

# Type 2 Diabetes- Non-insulin Patient Resource Book

For current information about diabetes, check out Diabetes Canada www.diabetes.ca



# Type 2 Diabetes- non-insulin Patient Resource Book

#### **Diabetes Education Centers**

#### Souris & Montague Diabetes Program

Montague Health Centre 407 MacIntyre Ave Montague, COA 1R0 902-838-0787

#### Queen East Diabetes Program

Sherwood Business Centre 161 St. Peter's Rd Charlottetown, C1A 7N8 902- 368-4959

#### Queen West Diabetes Program

Four Neighborhoods Health Centre 152 St. Peter's Rd Charlottetown, C1A 7N8 902-569-7562

#### East Prince Diabetes Program

Harbourside Health Centre 243 Heather Moyse Dr Summerside, C1N 5R1 902-432-2600

#### West Prince Diabetes Program

O'Leary Health Centre 14 MacKinnon Dr O'Leary, COB 1V0 902-859-3929

For current information about diabetes, check out Diabetes Canada www.diabetes.ca

## What is diabetes?

There are different types of diabetes. As of 2015, 5.7 million Canadians are living with diabetes, with 95% having type 2 diabetes.

#### **Risk factors for type 2 diabetes**

You may have one or more of the following:

- Age 40 or older
- Being overweight
- Having a relative with type 2 diabetes
- Member of a high-risk group (African, South Asian, Indigenous, South Asian)
- Had gestational diabetes (diabetes during pregnancy)
- High blood pressure and/or cholesterol

#### Type 2 diabetes explained

The pancreas makes insulin. In someone with type 2 diabetes, their pancreas is "tired" and does not make enough insulin. Also, the cells of their body are "tired" and do not recognize the insulin that is being made. The process of cells recognizing insulin in the blood stream is what allows glucose (sugar) to enter the cells. Too much sugar remaining in the blood stream is what causes high blood sugar levels. Another process that causes high blood sugar is a "leaky" liver. This is when the liver releases sugar into the blood stream. A "leaky" liver is common in those with type 2 diabetes.





# In summary, high blood sugar is caused by...

A tired pancreas that doesn't secrete enough insulin, tired cells that do not recognize insulin, a "leaky" liver dumping sugar into the blood.

## Healthy living with diabetes



#### Sample healthy meal plan

#### Breakfast

¾ cup cooked plain oatmeal

- ¼ cup unsalted chopped nuts
- 1 cup strawberries
- 1 cup unsweetened soy milk

#### **Physical activity**

Improves blood sugar control, lowers blood pressure, aids in weight loss and lowers risk of heart disease and cancer.

- Aim for 150 minutes of cardiovascular exercise every week (i.e., walking, biking, swimming)
- Aim for at least 3 sessions of weightbearing exercise per week (i.e., weightlifting, Pilates, pushups)
- Add stretching into your regular exercise routine (i.e., stretches, yoga)

#### Focus on healthy eating

- Fill ½ your plate with non-starchy vegetables (i.e., broccoli, green beans, cabbage)
- Fill ¼ of your plate with minimally processed carbohydrates (i.e.., wholegrain pasta, brown rice, sweet potato)
- 3. Fill ¼ plate with protein. Limit red meat, and aim for fatty fish (i.e., salmon, trout) at least once per week.
- In general, minimize eating processed foods; shop on the outer perimeter of grocery stores
- 5. Minimize drinking sugar sweetened beverages (i.e., juice, pop) and calories; aim for 6-8 glasses of water per day

#### Lunch/Dinner

3 oz. fish
1 cup cooked yam
2 cups steamed broccoli & spinach
½ small mango, sliced

#### Snacks

1/3 cup hummus & 1 cup raw veggies1 slice whole grain bread & 1 tbsp naturalnut butter



## **Medications for diabetes**

Type 2 diabetes is a progressive in nature. Sometimes it can be managed with dietary changes and increasing physical activity/weight loss, but often times people require the addition of medication. There are many different medications that can be prescribed, and your health care provider will choose the right medication or combination of medications for you.

#### Types of diabetes medications

#### 1. Pills:

Medication	How it works	Potential side effects
Metformin (glucophage, glumetza)	Increases insulin sensitivity, reduces glucose released from liver	Stomach upset, diarrhea, nausea
Januvia (sitagliptin) Onglyza (saxagliptin) Trajenta (linagliptin)	Stimulates pancreas to release more insulin, reduces glucose released from liver	Stomach upset, diarrhea
Diamicron (gliclizide)	Stimulates pancreas to release more insulin	Low blood sugar
Invokana (canagliflozin) Forxiga (dapagliflozin) Jardiance (empagliflozin)	Blocks reabsorption of glucose from the kidneys	Yeast and urinary tract infections, risk of dehydration
Rybelsus (semaglutide)	Stimulates pancreas to release more insulin, reduces, reduces appetite	Nausea, diarrhea

2. Injectable non-insulin (i.e., Ozempic (semaglutide), Victoza (liraglutide), Trulicity (dulaglutide)): stimulates the pancreas to release more insulin, reduces appetite, and can reduce the risks of heart and/or kidney disease.

As with all medications, take as prescribed and inform your healthcare provider if you experience any side-effects

# **Blood glucose monitoring**

Blood glucose monitoring, or "checking your blood sugar" may be recommended to you as part of your diabetes self-management routine. Blood sugar monitoring allows you and your healthcare team to determine if your eating habits, lifestyle changes, and medications are working for you.

#### How often should I check my blood sugar?

The frequency of blood sugar monitoring can vary depending on your diabetes treatment plan. According to Diabetes Canada (2018):

Diabetes Treatment	Blood sugar checks
Diet + exercise	Not generally recommended
Pills/oral medications	1-2 times per week
Basal insulin	At least as often as insulin is given (typically check sugar before breakfast & before bed)
Basal + bolus insulin	At least 4 times per day (before meals + before bed)

#### **Blood sugar targets**

Fasting and before meals  $\rightarrow$  4 to 7 mmol/L 2 hours after meals  $\rightarrow$  5 to 10 mmol/L

Meeting the above blood sugar targets will minimize the risks of developing diabetes-related complications

#### Steps for checking blood sugar

- 1. Clean hands with soap and water and dry thoroughly.
- 2. Gather your supplies (meter, lancing device with new lancet, test strip, tissue etc..)
- 3. Insert test strip into meter.
- 4. Puncture the side of your finger (3<sup>rd</sup> or 4<sup>th</sup> preferred).
- 5. Gently massage the finger but do not squeeze. If no blood appears, consider increasing the depth on your lancing device and prick a different finger.
- 6. Apply drop of blood to the test strip.
- 7. Your blood sugar reading will appear after several seconds (different devices differ in time for result to appear).
- 8. Consider writing your blood sugars down to recognize patterns and/or for review by your healthcare team.
- 9. Consider bringing your meter to a lab annually to check accuracy (you will check your sugar right before blood is drawn and then can compare later to the results).

**Health** PEI

# Home Blood Glucose (Sugar) Results

Namo.						Dhone.		
Medica	Medication(s) Dose:							Recommended blood glucose goals: Before meals: 4- 7 mmol/L 1.5 to 2 hours after meals: 5- 10 mmol/L
Date	Before Break-fast	2 hr after Breakfast	Before Lunch	2 hr after Lunch	Before Supper	2 hr after Supper	Before Bed Snack	Notes:
			<u>E</u>					
		÷	12					

09HE15-23656

# Low blood sugar (hypoglycemia)

Low blood sugar is anything less than 4 mmol/L. It can be caused by too much diabetes medication, taking medication / insulin at the wrong time of day, too little food, more exercise than usual, drinking alcohol.

If you have a low blood sugar,	
you may have 1 or more of	
the following symptoms:	

- ❖ Dizzy❖ Shaky❖ Hungry❖ Sweaty
- Confused
  - Sweaty
- Irritable

If you have any of the above symptoms , follow these steps:

#### Step 1

Check your blood sugar right away

#### Step 2

If your blood sugar is less than 4 mmol/L, eat a fast-acting source of sugar:

- 4 glucose tabs (DEX4)
- 2/3 cup of juice or regular soda (not diet)
- 1 tbsp of sugar dissolved in water or honey

#### Step 3

Recheck blood sugar in 15 minutes, repeat the above steps if blood sugar is still less than 4 mmol/L.

#### Step 4

Once your blood sugar is above 4 mmol/L, if your next meal is more than an hour away, have a small snack of carbohydrates + protein (i.e., toast with peanut butter, crackers with cheese or hummus).

#### Step 5

Tell your healthcare provider if you have more than 1 episode of low blood sugar in a week, or if you needed the assistance of another person to provide treatment.

It's important not to over treat low blood sugar. Overtreatment can lead to "rebound highs" (when you blood sugar goes too high after a low) and weight gain.

**Medical alert**: it is strongly recommended to wear a medical alert bracelet/necklace indicating diagnosis of diabetes. This way, if you're ever unable to respond, healthcare providers will be aware of your condition. Ask your local pharmacy or diabetes education center for more information.

# **Driving guidelines**

Some of the medications used in the management of diabetes can increase the risk of low blood sugar. Therefore, those with diabetes must take extra precautions when driving. Below are the steps recommended by Diabetes Canada (2018).

#### **Driving safely**

- 1. Check your blood sugar before driving and make sure it is 4 mmol/L or higher before you drive.
- 2. Stop driving if feeling unwell, check blood sugar, and treat if below 4 mmol/L.
- 3. After treating a low, you must wait till your blood sugar is above 5 mmol/L (you may need up to 40 minutes to fully recover).
- 4. Check your blood sugar at least every 4 hours on long drives.

Tip: always keep low blood sugar treatment (juice boxes, glucose tabs) and portable snacks (granola bars) handy in the car.

# Alcohol

With diabetes, alcohol can increase the risk of having a low blood sugar (hypoglycemia) Therefore, if you wish to drink alcohol, please discuss with your healthcare provider to learn how to stay safe and minimize risks.

The following are the general recommendations:

Women: 2 standard drinks per day, or less than 10 standard drinks per week Men: 3 standard drinks per day, or less than 15 standard drinks per week



#### What is a standard drink?

### References

Canadian Centre on Substance Abuse and Addiction (2022). *Canada's low-risk alcohol drinking guidelines*. Retrieved from: <u>https://www.ccsa.ca/canadas-low-risk-alcohol-drinking-guidelines-brochure</u>

Diabetes Canada Clinical Practice Guidelines Expert Committee. *Diabetes Canada* 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes. 2018;42(Suppl 1):S1-S325

Government of Canada (2022). *Canada's food guide*. Retrieved from: <u>https://food-guide.canada.ca/en/</u>

Health PEI (2022). *Diabetes Program*. Retrieved from: <u>https://www.princeedwardisland.ca/en/information/health-pei/diabetes-program</u>

Health PEI (2022). *Diabetes Drug Program*. Retrieved from: <u>https://www.princeedwardisland.ca/en/information/health-pei/diabetes-drug-program</u>

# Health PEI Referral Provincial Diabetes Program

Reason for referral to the Provincial	Date		
□ New diagnosis □ Re-referral □ Change	e of treatment □ Insulin Start		PHN
Name (last)	(first)	(initial)	□ Male □ Female □ Pregnant
Mailing Address		(postal code)	Date of Birth () dd / mm / yy Age
Telephone (home)	(work) (cel	1)	Individual informed of referral
Contact Person			Family Physician/NP
Referred by: □ Family Physician/NP □ Physician S	specialist □ Self □ Other	(name)	(title)
Type of diabetes (see back for diagnosti	c criteria)		Current Treatment
□ Type 1 □ Type 2 Symptoms of diabetes + casual plasma glu plasma glucose (FPG) ≥ 7.0 mmol/L <b>OR</b> PC AIC ≥ 6.5% (type 2 only)*. *In the absence of unequivocal hyperglycer <b>on a different day</b> must be done for confirm	G 2hr sample of 75g OGTT $\ge$ 11 nia with acute symptoms, a <b>sec</b>	.1 mmol/L <b>OR</b>	<ul> <li>Nutritional management</li> <li>Physical activity</li> <li>Oral agent(s)/injectable (drug, strength, dosing/frequency)</li> </ul>
<ul> <li>□ Prediabetes (see back for diagnostic critical of the content of t</li></ul>	iteria)	ation)	
Diagnostic Laboratory testing	Recommended clinical test	ts/screening:	□ Insulin (type/frequency)
Fasting glucosemmol/LRandom glucosemmol/LAIC%	(Indicate if completed) A1c Fasting lipid profile	□ Yes □ No □ Yes □ No	
Confirmatory test: (2 <sup>nd</sup> test on a different day)	Creatinine Urine microalbumin (i.e. AC	🗆 Yes 🗆 No	□ Other Medications
Fasting glucose       mmol/L         Random glucose       mmol/L         AIC       %         Glucose tolerance test:       g         Glucose       g	Retinopathy screen Resting ECG, if > 40 yrs of a diabetes duration > 15 yrs TSH (Type 1 diabetes) ALT, CK (for statin therapy)	□ Yes □ No □ Yes □ No	
1 hour mmol/L 2 hour mmol/L			
<b>Problems that may affect learning:</b> □ la □ mentally challenged □ literacy □ un □ due to financial/social/emotional proble	nsuitable for group education	- Reason:	
Date of diagnosis	Referral sent by:		
	(print name)		(signature)
Forward a copy of this referral via fax or mail to the foll ) Provincial Diabetes Program for diabetes education an ) Family physician's/NP office (where applicable) Driginal copy to remain on patient's chart at referral s	nd support (location of patient's choice),	see below for contact in	formation

East Prince Diabetes Program	West Prince Diabetes Program	Queens West Diabetes Program	Queens East Diabetes Program	Kings Diabetes Program
Harbourside Family	O'Leary Health Center	Four Neighbourhoods Health Centre	Sherwood Business Centre	Montague Health Centre
Health Centre	15 MacKinnon Drive	152 St. Peters Road	161 St. Peters Road	PO Box 877
243 Heather Moyse Drive	O'Leary, PE C0B 1V0	Charlottetown, PE C1A 7N8	Charlottetown, PE C1A 7N8	407 MacIntyre Avenue
Summerside, PE C1N 5R1	Tel: 902-859-0388	Tel: 902-569-7562	Tel: 902-368-4959	Montague, PE C0A 1R0
Tel: 902-432-2600	Fax: 902-859-3922	Fax: 902-368-6936	Fax: 902-894-0321	Tel: 902-838-0787
Fax: 902-432-2610				Fax: 902-838-0986

#### **Diagnosis of Diabetes**

- Symptoms of diabetes plus "casual" plasma glucose (PG) value ≥ 11.1 mmol/L. Casual is defined as any time of the day without regard to time since last meal. The classic symptoms of diabetes include fatigue, polyuria, polydipsia, and unexplained weight loss.
   OR
- 2. A fasting plasma glucose (FPG)  $\geq$  7.0 mmol/L. Fasting is defined as no calorie intake for at least 8 hours.

#### OR

3. The PG value in the 2-hour sample of the 75g OGTT is  $\geq$  11.1 mmol/L.

#### OR

4. AIC  $\geq$  6.5%.

#### Confirmatory Test

In the absence of unequivocal hyperglycemia with acute symptoms, values above these criteria must be confirmed by a second test on a different day.

Glucose levels for diagnosis

Category	AIC	FPG mmol/L	PG 1 hr after 75g glucose load mmol/L	PG 2 hr after 75 g glucose load, mmol/L
Prediabetes	6.0 - 6.4%	6.1-6.9 <b>(IFG)</b>	N/A	7.8-11.0 (IGT)
Diabetes Mellitus (DM)	<u>&gt;</u> 6.5% (type 2)	<u>&gt;</u> 7	N/A	<u>&gt;</u> 11.1
Gestational Diabetes (GDM)*		<u>&gt;</u> 5.3	<u>&gt;</u> 10.6	<u>&gt;</u> 9.0

\*Screen at 24 to 28 weeks gestation with a 50g oral glucose challenge (earlier in high risk patients). Include A1C at first antenatal visit for high risk patients to identify undiagnosed type 2 diabetes

 $\bullet\,$  If > 11.1 mmol/L, GDM is present and the 75g OGTT is unnecessary.

- If 7.8-11.0 mmol/L, a 75g OGTT is recommended. If one of the following values is met or exceeded (with a 75g OGTT), GDM is present.
- FPG>5.3\_
- 1 hr PG>10.6
- 2 hr PG>9.0

#### Targets for Good Diabetes Control

**Glycated Hemoglobin (HbA1c):** Measure every 3 to 6 months, preferably every 3 months if not at target. Target for most patients:  $\leq 7.0\%$  Alternate target (consider for patients in whom it can be achieved safely)  $\leq 6.5\%$  Glycemic targets should be individualized based on age, duration of diabetes, risk of hypoglycemia, life expectancy and history of cardiovascular disease.

Blood glucose: Optimal glucose control in adults and children over age 12

- Fasting or AC 4-7mmol/L
- 1 or 2 hour PC 5-10 mmol/L (5-8 mmol/L for optimal control)

Lipids: Measure fasting at diagnosis and repeat every 1 to 3 years as clinically indicatedPrimary targetLDL-C  $\leq$  2.0mmol/L

ECG at baseline and every 2 years in patients:

• Age > 40 years • Duration of diabetes >15 years and age > 30 years. • End organ damage • Cardiac risk factors

Blood pressure: Measure at diagnosis and every 3 to 4 months thereafter unless otherwise indicated

• BP in people with DM <130/80

Screening for Diabetic Nephropathy using a random urine albumin to creatinine ratio

- Type 1 diabetes annually after puberty in those with diabetes of  $\geq$  5 years' duration
- Type 2 diabetes at diagnosis and then annually
- Serum creatinine levels (should be measured) and a GFR annually in those patients with diabetes without albuminuria and at least every 6 months in those with albuminuria

Annual foot examination for all people with diabetes, starting at puberty. Those at higher risk for foot problems (previous ulceration, neuropathy, structural deformity, peripheral vascular disease and/or microvascular complications) may require more frequent foot examinations.

- Type 1 diabetes annually after 5 years duration of Type 1 in post-pubertal individuals
- Type 2 diabetes annually

#### **Retinal Eye examination**

- Type 1 diabetes annually 5 years after the onset of diabetes in individuals  $\geq$  15 years of age
- Type 2 diabetes at diagnosis and then every 1 to 2 years



#### **PATIENT REGISTRATION FORM**

#### **DIABETES DRUG PROGRAM**

Fax requests to (902) 368-4905 OR mail requests to PEI Pharmacare, P.O. Box 2000, Charlottetown, PE, C1A 7N8

SECTION 1- REGISTERED HEALTH PRACTITIONER INFORMATION	SECTION 2 - PATIENT	NFORMATION
NAME AND MAILING ADDRESS	PATIENT (FAMILY NAME)	PATIENT (GIVEN NAME)
	DATE OF BIRTH (YYYY/MM/DD)	PERSONAL HEALTH NUMBER (PHN)
Please Identify Profession:	PATIENT'S MAILING ADDRESS	
Medical Practitioner Pharmacist Dietitian		
Nurse Practitioner Nurse Other:	_	
PHONE NUMBER (INCLUDE AREA CODE)		
FAX NUMBER (INCLUDE AREA CODE)		

#### **SECTION 3 – DIAGNOSIS CERTIFICATION**

I CERTIFY THAT THE PATIENT IDENTIFIED IN SECTION 2 HAS BEEN DIAGNOSED AS HAVING DIABETES BY A MEDICAL PRACTITIONER OR NURSE PRACTITIONER\*.
 \*THE SUBMISSION OF SPECIAL AUTHORIZATION REQUESTS MAY BE REQUIRED FOR MEDICATION COVERAGE.
 CONFIRMATION OF DIABETES TYPE (REQUIRED):

 Type I or Type II Diabetes Mellitus
 Gestational Diabetes Mellitus (temporary 10 month registration)

#### **ELIGIBILITY LIMITATIONS**

A person is not eligible to receive benefits under the Diabetes Drug Program, if the person is entitled to those benefits:

(a) under the Workers Compensation Act;

(b) from the Royal Canadian Mounted Police;

(c) from the Department of National Defence;

(d) from Veterans Affairs Canada;

(e) under the Non-Insured Health Benefits Program for First Nations and Inuit;

(f) under any other enactment or Act of the Parliament of Canada; or

(g) under any statute of any jurisdiction either within or outside of Canada.

#### **SECTION 4 – REGISTERED HEALTH PRACTITIONER CERTIFICATION**

🗹 I am applying on behalf of the patient noted in Section 2 for registration into the Diabetes Drug Program. I understand that PEI Pharmacare may require additional

documentation or information to support this Patient Registration Request, or at any time the Patient is registered in the Diabetes Drug Program, to determine the need for

ongoing registration in the Program. Personal information is collected under Prince Edward Island's Health Information Act as it relates directly to and is necessary for providing

services under the Diabetes Drug Program. Any questions should be directed to the Program Office at 902-368-4947 or to the address at the top of the form.

I To the best of my knowledge, I certify that the above patients is eligible for benefits under the Diabetes Drug Program.

#### REGISTERED HEALTH PRACTITIONER COLLEGE REGISTRATION NUMBER (REQUIRED):

REGISTERED HEALTH PRACTITIONER SIGNATURE (REQUIRED):

DATE:

On the first business day of receipt of the completed registration form, a Patient will be registered in the Diabetes Drug Program. In order to be eligible, a patient must be a PEI resident as defined by the *Drug Cost Assistance Act*.

FORMS WITH INFORMATION MISSING WILL BE RETURNED FOR COMPLETION.

MEDICATIONS NOT IDENTIFIED AS COVERED UNDER THE DIABETES DRUG PROGRAM IN THE FORMULARY WILL NOT BE COVERED.

# Health PEI

#### **Diabetes Teaching Checklist**

Level of understanding

U - Understanding indicated

R - Repeat N/A - not applicable

Eval Topics Date Topics Date Name Name Eval **Diabetes Education** Importance of site Package - type rotation for insulin □ Insulin injection □ Non-Insulin What is diabetes? Sharps Disposal □ Single use needles Hypoglycemia/ Blood Glucose Hyperglycemia Monitoring □ Meter / Test strip □ Signs & □ Purpose Symptoms □ Frequency □ Management □ Target Values □ Lancets Medication **General Information** Administration  $\Box$  Complications, □ Oral medication management and □ Use of prevention Pen/Syringe Insulin Nutrition □ Types & actions □ Consult □ Storage Dietician Insulin Injection □ Refer to  $\Box$  location of sites **Provincial Diabetes** □ needle length Program Is this person appropriate for group □ YES teaching? Videos/Books Identified Family Goals: Date Identified Learning Barriers: Comments:

Upon completion, fax copy of this teaching record along with referral to the Provincial Diabetes Program (see referral form for fax #s) Februaryr 01, 2014\_V2