The Truth About Carbohydrates

Katherine Langlois, RD, LDN

BlueCross BlueShield of Louisiana

What are Carbohydrates (CHO)?

- Carbohydrates are part of food that your body uses for energy.
- Most important is the *type of carbohydrate* you choose to eat. Some sources are healthier than others.
- There are two types of carbohydrates:
  - **Simple** – from food with sugar, like candy, fruit, milk, syrup, soft drinks, honey or jam/jelly.
  - **Complex** – from food with starches and fiber, like potatoes, corn, beans, lentils, peas, oatmeal, pasta or whole-grain bread
- It’s more important to eat carbohydrates from healthy foods than to follow a strict diet limiting or counting the number of grams of carbohydrates consumed.

Why Carbohydrates are important:

- When you eat carbohydrates, your body breaks them down into blood sugar, called *glucose*.
- Glucose *feeds your cells*.
- When you eat food with *more than five grams of carbohydrates*, your blood sugar levels go up.
- When your blood sugar levels go up, your pancreas releases the hormone *insulin*.
- Insulin is important for *metabolism* and *utilization of energy* from the ingested nutrients - especially glucose.

Why is insulin important?

- Insulin can regulate blood glucose. The body senses and responds to rise in blood glucose by secreting insulin.
- There are two major types of diabetes:
    - **Type 1** – no or very low production of insulin from the pancreatic beta cells. Patients with Type 1 diabetes mellitus depend on external insulin (most commonly injected under the skin) for their survival.
    - **Type 2** diabetes mellitus – demands of insulin are not met by the amount produced by the pancreatic beta cells. Patients may be treated with medication to reduce their blood sugar or may eventually require externally supplied insulin if other medications fail to control blood glucose levels adequately.

Starches and Grains

- Most calories in starchy foods come from carbohydrates.
- These foods are a good source of energy and give you fiber, vitamins, and minerals. But be mindful of how much you eat.
- Each serving on the following lists contain about
  - 15 grams carbohydrates
  - 0-3 grams protein
  - 0-1 gram fat
  - 80 calories

GREEN STARCHY FOOD	ONE SERVING
• Winter, acorn or butternut squash	1 cup
• Sweet potato/yam	1/2 cup
• Cooked beans (black, garbanzo/chickpeas, kidney, lima, navy, pinto or white)	1/2 cup
• Cooked lentils (brown, green or yellow)	1/2 cup
• Cooked peas (black-eyed or split)	1/2 cup
• Quinoa, cooked	1/3 cup
• Couscous	1/3 cup
• Bulgur, cooked	1/2 cup

YELLOW STARCHY FOOD	ONE SERVING
Whole-wheat bread	1 slice (1 oz)
Rye bread	1 slice (1 oz)
Whole wheat hot dog/hamburger bun	1/2 bun
Cereal, cooked (oats, oatmeal)	1/2 cup
Cereals, ready-to-eat	
Pick those with at least three grams of fiber and less than six grams of sugar	1/2 cup
Granola, low-fat	1/4 cup
Whole wheat cereal	1/3 cup
Brown rice	1/3 cup
Corn, cooked	1/2 cup
Corn on cob, large (5 oz)	1/2 cob
Peas, green, cooked	1/2 cup
Whole-wheat English muffin	1/2 muffin
Popcorn (air-popped)	3 cups

RED STARCHY FOOD	ONE SERVING
• Potato baked with skin	1/4 large (3 oz)
• Pretzels	3/4 oz
• White bread	1 slice (1 oz)
• White English muffin	1/2 muffin
• Cornbread	1 ¾ inch cube or 1 ½ oz
• Bagel, large (about 4 oz)	1/4 bagel
• Biscuit, 2 ½ inches across	1
• White hot dog/hamburger bun	1/2 bun
• Pancake (4 inches across, ¼ inch thick)	1
• Pita pocket bread (6” across)	1/2
• Roll, plain, small	1
• Tortilla, corn or flour (6” across)	1

RED STARCHY FOOD	ONE SERVING
• Waffle (4 inch square)	1
• Pasta, cooked	1/3 cup
• White rice	1/3 cup
• Potato boiled, all kinds	1/2 cup
• Potato mashed with milk and fat	1/2 cup
• French fries (oven-baked)	1 cup
• Round, butter-type crackers	6 crackers
• Saltines	6 saltines
• Graham cracker, 2 ½ inch square	3
• Snack chips (tortilla chips, potato chips)	
Fat-free or baked	15-20 chips
Regular	9-13 chips
• Baked beans	1/3 cup

Fruits

- Fresh, frozen or dried fruits are good sources of fiber.
- Fruit juices contain very little fiber, so eat real fruit instead of juice whenever you can.
- For canned fruit, choose fruit packed in its own juice or light syrup.
- Each serving from the following lists contain about
  - 15 grams carbohydrates
  - 0 grams fat
  - 0 grams protein
  - 60 calories

GREEN FRUIT	ONE SERVING
Apple, unpeeled, small (4 oz)	1
Blackberries	3/4 cup
Blueberries	3/4 cup
Raspberries	1 cup
Strawberries (whole)	1 ¼ cup
Cantaloupe, cubed	1 cup
Cherries	12 cherries
Grapefruit, large	1/2
Grapes, small	17 grapes

GREEN FRUIT	ONE SERVING
• Kiwi	1
• Mango, small	1/2 fruit or 1 cup
• Orange, small	1
• Papaya cubed	1/2 fruit or 1 cup
• Peaches (fresh, medium)	1
• Pears (fresh, large)	1/2
• Pineapple (fresh)	3/4 cup
• Small plums	2
• Watermelon	1 slice or 1 ¼ cup (cubes)

YELLOW FRUIT	ONE SERVING
• Applesauce, unsweetened	1/2 cup
• Banana, extra small	1
• Dried fruits (blueberries, cherries, cranberries, mixed fruit, raisins	2 tbsp
• Mandarin oranges, canned	3/4 cup
• Dried prunes	3

RED FRUIT	ONE SERVING
• Apple, grapefruit, orange, pineapple juice	1/2 cup
• Fruit juice blends, 100% juice, grape juice, prune juice	1/3 cup

Milk/Dairy

- Dairy products like milk and yogurt are rich in calcium and protein, but they have carbohydrates too.
- Choose fat-free, low-fat and reduced-fat types. These have less saturated fat and cholesterol than whole-milk products.
- Each serving from the following lists contain about
  - 12 grams of carbohydrates
  - 8 grams protein
  - 90-146 calories
  - 0-8 grams fat

GREEN DAIRY	ONE SERVING
• Fat-free milk, buttermilk, Lactaid	1 cup
• Evaporated milk	1/2 cup
• Yogurt, plain or flavored with a low calorie sweetener	2/3 cup
• Reduced-fat milk, Lactaid	1 cup
• Greek yogurt	6 oz
• Whole milk, buttermilk, goat's milk	1 cup
• Soy milk, regular, plain	1 cup

YELLOW DAIRY	ONE SERVING
• Smoothies, flavored, regular	10 oz

Sweets/Desserts

- Sweets tend to be high in carbohydrates and do not have as many vitamins, minerals and fiber as other foods.
- These foods should be used as special treats, not something you eat every day.
- Many sugar-free, fat-free and reduced-fat desserts are made with ingredients that contain extra carbohydrates, so check the Total Carbohydrate information on the food label to be aware of what you are eating.

Dessert Examples

- Brownie, cake, candy, chocolate, cookies, fruit juice bars, ice cream, muffins, pie, pudding, syrup and frozen yogurt
- **Sample serving sizes:**
  - Brownie – 2 inch square
  - Packaged cookies = 2 cookies
  - Ice cream = 1/2 cup
  - Muffin = 1/4 of a regular 4 oz. muffin

Read the Labels

- Look at the number of “Total Carbohydrate” grams listed on the Nutrition Facts label.
- This tells you how many grams of carbohydrates are in one serving of that food.
- 15 grams total carbohydrate = 1 serving size
- There can be more than one serving size in the package.

Read the Labels

- Check the ingredient list on a food label.
- Limit foods that have sugar or starch listed in the first five ingredients.
- **All of these are forms of sugar**:

Sucrose
Dextrose
Fructose
Maltose
Lactose
Glucose
Honey
Syrup
High-fructose corn syrup
Maple syrup
Brown rice syrup
Molasses
Evaporated cane juice
Fruit juice concentrate
Corn sweeteners
Galactose
Agave nectar
Beet sugar
Brown sugar
Cane juice crystals
Cane sugar
Caramel
Carob syrup
Corn syrup solids
Crystalline fructose
Diastatic malt
Ethyl maltol
Maltodextrin
Panela
Panocha
Confectioner's sugar
Treacle
Turbinado sugar
Sorbitol
Mannitol

Beverages count too!

Grande 16oz | Whole Milk

Nutrition Facts Per Serving (16 fl oz)

Calories 290	Calories from Fat 100
	% Daily Value*
Total Fat 11g	17%
Saturated Fat 6g	30%
Trans Fat 0g	
Cholesterol 35mg	12%
Sodium 140mg	6%
Total Carbohydrate 37g	12%
Dietary Fiber 0g	0%
Sugars 35g	
Protein 11g	

Vitamin A 10% • Vitamin C 0% • Calcium 35% • Iron 0%

Caffeine 150mg**

*Percent Daily Values are based on a 2,000 calorie diet.

**Each caffeine value is an approximate value.

Vanilla Latte

Grande 16oz | Nonfat milk

Nutrition Facts Per Serving (16 fl oz)

Calories 200	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 140mg	6%
Total Carbohydrate 37g	12%
Dietary Fiber 0g	0%
Sugars 35g	
Protein 12g	

Vitamin A 15% • Vitamin C 0% • Calcium 40% • Iron 0%

Caffeine 150mg**

*Percent Daily Values are based on a 2,000 calorie diet.

**Each caffeine value is an approximate value.

Beverages count too!

Gatorade Perform® Lemon-Lime Thirst Quencher
Boisson désaltérante Gatorade Performer^MC Citron-Lime

Nutrition Facts
Valeur nutritive
Per 591 mL / par 591 mL

Amount / Teneur	% Daily Value / % valeur quotidienne
Calories / Calories 150	
Fat / Lipides 0 g	0 %
Sodium / Sodium 250 mg	11 %
Potassium / Potassium 65 mg	2 %
Carbohydrate / Glucides 38 g	13 %
Sugars / Sucres 35 g	
Protein / Protéines 0 g	

Not a significant source of saturated fat, trans fat, cholesterol, fibre, vitamin A, vitamin C, calcium or iron.

Source négligeable de lipides saturés, lipides trans, cholestérol, fibres, vitamine A, vitamine C, calcium et fer.

INGREDIENTS: WATER, SUGAR, DEXTROSE, CITRIC ACID, NATURAL FLAVOURS, SALT, SODIUM CITRATE, MONOPOTASSIUM PHOSPHATE, GUM ARABIC, ESTER GUM, COLOUR.

INGRÉDIENTS : EAU, SUCRE, DEXTROSE, ACIDE CITRIQUE, ARÔMES NATURELS, SEL, CITRATE DE SODIUM, PHOSPHATE MONOPOTASSIQUE, GOMME ARABIQUE, GOMME ESTER, COLORANT.

G2 Perform™ Blueberry Pomegranate Electrolyte Beverage
Boisson d'électrolytes G2 Performer^MC Bleuet grenade

Nutrition Facts
Valeur nutritive
Per 250 mL / par 250 mL

Amount / Teneur	% Daily Value / % valeur quotidienne
Calories / Calories 20	
Fat / Lipides 0 g	0 %
Sodium / Sodium 115 mg	5 %
Potassium / Potassium 30 mg	1 %
Carbohydrate / Glucides 5 g	2 %
Sugars / Sucres 5 g	
Protein / Protéines 0 g	

Not a significant source of saturated fat, trans fat, cholesterol, fibre, vitamin A, vitamin C, calcium or iron.

Source négligeable de lipides saturés, lipides trans, cholestérol, fibres, vitamine A, vitamine C, calcium et fer.

INGREDIENTS: WATER, SUGAR, CITRIC ACID, NATURAL AND ARTIFICIAL FLAVOURS, SALT, SODIUM CITRATE, MONOPOTASSIUM PHOSPHATE, SUCRALOSE (47 mg/250 mL), ACESULFAME POTASSIUM (9 mg/250 mL), COLOUR.

INGRÉDIENTS : EAU, SUCRE, ACIDE CITRIQUE, ARÔMES NATURELS ET ARTIFICIELS, SEL, CITRATE DE SODIUM, PHOSPHATE MONOPOTASSIQUE, SUCRALOSE (47 mg/250 mL), ACÉSULFAME POTASSIUM (9 mg/250 mL), COLORANT.

Artificial sweetener vs Sugar

- Artificial sweeteners are synthetic sugar substitutes, but may be derived from naturally occurring substances.
- There's no sound scientific evidence that any of the artificial sweeteners approved for use in the U.S. cause cancer or other serious health problems.
- Artificial sweeteners don't contribute to tooth decay and cavities.
- They may also help with the following:
  - **Weight control**. Artificial sweeteners are non-nutritive — they have virtually no calories.
  - **Diabetes.** Unlike sugar, artificial sweeteners generally don't raise blood sugar levels because they are not carbohydrates.

Don’t Fall for False Claims

Serving Size 1/2 Cup (65g)	
Servings Per Container 12	
Amount Per Serving	
Calories 140	
Calories From Fat 60	
	% Daily Value*
Total Fat 7g	11%
Saturated Fat 4.5g	23%
Trans Fat 0g	
Cholesterol 45mg	15%
Sodium 50mg	2%
Total Carbohydrate 16g	5%
Dietary Fiber 0g	0%
Sugars 14g	
Protein 2g	
Vitamin A	4%
Vitamin C	0%
Calcium	8%
Iron	0%

*Percent Daily Values are based on a 2,000 calorie diet

Nutrition Facts

MILK, CREAM, SUGAR, CORN SYRUP, EGG YOLKS, WHEY, CAROB BEAN GUM, MONO AND DIGLYCERIDES, VANILLA BEANS*, NATURAL FLAVOR, RUM, NATURAL VANILLA FLAVOR*, TARA GUM, ANNATTO (FOR COLOR), GUAR GUM, SALT.

Serving Size 1/2 Cup (56g)	
Servings Per Container 12	
Amount Per Serving	
Calories 80	
Calories From Fat 25	
	% Daily Value*
Total Fat 3g	5%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 10mg	3%
Sodium 45mg	2%
Total Carbohydrate 13g	4%
Sugar Alcohol 6g	
Dietary Fiber 0g	0%
Sugars 4g	
Protein 2g	
Vitamin A	6%
Vitamin C	0%
Calcium	6%
Iron	0%

*Percent Daily Values are based on a 2,000 calorie diet

Nutrition Facts

SKIM MILK, MALTITOL SYRUP, MALTODEXTRIN (CORN), CREAM, WHEY, **CONTAINS 2% OR LESS OF EACH OF THE FOLLOWING:** MONO AND DIGLYCERIDES, GUAR GUM, CAROB BEAN GUM, NATURAL FLAVORS, CARRAGEENAN, ACESULFAME POTASSIUM, SUCRALOSE (SPLENDA® BRAND), TARA GUM, VITAMIN A PALMITATE, ANNATTO (FOR COLOR).

Dos and Don'ts

of breakfast from office cafeteria

DO

- Oatmeal
- Fruit cup
- Grits

DON'T

- Cinnamon Roll
- Muffin

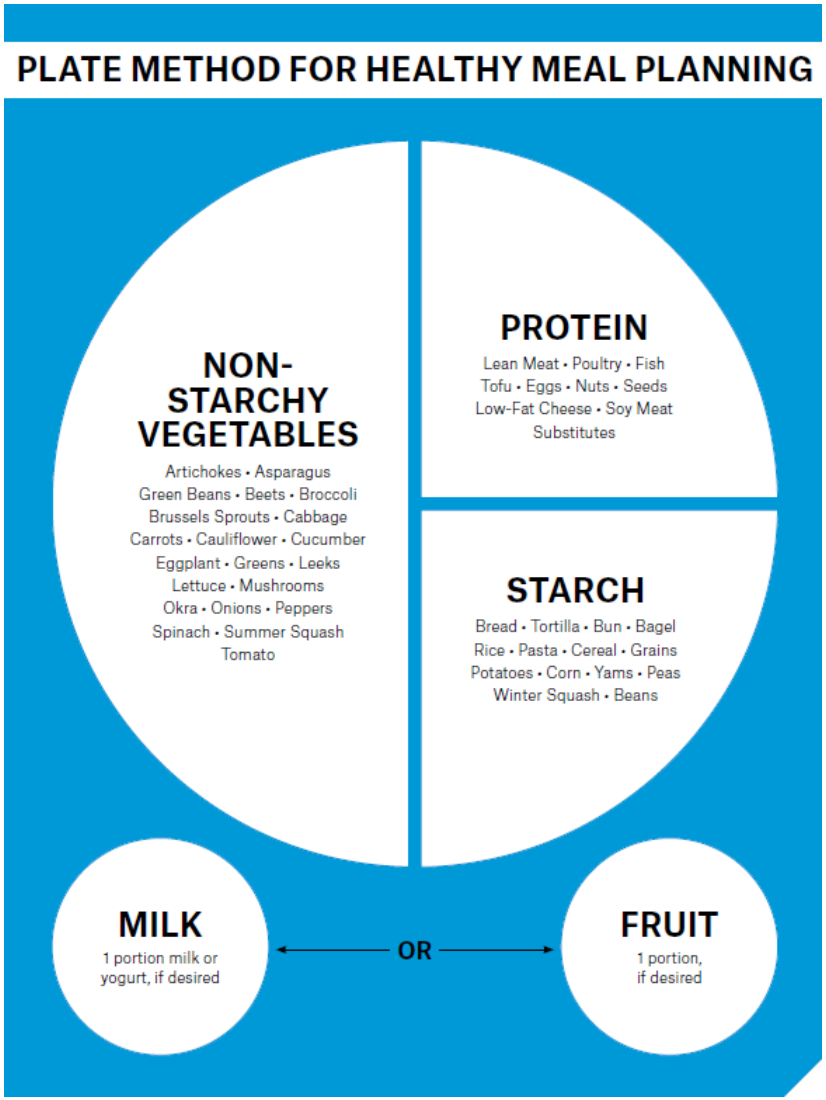
MAYBE

- Pancake
- Waffle

How Should Your Plate Look

- **Monday cafeteria special:** Red Beans and Rice with Sausage, veggies, salad, cornbread

- **Better option:**
  - 1/3 cup rice
  - ½ cup beans
  - 3oz pork chop
  - 1 cup green beans
  - 1 orange



Vending Machine vs…

Nutrition Facts
Serving Size 1 oz (28g/About 21 pieces)

Amount Per Serving	
Calories 150	Calories from Fat 90
	% Daily Value*
Total Fat 10g	16%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 250mg	10%
Total Carbohydrate 13g	4%
Dietary Fiber less than 1g	2%
Sugars 1g	
Protein 2g	

Vitamin A 0%	•	Vitamin C 0%	
Calcium 0%	•	Iron 2%	
Thiamin 8%	•	Riboflavin 4%	
Niacin 4%	•	Vitamin B_6 2%	

* 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

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Ingredients: Enriched Corn Meal (Corn Meal, Ferrous Sulfate, Niacin, Thiamin Mononitrate, Riboflavin, and Folic Acid), Vegetable Oil (Corn, Canola, and/or Sunflower Oil), Cheese Seasoning [Whey, Cheddar Cheese (Milk, Cheese Cultures, Salt, Enzymes), Canola Oil, Maltodextrin (Made From Corn), Salt, Whey Protein Concentrate, Monosodium Glutamate, Natural and Artificial Flavors, Lactic Acid, Citric Acid, Artificial Color (Yellow 6)], and Salt.
CONTAINS MILK INGREDIENTS.

Nutrition Facts
Serving Size 1 package
Servings Per Container 8

Amount Per Serving	
Calories 200	Calories from Fat 90
	% Daily Value*
Total Fat 10g	16%
Saturated Fat 3g	15%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 310mg	13%
Total Carbohydrate 24g	8%
Dietary Fiber 2g	8%
Sugars 5g	
Protein 5g	

Vitamin A 0%	•	Vitamin C 0%	
Calcium 4%	•	Iron 6 %	

*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

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

INGREDIENTS: ENRICHED WHEAT FLOUR (UNBLEACHED WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMIN MONONITRATE, RIBOFLAVIN, FOLIC ACID), PEANUT BUTTER (ROASTED PEANUTS, SUGAR, HYDROGENATED CANOLA OIL, HYDROGENATED COTTONSEED OIL, HYDROGENATED SOYBEAN OIL, SALT, MOLASSES), VEGETABLE SHORTENING (PALM OIL, CANOLA OIL WITH TBHQ AND CITRIC ACID TO PRESERVE FRESHNESS), SUGAR, MODIFIED CORN STARCH AND LESS THAN 2% OF THE FOLLOWING: SALT, LEAVENING (AMMONIUM BICARBONATE, MONOCALCIUM PHOSPHATE, BAKING SODA), DEXTROSE, CHEDDAR CHEESE (PASTEURIZED MILK, CHEESE CULTURES, SALT, ENZYMES), MOLASSES, HYDROLYZED SOY PROTEIN, SOY LECITHIN, ARTIFICIAL COLOR (YELLOW 6), SODIUM SULFITE ANHYDROUS, SODIUM METABISULFITE, SPICES, AND WHEAT FLOUR.
CONTAINS WHEAT, PEANUT, SOY, AND MILK INGREDIENTS.
ALLERGY INFORMATION: THIS PRODUCT IS MADE IN A FACILITY THAT PROCESSES TREE NUTS.

Nutrition Facts
Serving Size 16 Pieces (30g)
Servings Per Container About 2

Amount Per Serving	16 Pieces		1 Package	
Calories	130		250	
Calories from Fat	20		35	
		%DV*		%DV*
Total Fat	2g	3%	4g	6%
Saturated Fat	0g	0%	1g	5%
Trans Fat	0.5g		1g	
Cholesterol	0mg	0%	0mg	0%
Sodium	90mg	4%	180mg	8%
Total Carbohydrate	25g	8%	50g	17%
Dietary Fiber	<1g	2%	1g	4%
Sugars	7g		14g	
Protein	2g		4g	
Vitamin A	0%		0%	
Vitamin C	0%		0%	
Calcium	0%		0%	
Iron	6%		10%	

*Percent Daily Values (DV) 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

Nutrition Facts
Serving Size 1 bun (142 g)

Per Serving	% Daily Value*
Calories 590	
Calories from Fat 261	
Total Fat 29g	45%
Saturated Fat 14g	70%
Polyunsaturated Fat 5g	
Monounsaturated Fat 9g	
Cholesterol 0mg	0%
Sodium 390mg	16%
Carbohydrates 76g	25%
Dietary Fiber 2g	8%
Sugars 37g	
Protein 7g	

Vitamin A 0% · Vitamin C 0%
Calcium 10% · Iron 15%

. . . Healthy Snacks!

- Hummus with carrots or cucumbers
- Protein bars
- Greek yogurt
- Nuts with dried fruit
- Cottage cheese with fruit
- String cheese with ½ avocado

Resources:

- http://www.news-medical.net/health/What-is-Insulin.aspx
- How You Can Eat Healthy and Watch Carbohydrates – BCBSLA handout
- http://www.mayoclinic.org


Questions?