

Pancreatic Cancer and Diabetes: What You Need to Know

For patients with pancreatic cancer

This booklet will give you information about:

- What is diabetes
- How diabetes and pancreatic cancer are connected
- Whether your high blood sugar will go away after treatment
- How your diet affects your blood sugar
- Which foods have carbohydrates
- What type of carbohydrates are best for you
- How much carbohydrate is right for you
- Tips for getting more protein
- Tips for getting more calories

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What is diabetes?

Diabetes is a condition in which your body can't make or use insulin properly. **Insulin** is a hormone made in your pancreas that controls your **blood sugar** - the amount of glucose (sugar) in your blood. Insulin helps move sugar from your blood into your cells so it can be used as energy. When people have diabetes, too much sugar stays in their blood – this causes high blood sugar. Over time, high blood sugar can damage your organs, blood vessels, and nerves.

How are diabetes and pancreatic cancer connected?

Both pancreatic cancer and its treatment can cause diabetes. When cancer grows in the pancreas it damages the tissues. You may also have surgery that removes part or all of your pancreas as part of your treatment (known as a “Whipple procedure”). Both of these things can impact the amount of insulin your pancreas makes, and cause high blood sugar.

If you had diabetes before your cancer diagnosis, the cancer and its treatment can suddenly make it harder to control your blood sugar. If you know you have a hard time controlling your blood sugar, please speak with your health care team.

Will my high blood sugar go away after treatment?

Your blood sugar may go back to normal after your cancer treatment. This may happen if your high blood sugar is caused by medication like steroids. Your blood sugar may stay high after treatment if you had some or all of your pancreas removed.

Lifestyle changes and medication can help keep your blood sugar normal. A dietitian can help you identify what diet and lifestyle changes may help. If you are on medications for your blood sugar, make sure you take them as prescribed by your doctor.

How does my diet affect my blood sugar?

What you eat changes your blood sugar, especially foods with carbohydrates.

Carbohydrates break down into sugar in your body and cause your blood sugar to go up. Carbohydrate foods are an important part of a healthy diet. They are your body's main source of energy and are the best sources of fibre, vitamin A, vitamin C, potassium, and calcium. You do not need to stop eating carbohydrates if you have diabetes. Instead you can improve your blood sugar by changing the type and how much carbohydrate you eat.

Note: During your cancer treatment, do not try to control your blood sugar by eating less food overall. Getting enough protein and calories during treatment is important to help keep your body strong. If you have lost weight or find it hard to eat enough, please speak with a dietitian. You may need to eat high-calorie foods that cause your blood sugar to go up. Your health care team can help you manage your diabetes around this. For example, they may suggest a change in your medication.

Which foods have carbohydrates?

Carbohydrate foods include:

- Starchy vegetables like potatoes, sweet potatoes, and corn
- Legumes like dried beans, peas, and lentils
- Grain products like bread, rice, pasta, and crackers
- Fruit
- Milk, yogurt, and fortified soy beverage
- Sugars – white, brown, and icing sugars, honey, agave nectar and foods with sugars added to them, like cake, pop, and candy

Foods that do not have carbohydrates, and do not affect your blood sugars, include:

- Non-starchy vegetables
- Non-starchy protein foods like chicken, tofu, fish, beef, eggs, nuts
- Fats and oils

What type of carbohydrates are best?

Not all carbohydrates affect your blood sugar in the same way.

High-quality carbohydrates break down slowly in your body, and have less of an effect on your blood sugar. They also have more nutrients like fibre, vitamins, and minerals. When you eat carbohydrates, try to choose high-quality carbohydrates most often.

Lower-quality carbohydrates break down quickly in your body and cause your blood sugar to go up quickly. They also contain fewer nutrients. Try to choose fewer lower-quality carbohydrates.

	High-quality carbohydrates Choose most often High-fibre Cause blood sugar to increase slowly Less processed	Lower-quality carbohydrates Choose less often Low-fibre Cause blood sugar to increase quickly More processed
Starchy vegetables	<ul style="list-style-type: none">• All kinds, like potatoes, sweet potatoes, corn	
Legumes	<ul style="list-style-type: none">• All beans, peas, and lentils	
Grains and cereals	<ul style="list-style-type: none">• Quinoa, barley, bulgur, buckwheat, freekeh, millet, amaranth• Brown, basmati, or wild rice• Steel-cut oats• All Bran®, oat bran, or Bran Buds with Psyllium®	<ul style="list-style-type: none">• Short-grain white rice• White pasta• Packaged, flavoured instant oats• Rice Krispies®, Corn Flakes®• Granola
Breads	<ul style="list-style-type: none">• 100% whole grain, rye, heavy-mixed grain, pumpernickel, sourdough	<ul style="list-style-type: none">• White bread, white buns, Kaisers, croissants, bagels
Fruit	<ul style="list-style-type: none">• All fresh or frozen fruit (examples of fruits that have less of an impact on blood sugars are cherries, grapefruit, apples, pears, strawberries, oranges, and plums)• Limit portion of dried fruit	<ul style="list-style-type: none">• Fruit canned in juice or syrup• Fruit juice

	High-quality carbohydrates Choose most often High-fibre Cause blood sugar to increase slowly Less processed	Lower-quality carbohydrates Choose less often Low-fibre Cause blood sugar to increase quickly More processed
Chips, crackers, and crispbreads	<ul style="list-style-type: none"> • Ryvita® • Wasa® • Finn crisps® 	<ul style="list-style-type: none"> • Soda crackers • Rice cakes • Potato and corn chips • Veggie sticks • Pretzels
Milk and yogurt	<ul style="list-style-type: none"> • Plain cow's, goat's, and soy milk • Plain, unsweetened yogurt or kefir 	<ul style="list-style-type: none"> • Flavoured milk • Flavoured yogurt or kefir • Ice cream, frozen yogurt, gelato
Other	<ul style="list-style-type: none"> • Air-popped popcorn 	<ul style="list-style-type: none"> • Sweets (e.g. cakes, cookies, granola bars, pudding, chocolate, candies, licorice, tea biscuits) • French fries • Pizza pockets • Dumplings • Waffles, pancakes

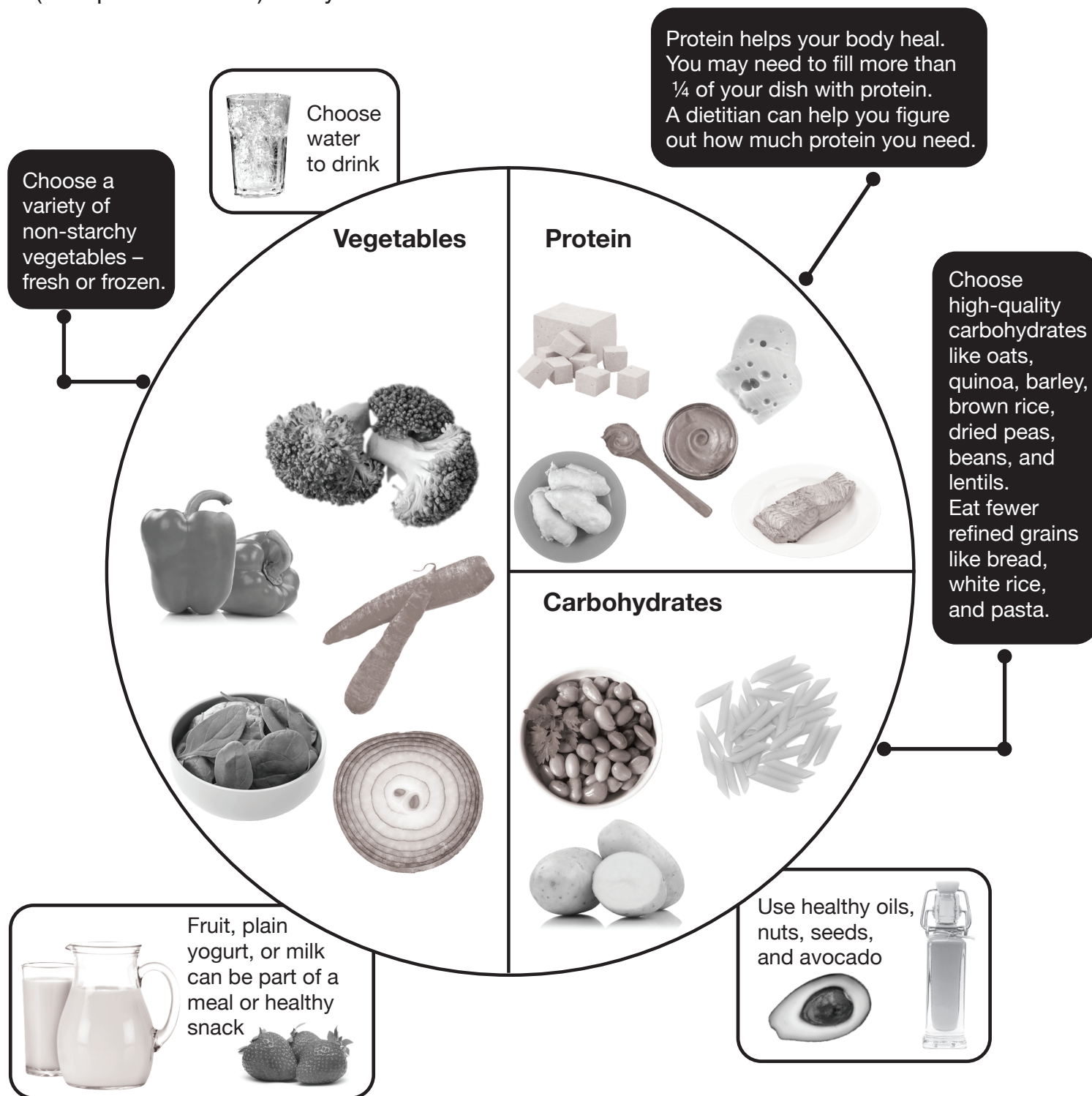
How much carbohydrate is right for me?

Try to eat 3 meals a day at regular times and space meals no more than 6 hours apart. You may benefit from a healthy snack in-between meals. Use the next 2 pages to help you choose a healthy amount of carbohydrates at each meal and snack.

Remember, if you have lost weight or find it hard to eat please speak with a dietitian. This eating pattern might not be right for you.

Meals

- At each meal, aim to fill $\frac{1}{4}$ of your dish with high-quality carbohydrate foods (whole grains, legumes, or starchy vegetables), $\frac{1}{4}$ of your dish with protein, and $\frac{1}{2}$ of your dish with non-starchy vegetables. You might enjoy 1 serving of milk (1 cup) or yogurt ($\frac{3}{4}$ cup) or fruit ($\frac{1}{2}$ cup or 1 medium) with your meal.



Snacks

- Enjoy a snack in between meals if you are hungry, if you are trying to eat more calories or protein, or if you have to wait longer than 6 hours before your next meal.
- For healthy snack ideas, mix and match 1 to 2 foods from the chart below. Try to include a protein food at each snack, to help you meet your protein needs.

Vegetable/Fruit/Starch Foods		Protein Foods	
Chopped vegetables	1 cup + (250 ml or more)	Nut/seed butter	2 Tbsp. (30 ml)
Apple/pear/orange	1 medium	Nuts	¼ cup (60 ml)
Banana	1 small	Seeds	¼ cup (60 ml)
Melon/berries	1 cup (250 ml)	Yogurt/Greek yogurt	¾ cup (175 ml)
Grapes/cherries	15 fruit	Milk (cow, goat, soy)	1 cup (250 ml)
Kiwi/plum/tangerines	2 fruit	Cottage cheese	¾ cup (175 ml)
Dried fruit	¼ cup (60 ml)	Cheese	1 oz. (28 g)
Whole grain crackers (crisp breads)	4 crackers	Egg	1 egg
Bread (whole grain)	1 slice	Canned fish	1 small can (85 g)
Pita/tortilla (whole wheat)	½ piece	Bean salad	¾ cup (175 ml)
English muffin (whole wheat)	1 muffin	Hummus/bean dip	2 Tbsp. (30 ml)

Tips for getting more protein

Getting enough protein is important to help your body stay strong, heal, and recover. Remember, most protein foods do not have carbohydrates in them. You do not need to worry about eating too much protein when you are trying to control your blood sugar. Try these tips to add more protein to your day:

- **Eat a protein food at every meal and snack**
- **Choose non-starchy protein foods most often, like:**
 - **Tofu** – add to smoothies, soups, casseroles, stir-fries, salads, and sauces.
 - **Cheese** – add to salads, eggs, muffins, pasta, and sandwiches. Melt into soups, sauces, and casseroles. Use for a snack with fruit and crackers.
 - **Eggs** – use to make quiche, omelets, French toast, and soufflés. Add cooked eggs to salads, soups, or casseroles. Mix with mayonnaise in a sandwich.
 - **Nuts and seeds** – add to salads, yogurt, cereal, and trail mix.
 - **Nut/seed butter** – spread on toast, sandwiches, and crackers. Swirl through yogurt or hot cereals. Use as a dip with fruit and vegetables.
 - **Meat, fish, poultry** – add to salads, pasta, soups, omelets, casseroles, and soufflés.
- **Try a protein powder** – add to soups, mashed potatoes, smoothies, cereals, puddings, and casseroles. Most protein powders are low in carbohydrate, but check the nutrition facts label (choose one with less than 4 g of sugar per serving).

Tips for getting more calories

If you have lost weight or are finding it hard to eat enough, follow these tips to add extra calories to your diet:

- **Use extra olive, canola, or avocado oil** on your meats, vegetables, stir-fries, smoothies, and salads. Pan-fry foods to boost the calories.
- **Choose higher-fat dairy foods** like homogenized milk and full-fat yogurt.
- **Add healthy high-fat foods to your meals and snacks**, like avocados, olives, and nuts. Eat these foods by themselves, blend into smoothies, or add to salads.
- **Enjoy a fatty fish for lunch or dinner**, like salmon, tuna, mackerel, sardines, trout, herring, arctic char or anchovies.
- **Try a diabetes-friendly nutrition supplement** as a snack or part of your meal if you are too tired to cook. A dietitian can help you choose one that's right for you.

If you are a patient at the Odette Cancer Centre and you have questions about healthy eating or you would like to book an appointment with a registered dietitian, please contact the Nutrition Resource Centre:

T-Wing ground floor, TG-261 (across from the café)
416 – 480 – 6100 ext. 3438

Notes
