

# **CARBOHYDRATE COUNTING**

## Do children with diabetes need a special diet?

- No!
- The basic nutritional needs of a child or adolescent with diabetes is the same as their peers
- Healthy eating is important for all children
- Children with diabetes have no true food restrictions, but require insulin for items that contain carbohydrates

# What are carbohydrates?

- Food contains 3 different macronutrients
  1. Carbohydrates (Carbs)
  2. Fat
  3. Protein
- Carbs impact blood glucose the most

# Foods with Carbs

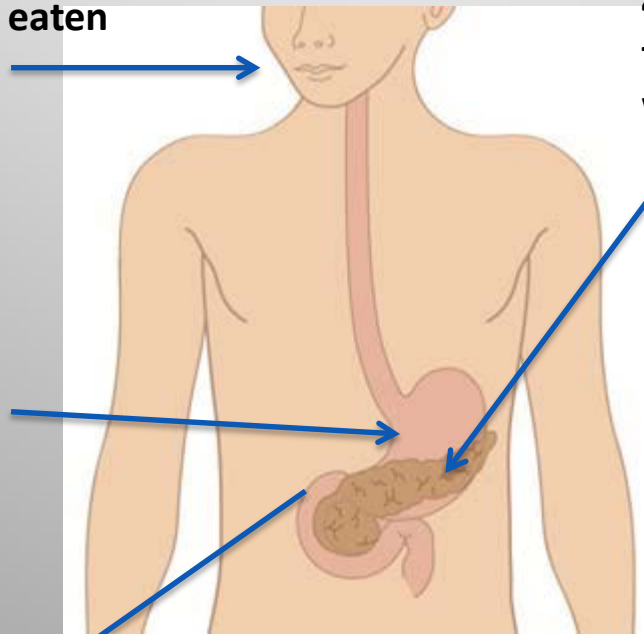
- Grains: Bread, cereal, pasta, rice, crackers
- Starchy Vegetables: Potatoes, corn, peas, beans, legumes
- Fruits: Fresh, frozen, canned, and juices
- Dairy: Milk and yogurt
- Others: *Breaded* meats, sauces, cakes, cookies, candy, chips, ice cream, sauces, etc.



# How do carbs impact blood glucose?



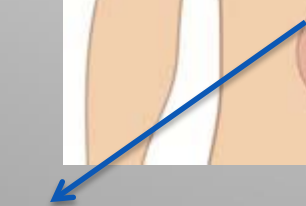
1. Carbs are eaten



2. Carbs are broken down to forms of sugar that eventually break down to glucose

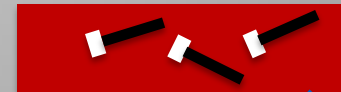


3. Glucose enters the blood stream and blood glucose rises



4. For a person without diabetes, the pancreas releases insulin when blood glucose rises

5. Insulin is the key that moves glucose from the blood to the body's cells



6. Glucose in the cell gives the body energy



## What about carbs and children with diabetes?

- The pancreas no longer makes insulin
- Children with diabetes still need carbs for energy and growth
- Insulin needs to be given (with a syringe, pen, or insulin pump) when carbs are eaten
- Whether the choice is healthy or unhealthy, all carb grams in food or beverages must be counted

# Carb Counting: Food Label

<b>Nutrition Facts</b>	
Serving Size 1 cup ( <del>2</del> 8g)	
Servings Per Container 2	
<b>Amount Per Serving</b>	
<b>Calories</b> 260	Calories from Fat 120
<b>% Daily Value*</b>	
<b>Total Fat</b> 13g	<b>20%</b>
Saturated Fat 5g	<b>25%</b>
Trans Fat 2g	
<b>Cholesterol</b> 30mg	<b>10%</b>
<b>Sodium</b> 660mg	<b>28%</b>
<b>Total Carbohydrate</b> 31g	<b>10%</b>
Dietary Fiber 0g	<b>0%</b>
Sugars 5g	
<b>Protein</b> 5g	

**Serving Size:** Look here first. All of the information is about the Serving Size of 1 cup.

*Note:* The gram amount is the weight of the serving NOT the amount of carbs. Ignore this number unless using a food scale.

**Servings Per Container:** This tells how many servings are in the entire package. In this example, the entire package contains 2 servings, or 2 cups.

**Total Carbohydrate:** This gives the amount of carbs in 1 serving.

*For this label:*

1 serving = 1 cup = 31 grams of carbs

Entire container = 31 x 2 = 62 grams of carbs

# Carb Counting: Food Label

<b>Nutrition Facts</b>	
Serving Size 1/2 oz. (15 g) 5 Crackers	
Servings Per Container 12	
Amount per serving	
<b>Calories</b> 60	<b>Calories from fat</b> 10
% Daily Value *	
<b>Total Fat</b> 1 g	<b>2%</b>
Saturated Fat 0 g	<b>0%</b>
Trans Fat 0 g	
<b>Cholesterol</b> 0 mg	<b>0%</b>
<b>Sodium</b> 40 mg	<b>1%</b>
<b>Total Carbohydrate</b> 12 g	<b>4%</b>
Dietary Fiber 0 g	<b>0%</b>
Sugar 3 g	
<b>Protein</b> 1 g	

Use the cracker food label for the following questions:

1. How many carb grams are in 5 crackers? **12 grams**
2. How many carb grams are in one cracker? **12 grams ÷ 5 crackers = 2.4 grams**
3. How many carb grams would be in 12 crackers? **2.4 grams x 12 = 28.8 grams**



# Carb Counting: Food Label

Nutrition Facts	
Serving size 1/6 pizza (130g)	
Servings per container: 6	
<b>Amount Per Serving</b>	<b>% Daily Value*</b>
Calories 260	Calories from Fat 70
<b>Total Fat</b> 8g	<b>12%</b>
Saturated Fat 3.5g	<b>18%</b>
Trans Fat 0g	
<b>Cholesterol</b> 15mg	<b>5%</b>
<b>Sodium</b> 600mg	<b>25%</b>
<b>Total Carbohydrate</b> 36g	<b>12%</b>
Dietary Fiber 4g	<b>16%</b>
Sugars 6g	
<b>Protein</b> 16g	

Use the pizza food label for the following questions:

1. What is the serving size of the pizza?  
**1 slice for a pizza cut into 6 slices**
  2. How many servings are in the pizza?  
**6 servings or 6 slices**
  3. How many carbs are in 1 slice out of 6?  
**36 grams**
  4. How many grams would be in the entire pizza?  
**36 grams x 6 slices = 216 grams of carbs**
  5. If the pizza was cut into 8 slices, how many grams would be in each slice?  
**216 grams ÷ 8 slices = 27 grams of carbs**
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## Carb Counting: Without Food Label

- For food or beverages brought from home, the parent must provide the carb gram amount for each item
- The school food service provider must provide the carb gram amounts for the school menu
- Food items made by different vendors may have varying amounts of carb grams
- If carb grams are not provided by the parent or food service provider, there are other resources available, including Calorie King (book, online or app)

# Carb Counting: Calorie King Book

**Fruit ~ Fresh** **F**

**Weights As Purchased**

	C	F	Cb
<b>Apples</b> , all varieties, average:			
Whole, with skin:			
1 small, 4 oz	55	0	14
1 medium, 5.5 oz	75	0	19
1 large, 8 oz	110	0	28
1 extra large, 11 oz	145	0	36
Flesh only, no skin or core: 1 oz	15	0	3.5
Slices, 1 cup, 4 oz	55	0	14
Candy/Caramel Apple, 1 med., 6.5 oz	245	4	54
Chiquita, Apple Bites, 14 slices, 5 oz	80	0	20
<b>Apricots:</b> 1 small, 1.5oz	20	0	4
1 medium, 2 oz	25	0	6
1 large, 3 oz	40	0	10
1 extra large, 4 oz	50	0	12
<b>Asian Pear</b> , (Nashi Fruit), 1 medium, 7 oz	85	0	21
<b>Avocado:</b>			
Hass variety (Californian/Mexican):			
Pulp: ¼ medium, 1.5 oz	70	6.5	3
½ medium, 3 oz	140	13	7
1 medium (8.5 oz whole), 6 oz	280	26	14
Salad slices (3), 1 oz	50	4	2
Mashed: 2 Tbsp, 1 oz	50	4	2
¼ cup, 2 oz	95	8	5
Cubes, ½ cup, 2.5 oz	120	11	6
<b>Fuerte (Florida) variety:</b>			
¼ medium, 2.7 oz pulp	90	7.5	6
½ medium, 5.4 oz pulp	180	15	12
Mashed, 2 Tbsp, 1 oz	35	3	2

← Alphabetized by food categories

← Carbs found in the green Cb column

← After finding the right food, find the size or portion.

*How many carbs would be in 1 large apple? 28 grams*

Quick Guides are a great resource for an average of a food when a label is not available.

*How many carbs would be in 1 large slice of bread? 18 grams*

[www.calorieking.com](http://www.calorieking.com)  
or  
smart phone application

**B Bread & Bread Products**

Note: Most breads have similar calories on a weight basis. However, volume may vary.

For example, 1 oz of bread may equal 1 slice regular bread or 2 slices of a lighter bread. It is best to weigh bread used and calculate using: 1 oz bread = 70 calories, 14g carb.

	C	F	Cb
<b>Quick Guide</b>			
<b>Bread</b>			
<b>White or Wheat: Average Per Slice</b>			
Thin or Light, 0.75 oz	50	0.5	9
Sandwich slice, 1 oz	70	1	12
Thick or Large, 1.5 oz	105	1.5	18
Thick, 2 oz	140	2	23
Extra Thick, 3 oz	210	3	35
Whole Loaf: 16 oz	1120	15	185
24 oz Loaf	1680	24	280
<b>Multi Grain/Whole Grain: Per Slice</b>			
Sandwich Slice, 1 oz	75	1.5	12
Thick Slice, 2 oz	150	2.5	25
<b>Toast: Based on same counts as White/Wheat as above</b>			
<b>1 Slice (1 oz fresh):</b>			
With 1 tsp butter/margarine	105	5	12
With 1 tsp "light" butter/marg.	90	3.5	12
With 2 tsp butter/margarine	140	9	12
With 2 tsp "light" butter/marg.	110	6	12

←

# Carb Counting at Snack or Mealtime

- Count all of the carbs before a child eats
- Write out the carb amount for each food
- Younger children:
  - Give insulin **after** eating, within 30 minutes after the first bite
  - Count the carbs put on the plate before eating and the carbs actually eaten
- Older children:
  - Give insulin **before** eating
  - Count carbs **before** eating
  - Start eating within 0-15 minutes of giving insulin
  - Carbs need to be eaten within 30 minutes of giving insulin
  - If all carbs are not eaten, substitute with the same carb amount



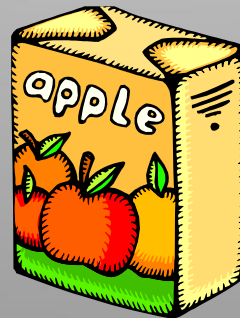
*Always follow the medical orders for each individual child.*

## Substitution Example

Logan had a large apple at lunch (28 grams of carbs) and received insulin before his meal. Logan was only able to eat half of his apple. What should you do?

**If extra carbs are not given, Logan's blood glucose could drop low. Since 14 grams of carbs from the apple were not eaten, replace with a food or drink with a similar amount of carbs.**

**4 ounces juice (½ cup) = 15 grams of carbs**



# Carb Counting at Snack and Mealtime

- Be sure to consider all items at a snack or meal.
- Even small amounts of carbs can add up to make a difference to the total carb count.
- Less obvious items:
  - Ketchup, dressing, sauces
  - Breading on meat, fish, or cheese
  - Vegetables