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## What is Prediabetes?

Prediabetes is when your blood sugar (glucose) levels are higher than normal, but not high enough to be called type 2 diabetes.

To understand prediabetes, it helps to know how the body uses glucose.

After you eat a meal, food is broken down by the body into glucose which our cells use for energy to fuel our daily activities. **Glucose is a type of sugar that comes from food, particularly carbohydrates.** Carbohydrates are found in foods such as:

- **Fruit** (fresh, frozen, canned, dried) & fruit juice
- **Grains & starches** (potatoes, corn, rice, pasta, cereal, bread)
- **Milk products** (milk, chocolate milk, yogurt, ice cream)
- **Others** (chips, popcorn, regular pop, pizza, cookies/pastries, etc.)

As the amount of sugar starts to rise in your blood stream after eating, the pancreas releases a hormone called **insulin** into the blood stream. Insulin carries the glucose from the blood into the cells of the body for use as energy. If there is too much sugar, the body stores the excess in the liver where it is turned into fat or the muscles to fuel our daily activities.

If you have prediabetes:

- Your body may not use insulin the way that it should
- Your body may not be making enough insulin
- Your liver may release glucose back into the blood when not needed

Following a healthy lifestyle can help prevent or delay the development of type 2 diabetes.

### Get the Support You Need!

Being diagnosed with prediabetes may result in feelings of anger, denial, fear, sadness & guilt & you may find you have a hard time accepting this new diagnosis. This is completely normal & there are many people available to help you navigate your new way of living. Talk to others who have prediabetes or diabetes as well as your health care team for support & guidance.

Your health care team might include:

- Family physician
- Registered nurse or nurse practitioner
- Registered dietitian
- Psychologist or social worker
- Foot care specialist or chiropodist
- Endocrinologist or internist
- Optometrist, optician or ophthalmologist
- Kidney specialist such as a nephrologist
- Pharmacist

**Remember – YOU** are the most important member of your health care team & you are encouraged to take an active role in your prediabetes self-management.

## What is Normal Blood Sugar Control?

Blood sugar (or glucose) is the amount of glucose in your blood at a given time. It may be helpful for some people to monitor their blood sugar levels at home. A blood glucose meter, called a **glucometer**, is used to monitor your blood glucose levels. Many people with prediabetes DO NOT need to test their blood glucose.

*Ask your diabetes team about whether you need to test your blood sugars & which meter is right for you.*

Checking your blood glucose levels may help you:

- Determine if you are having a high blood glucose level at that particular moment in time
- Show how your lifestyle (diet, exercise, stress, sleep habits) & medication affect your blood glucose levels
- Help you & your diabetes team make changes to your lifestyle & medications to improve your blood sugar control

Try to aim for these targets or as recommended by your diabetes team:

**Fasting Blood Glucose (before eating) = 4.0 to 7.0mmol/L**

**Blood Glucose 2 hours after the start of a meal = 5.0 to 10mmol/L**

## What is Hemoglobin A1C & What Does it Mean?

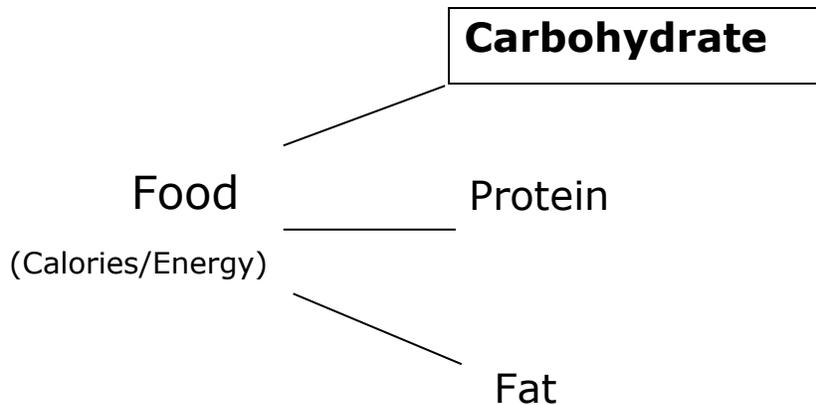
A1C, also called glycosylated hemoglobin is a blood test which shows the 3-month average of your blood sugar before the test was taken. You do not have to fast before this test.

Your A1C is **not the same** as your blood sugar results.

- For example: An A1C of 7.0% equals an average blood sugar of 9.5mmol/L.
- Diabetes Canada recommends an A1C target of **7.0% or less** for most adults. Your A1c should be checked every **3 to 6 months**.

## What Happens When You Eat?

When you eat, food breaks down into carbohydrate, protein & fat.  
**Carbohydrates affect your blood sugar.**



Carbohydrates (also called 'carbs') include:

- fibre
  - sugar
  - starch
- } increase your blood sugar

Fibre will **not** raise your blood sugars & actually helps prevent blood sugars from going too high after you've eaten.

### Healthy Eating Basics

Healthy eating is an important part of managing prediabetes. Prediabetes is a condition that likes consistency, especially when it comes to meal times & the types of foods eaten. Start with the following tips:

- Try to eat three meals a day at regular times & spaced no more than 4-6 hours apart
- Become more mindful of your eating & try to avoid eating out of boredom, habit or emotional reasons
- Avoid eating when distracted by the TV or other electronics
- Limit sugars & sweets such as regular pop, juice, candies, jam, etc.
- Limit intake of high fat foods such as chips, pastries, fried foods, etc.
- Limit your intake of salt/sodium to 1500-2300mg per day
- Aim to increase your daily fibre intake through whole grains, fruits, vegetables, beans & legumes. High fibre foods have 4g or more fiber per serving
- Drink water instead of juice or sweet drinks such as regular pop, iced teas, milkshakes, speciality coffee, etc. Try to drink at least 6-8 cups of water daily.
- Plan ahead! Make a weekly grocery list & menu; keep pre-cut vegetables & fruit on hand for easy snacking; schedule time for exercise, etc.
- Watch your portion sizes. Check your portions by using measuring cups, & scales & by using the Handy Portion Guide or Balanced Plate

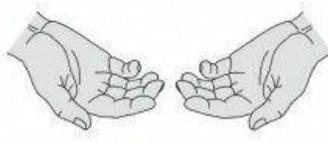
### Handy portion guide

Your hands can be very useful in estimating appropriate portions. When planning a meal, use the following portion sizes as a guide:



**FRUITS\*/GRAINS & STARCHES\*:**  
Choose an amount the size of your fist for each of Grains & Starches, and Fruit.

**MILK & ALTERNATIVES\*:** Drink up to 250 mL (8 oz) of low-fat milk with a meal.



**VEGETABLES\*:**  
Choose as much as you can hold in both hands.



**MEAT & ALTERNATIVES\*:**  
Choose an amount up to the size of the palm of your hand and the thickness of your little finger.

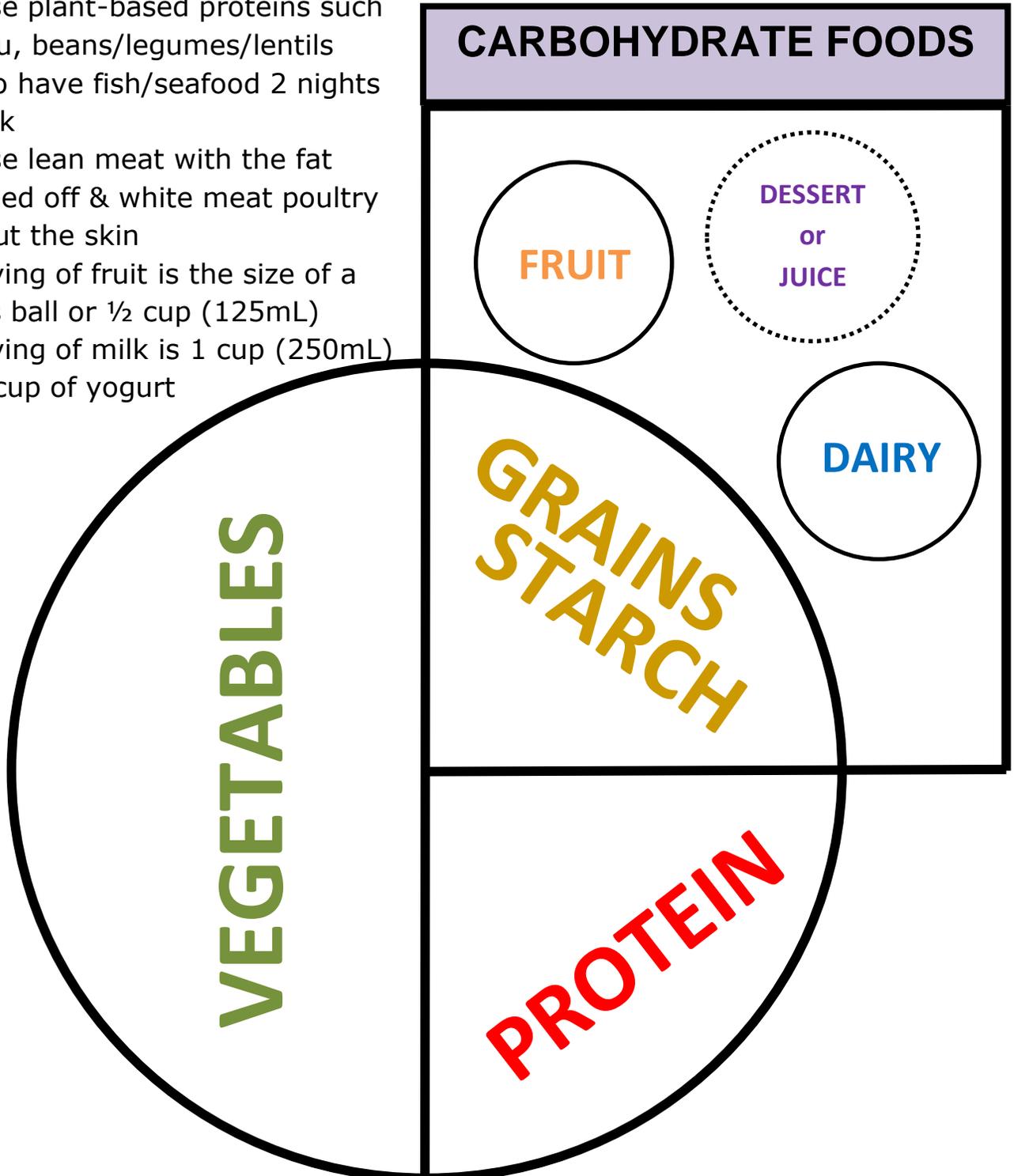


**FATS\*:**  
Limit fat to an amount the size of the tip of your thumb.

\* Food group names taken from *Beyond the Basics: Meal Planning for Healthy Eating, Diabetes Prevention and Management* © Canadian Diabetes Association, 2005. Please refer to this resource for more details on meal planning.

## The Balanced Plate

- Aim to fill ½ your plate with vegetables - eat the rainbow!
- Choose whole grains more often
- Choose plant-based proteins such as tofu, beans/legumes/lentils
- Aim to have fish/seafood 2 nights a week
- Choose lean meat with the fat trimmed off & white meat poultry without the skin
- A serving of fruit is the size of a tennis ball or ½ cup (125mL)
- A serving of milk is 1 cup (250mL) or ¾ cup of yogurt



## Reading Food Labels

Food labels are a great resource for helpful information & can help you compare similar foods & make healthier choices. Nutrition information can be found in 3 different areas on packaged foods:

- Nutrition Facts Table
- Ingredient List
- Nutrition Content Claims/Health Claims

It is law in Canada that most foods have a nutrition label. Some foods that **do not** need to have a food label include:

- Fresh fruits/vegetables
- Raw meat/poultry/fish/seafood (**except** for ground meats/poultry)
- Pre-prepared meat & poultry that is barbequed, broiled, baked or roasted in-store
- Baked goods made in-store
- Alcoholic drinks
- Bulk foods
- Foods sold at farmer's markets when sold by the person who made them
- Individual portions of food or condiments (e.g. coffee creamers, ketchup packets, etc.)

### a) **Nutrition Facts Table:**

The Nutrition Facts table on the food label gives you information about the serving size, calories & a variety of other different nutrients. The Nutrition Facts table can be used to compare similar foods. Look for the following items:

- **Look at the Serving Size:** The amount listed is for the serving size given. Are you eating more, less or the same?
- **Read the Nutrition Facts:** Compare similar foods to help you make healthier choices.
  - Choose foods with little or no trans-fat per serving
  - Choose foods with less than 8g of sugar
  - Choose foods with more than 2 to 4g of fibre
  - Choose foods with less sodium

Nutrition Facts	
Serving Size	1 cup (228g)
Servings per container	2
Amount per serving	
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Total Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%
*Percent Daily Values are based on a 2,000 Calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.	
	Calories 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g

- 1 Serving Size / Number of Servings
- 2 Calories / Calories from Fat
- 3 % Daily Value
- 4 Nutrients to Limit
- 5 Nutrients to Get Enough of
- 6 Footnote

## Living Well with Prediabetes

- **Look at the % Daily Value:** The % daily value on the Nutrition Facts table is a guide to the nutrients in one serving of food. It is based on a 2000 calorie diet for healthy adults. Even if you eat less than 2000 calories a day, the % daily value can still be used as a helpful guide to help you make informed food choices.



The % daily value can tell you if the serving size has a lot or a little of a nutrient:

- 5% daily value or less is a LITTLE
- 15% daily value or more is a LOT

Some nutrients you may want **more** of include:

- Fibre
- Vitamins & minerals

Some nutrients you may want **less** of include:

- Sodium
- Saturated & trans fat

Using the % daily value is a useful way to compare different food products & to choose healthier foods.

### b) Ingredient List:

The ingredient list tells you what is in the food & is listed by weight from **most to least**. This means that a food contains **more** of the ingredients found at the beginning of the list & **less** of the ingredients at the end of the list.

**Example:** Breakfast Cereal

***Ingredients:** Whole wheat, wheat bran, sugar/glucose-fructose, salt, malt (corn flour, malted barley), vitamins (thiamine hydrochloride, pyridoxine hydrochloride, folic acid, d-calcium pantothenate), minerals (iron, zinc oxide).*

### c) Nutrient Content Claims/Health Claims

Nutrient or health content claims are statements on food product packages about a particular nutrient in the food.

- **Free, Zero & Without:** the amount of nutrient in the food is so small that it is not counted. For example: sugar-free, fat-free.
- **Low, Little & Few:** the product has a very small amount of the nutrient. For example: low cholesterol, low sodium.
- **Reduced, Less, Lower & Fewer:** the product has at least 25% less of the nutrient compared to a similar product. For example: reduced sodium.
- **Light or Lightly:** the product has at least 50% less of the nutrient compared to a similar product.
- **No Added or Without Added:** the product does not have the added nutrient. For example: no added sodium.
- **More, Higher & Higher in:** the product has 25% more of the nutrient compared to a similar product. For example: high fibre.
- **Source:** the product has a large amount of the nutrient. For example: source of calcium.

## Sugar-Free Labeling & Non-Calorie Sweeteners

**Sugar-Free & No Sugar Added** does not always mean carbohydrate-free. These are common terms that you will see on many labels.

**Sugar-Free** foods may or may not cause your blood sugar to rise depending on the sweeteners used & other ingredients in the food.

**No Sugar Added** simply means that no extra sugar is added during processing or packaging. These foods could still contain carbohydrates & therefore, impact your blood sugars. These products often use sweeteners other than sugar for sweetness.

### **Non-Calorie (Alternative) Sweeteners**

**Non-Calorie or Alternative Sweeteners** are added to foods to reduce sugar & calories. These sweeteners have a minimal effect on sugar levels. Health Canada has approved the following sweeteners:

- Aspartame
- Acesulfame K (Ace-K)
- Sucralose (e.g. Splenda)
- Steviol glycosides (Stevia)
- Saccharin
- Cyclamate
- Sugar alcohols (e.g. mannitol, sorbitol)

These are commonly found in products such as diet drinks, light yogurt and sugar-free gelatin desserts & pudding.

Non-calorie sweeteners can greatly decrease the amount of carbohydrates in foods but not necessarily the calories.

## Physical Activity

Regular physical activity is one of the most important things you can do to lower your blood sugar, improve your overall health & have fun. Activity helps to lower blood glucose by using the glucose for energy.

The Canadian Physical Activity Guidelines recommend that individuals over the age of 18 years strive to accumulate a minimum of **150 minutes** of moderate- to vigorous-intensity physical activity per week (or 30 minutes on 5 days per week), in bouts of 10 minutes or more. Muscle & bone strengthening activities should also be included on at least **2 days** per week.

Those with poor mobility or balance should perform activities that help to enhance balance & prevent falls.

Moderate-intensity activities include:

- Brisk walking
- Bike riding
- Skating
- Swimming
- Gardening
- Etc.

Vigorous-intensity activities include:

- Jogging
- Cross country skiing
- Hockey
- Zumba
- Etc.

Muscle & bone strengthening & balance exercises include:

- Lifting weights
- Exercise band exercises
- Yoga
- Etc.



## **Acknowledgements:**

Alberta Health Services

American Diabetes Association

Am I Hungry? Eat Mindfully, Live Vibrantly

Canada's Food Guide

Canada's Low-Risk Alcohol Drinking Guidelines

Canadian Physical Activity Guidelines

Diabetes Canada

Diabetes Canada 2018 Clinical Practice Guidelines

Dietitians of Canada

Government of Canada

Government of Ontario

Hamilton Health Sciences

St. Joseph's Health Care

Unlock Food

