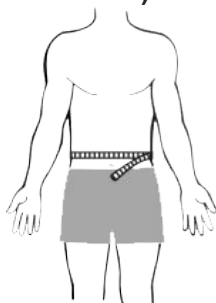
3. What is your waist circumference? Waist circumference is measured below the ribs (usually at the level of the navel).

MEN

- ☐ Less than 94 cm (less than ~37 inches) (0 POINTS)
- ☐ 94-102 cm (~37-40 inches) (3 POINTS)
- ☐ More than 102 cm (~more than 40 inches) (4 POINTS)

WOMEN

- ☐ Less than 80 cm (less than ~31 inches) (0 POINTS)
- ☐ 80-88 cm (~31-35 inches) (3 POINTS)
- ☐ More than 88 cm (~more than 35 inches) (4 POINTS)



4. Are you physically active for more than 30 minutes every day? This includes physical activity during work, leisure, or your regular daily routine.

- ☐ Yes (0 POINTS)
- ☐ No (2 POINTS)

5. How often do you eat vegetables and fruits?

- ☐ Every day (0 POINTS)
- ☐ Not every day (1 POINT)

6. Have you ever taken medication for high blood pressure on a regular basis?

- ☐ No (0 POINTS)
- ☐ Yes (2 POINTS)

7. Have you ever been found to have high blood glucose (e.g. in a health examination, during an illness, during pregnancy)?

- ☐ No (0 POINTS)
- ☐ Yes (5 POINTS)

8. Have any members of your immediate family or other relatives been diagnosed with diabetes (type 1 or type 2)? This question applies to blood relatives only.

- ☐ No (0 POINTS)
- ☐ Yes: grandparent, aunt, uncle, or first cousin (but not own parent, brother, sister or child) (3 POINTS)
- ☐ Yes: parent, brother, sister, or own child (5 POINTS)

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¹Source: Canadian Diabetes Association

²Source: Finnish Diabetes Risk Score (FINDRISC) questionnaire by Adjunct Professor Jaana Lindström, Diabetes Prevention Unit, Department of Chronic Disease Prevention, National Institute for Health and Welfare, Helsinki, Finland and Professor Jaakko Tuomilehto, Center for Vascular Prevention, Danube-University Krems, Krems, Austria



Add up points to determine your **Total Risk Score**
and use your results in the flow chart below.

Your Total Risk Score: ____ points

Total Risk Score

Recommendations

**0-14
points**

**Low to Moderate
Risk**

1-17% chance of developing
diabetes within 10 years

We recommend **not routinely
screening** for type 2 diabetes.

**15-20
points**

High Risk

33% chance of developing
diabetes within 10 years

We recommend **screening every
3-5 years** with A1C.*

**21+
points**

Very High Risk

50% chance of developing
diabetes within 10 years

We recommend **annual
screening** with A1C.*

Questions?

Consult our **Frequently Asked
Questions for Patients** or
email us at
info@canadiantaskforce.ca

What is A1C?

*The A1C test is a simple lab test that reflects your average blood glucose level over the last 3 months. A small blood sample to check your A1C can be taken at any time of the day. For more information, please see our **Frequently Asked Questions for Patients**.

For more information, please visit the Canadian Task Force on Preventive Health Care online at **www.canadiantaskforce.ca**