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PAVING YOUR PATH TO DIABETES MANAGEMENT:

Basic Carbohydrate Counting and The Glycemic Index

Canadian Diabetes Association

What is carbohydrate?

Carbohydrate is one of the three main nutrients found in foods. Starches, fruit, milk products, sugar, and some vegetables have carbohydrates. Your body needs carbohydrate for energy. It breaks them down into a sugar called glucose. Your brain and body need glucose to work properly.

Carbohydrates and Diabetes

With diabetes, it is important to eat the right types and amounts of carbohydrate. Some carbohydrates make your blood glucose go high quickly. Others raise your blood glucose slowly and to a smaller degree.

Choosing the Right Types of Carbohydrates

The Glycemic Index (GI) groups carbohydrate foods by how they affect your blood glucose levels. Using the Glycemic Index, you can make better food choices.

Choose LOW and MEDIUM GI foods more often

LOW GI Choose **most** often	MEDIUM GI Choose **more** often	HIGH GI Choose **less** often
Breads:	**Breads:**	**Breads:**
• 100% stone ground whole wheat • heavy mixed grain • pumpernickel	• whole wheat • rye • pita	• mantou** • white bread • kaiser roll • bagel, white
Cereal:	**Cereal:**	**Cereal:**
• All Bran™ • Bran Buds with Psyllium™ • Oat Bran™	• Grapenuts™ • puffed wheat • oatmeal • quick oats	• bran flakes • corn flakes • Rice Krispies™
Grains:	**Grains:**	**Grains:**
• cellophane noodles** • Vietnamese rice noodles** • Korean potato starch** • barley • bulgar • pasta/noodles • parboiled or converted rice	• rice noodle** • udon** • buckwheat noodles** • basmati rice • brown rice • couscous	• glutinous rice** • thai rice** • northern Chinese white noodles** • short-grain rice
Other:	**Other:**	**Other:**
• taro** • sweet potato • yam • legumes • lentils • chickpeas • kidney beans • split peas • soy beans • baked beans	• potato, new/white • beetroot** • sweet corn • popcorn • Stoned Wheat Thins™ • Ryvita™ (rye crisps) • black bean soup • green pea soup	• potato, baking (Russet) • french fries • pretzels • rice cakes • soda crackers

How Much Carbohydrates Do You Need?

The amount of carbohydrate you need depends on your age and weight. It also depends on how active you are. Speak to the registered dietitian on your health care team to see what amount is right for you.

General Guidelines for women and men:

	Women	Men
In a meal	3 to 4 carbohydrate choices	4 to 5 carbohydrate choices
In a snack	1 to 2 carbohydrate choices	1 to 2 carbohydrate choices

Making food choices

In this chart, each food choice contains about 15 grams of carbohydrate. That is what we call 'one carbohydrate choice'. In the chart, we show in brackets how to measure the portion, using either:

- cup measure
- milliliters (mL)
- tablespoons (tbsp) or
- grams (g)

Grains and starches

- rice, brown and white, long grain, cooked (⅓ cup, 75 mL)
- Chow Mein noodles (⅔ cup)
- rice noodles (⅓ cup, 75 mL)
- egg noodles (½ cup, 125 mL)
- pasta, barley, or buckwheat, cooked (½ cup, 125 mL)

- wonton wrappers, 3 pieces
- bread, 1 slice
- Large bagel, ¼
- cold cereal (½ cup, 125 mL)
- oatmeal, cooked (¾ cup, 175 mL)
- cream of wheat, cooked (¾ cup, 175 mL)
- potato, mashed (½ cup, 125 mL)
- potato, baked (½, 84 g)

- yam (½ cup, 125 mL)
- sweet potato (⅓ cup, 75 mL)
- taro (⅓ cup, 75 mL)
- corn, kernel (½ cup, 125 mL)
- corn, cob (½ ear, 73 g)
- cooked beans, lentils, split peas (1 cup, 250 mL)

Fruits

- orange, apple or pear (1 medium)
- peach (1 large)
- banana (1 small, or ½ large)
- mango, ½ medium (104 g) or ½ cup (83 g)
- asian pear (2 small, 244 g)

- durian (¼ cup, 60 g)
- longan (30 fruit, 100 g)
- kumquat (8 fruit, 150 g)
- persimmon (1 fruit)
- canned fruit in light syrup (½ cup, 125 mL)
- grapes (½ cup or 15 pieces)

- blueberries or melons (1 cup, 250 mL)
- medium kiwis or plums (2)
- apricots (½ cup, 125 mL)
- raisins (2 tbsp, 18 g)
- fruit juice (½ cup, 125 mL)

Vegetables

- water chestnuts (1 cup, 250 mL)
- canned peas (½ cup, 125 mL)
- fresh or frozen peas (¾ cup, 175 mL)

- squash or pumpkin (1 cup, 250 mL)
- tomatoes, canned, regular (2 cups, 500 mL)
- tomatoes, canned, stewed (1 cup, 250 mL)

- Most other vegetables are very low in carbohydrate and high in nutrients and dietary fibre

Milk and alternatives		
• evaporated milk, canned (½ cup, 125 mL) • milk or buttermilk (1 cup, 250 mL) • milk, lactose-reduced (1 cup, 250 mL)	• plain or low-fat yogurt – ¾ cup, 175 mL (for yogurt with fruit, read the Nutrition Facts Table)	• plain fortified soy beverage (1 cup, 250 mL)
Other choices		
• sugar, syrup, jam, molasses or honey, (1 tbsp, 15 mL) • cornstarch (2 tbsp, 30 mL)	• regular soft drink (½ cup, 125 mL) • 1 plain muffin (45 g) • cream filled cookies, 2 • arrowroot cookies, 4	• popcorn, air popped or low fat (3 cups, 750 mL) • granola bar, oatmeal type, 1 (28 g)
Foods and beverages with very little carbohydrate		
• coffee, black • tea, black • diet soft drinks	• herbs • spices • vinegar	• mustard • other condiments

Format adapted from: *Carbohydrate Counting,* Vancouver Coastal Health
Information taken from Beyond the Basics: Meal Planning for Healthy Eating, Diabetes Prevention and Management (2005).

For an extensive list of foods containing carbohydrates: **www.diabetes.ca/for-professionals/resources/nutrition/beyond-basics/#hints**

Planning Your Menu

You can plan your own menu using the Glycemic Index and carbohydrate choices. Here are some sample menus to help get you started.

Looking for recipe ideas? Visit **diabetesgps.ca.**

Sample Menu #1 Breakfast

Food item	Number of carbohydrate choices	Grams of carbohydrates (*rounded to the nearest 15*)
rice vermicelli (1 cup, 250 mL)	3	45
lean meat (1 oz, 30 g)	0	0
choy sum	0	0
fortified soy beverage	1	15
Total	**4**	**60 g**

Sample Menu #2 Lunch

Food item	Number of carbohydrate choices	Grams of carbohydrates (*rounded to the nearest 15*)
egg noodles (1 cup, 250 mL)	2	30
lean meat (2 oz, 60 g)	0	0
gailan	0	0
1 medium apple	1	15
1 hot tea, black	0	0
Total	**3**	**45 g**

Sample Menu #3 Dinner

Food item	Number of carbohydrate choices	Grams of carbohydrates (*rounded to the nearest 15*)
watercress soup	0	0
rice (⅔ cup, 150 mL)	2	30
stir-fry broccoli with beef (1 oz, 30 g beef)	0	0
steamed fish with ginger and green onion (2 oz, 60 g fish)	0	0
stir-fried spinach with garlic	0	0
oil, no more than 2 tsp		
1 medium orange	1	15
1 hot tea, black	0	0
Total	**3**	**45 g**

From *Beyond the Basics: Meal Planning for Healthy Eating, Diabetes Prevention and Management*.

Easy Ways to Plan the Size of Meals and Snacks

You can follow the picture below to help you with planning your meals.

**Vegetables** at least 2 kinds

Fruit

Milk

Grains and starches
potato, pasta, noodles, rice, corn

Meat and alternatives
fish, lean meat, chicken, beans, lentils, tofu

When you are eating away from home, whether at a buffet, at a house party or at a restaurant, follow The Plate Method to help you with planning your meals and snacks.

Vegetables
at least 2 kinds

Grains and starches
potato, pasta, noodles, rice, corn

Meat and alternatives
fish, lean meat, chicken, beans, lentils, tofu

Fruit

Milk
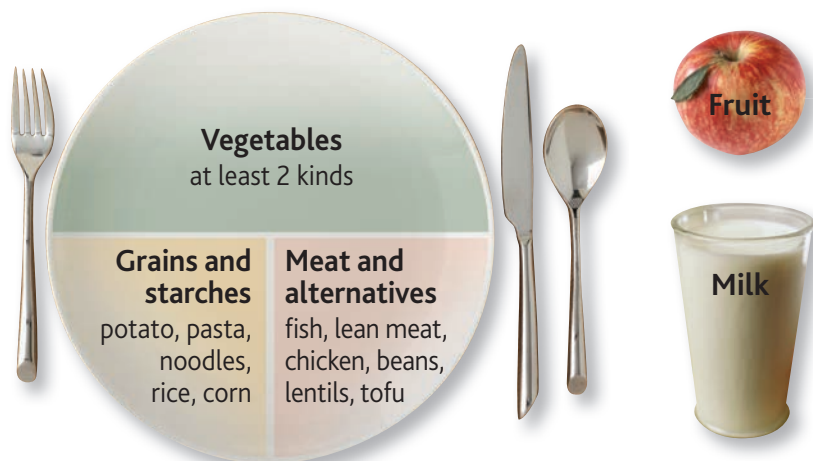
Handy Portion Guide

Use the Handy Portion Guide to help you with planning your meals and snacks.
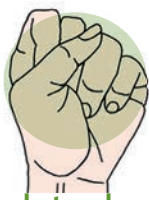
Grains and starches/fruits
Choose an amount the size of your fist for fruit, grains and starches.
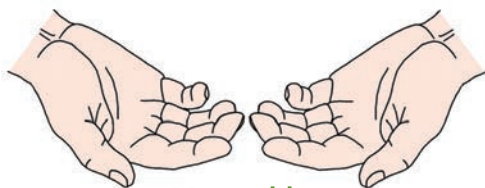
Vegetables
Choose as much as you can hold in both hands.

Meat and alternatives
Choose an amount the size of the palm of your hand and the thickness of your little finger.

Fat
Limit fat to an amount the size of the tip of your thumb.

Milk and alternatives
Drink up to 250 mL (8 oz) of low-fat milk with a meal.

Finding Carbohydrate Values Using The *Nutrition Facts* Table?

On packaged foods, you can find out how much carbohydrate is in a serving by reading the *Nutrition Facts* table. Here is an example, showing you what to look for:

Look at the SERVING SIZE
Compare this to the amount that you eat.

Look at the CARBOHYDRATE in the listed serving
Fibre and sugar are included in this number.

Subtract the FIBRE from Carbohydrate
Fibre is not digested and does not raise your blood glucose.

In this example:
36g – 6g (fibre) = **30 g** of available carbohydrate.

Nutrition Facts	
Per 90 g serving (2 slices)	
Amount	**% Daily Value**
Calories 170	
Fat 2.7 g	**4** %
Saturated 0.5 g + Trans 0 g	**5** %
Cholesterol 0 mg	
Sodium 200 mg	**8** %
Carbohydrate 36 g	**13** %
Fibre 6 g	**24** %
Sugars 3 g	
Protein 8 g	
Vitamin A 1 %	Vitamin C 0 %
Calcium 2 %	Iron 16 %

What Should My Blood Glucose be Before and After Meals?

Before meals	4 to 7 mmol/L
2 hours after meals	5 to 10 mmol/L

If your blood glucose goes up only 2 to 3 mmol/L two hours after your meal, you are doing well. If your blood glucose is going too high after meals, ask yourself:

- Are my meals balanced?
- Did I include some protein and fat?
- Am I eating too many carbohydrates?

- Am I getting enough exercise?
- Should I talk to my healthcare team about changing my medications?

Speak to the registered dietitian on your healthcare team if you have questions about carbohydrate counting and managing your blood glucose levels.

For more information, visit **diabetesgps.ca**

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Diabetes GPS is a tool developed by the Canadian Diabetes Association

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