Diabetes at Camp: Carbohydrate Counting and Insulin Dosing

Module 7 of 12

Special thanks to the team below and everyone who contributed to this work.

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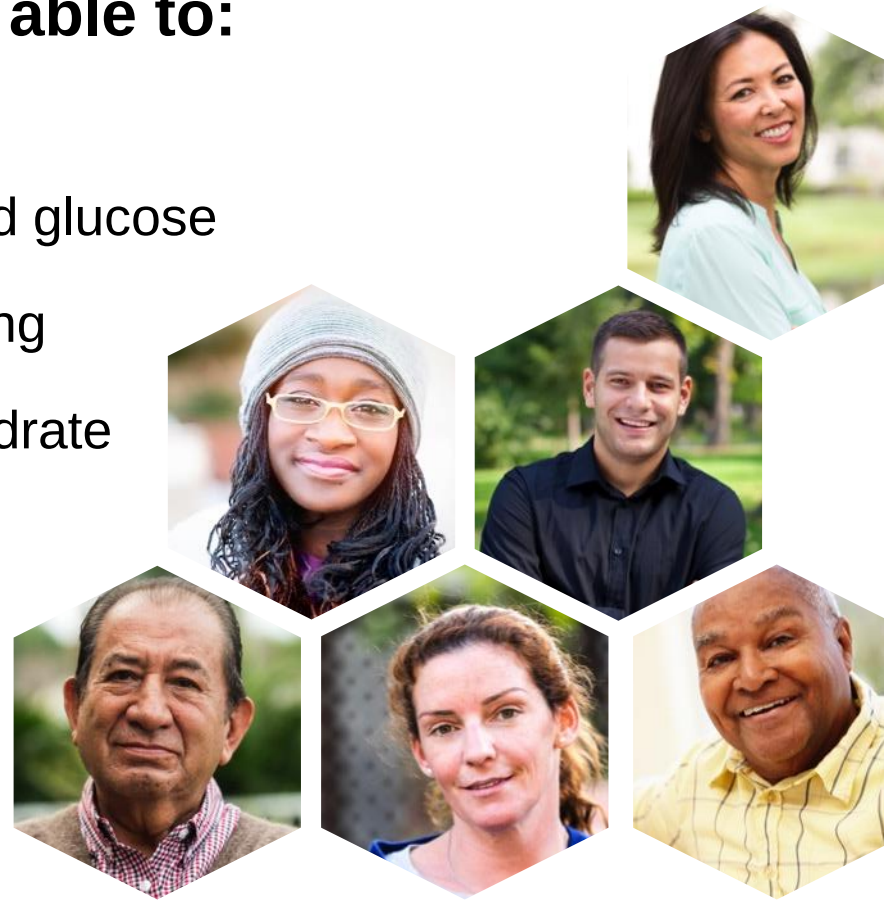
Objectives

At the end of this module, the participant will be able to:

- Identify types of food that have carbohydrate
- Describe the basics of how carbohydrate intake affects blood glucose
- Understand the importance of accurate carbohydrate counting
- Be familiar with common tools used to estimate the carbohydrate content of foods without a Nutrition Facts label



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So what are carbohydrates anyway?

Most foods contain some amount of carbohydrate - with the highest concentration from: breads and starchy vegetables, milk and yogurt, fruit, and sweets

Most everyone abbreviates grams of carbohydrates to **CHO** or **carbs**

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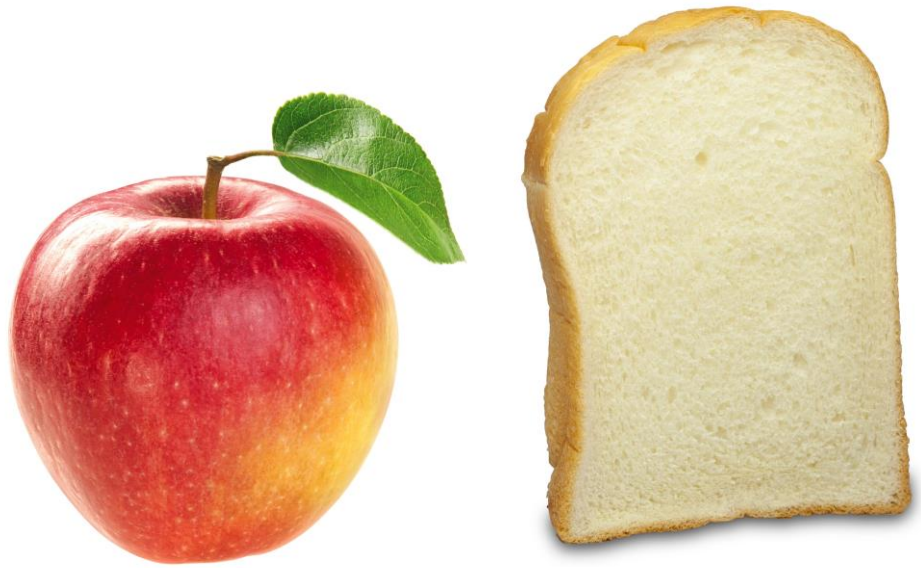
How do we count carbohydrates in food?

- Carbohydrates can be quantified in grams
- Here are some examples of what 15 grams of carbohydrate might look like:
  - 1 medium apple
  - 8 ounces of milk
  - 1 standard slice of bread
  - ½ cup of potatoes
  - ½ cup juice



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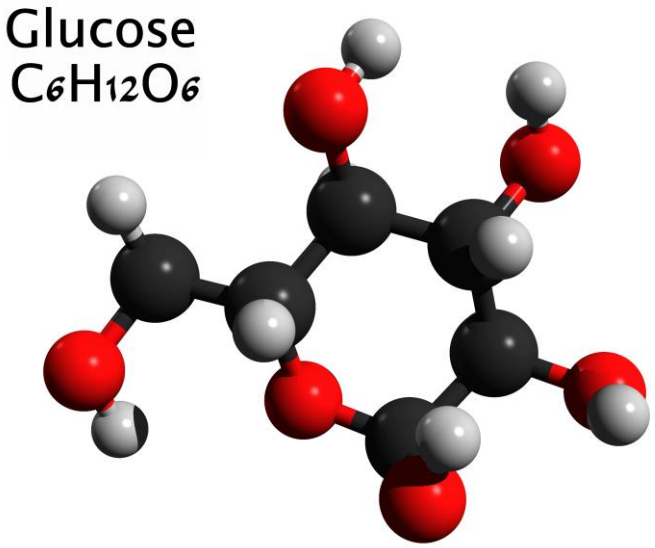
All carbs, except most fiber, end up as glucose in the blood stream



Glucose enters your blood in two ways:

1. Most of the glucose in our blood comes from the food we eat - specifically the foods that contain carbohydrate

2. Our body stores about 2-3 days worth of glucose to be released if we need it; but also releases glucose for other reasons, such as when we're stressed or sick

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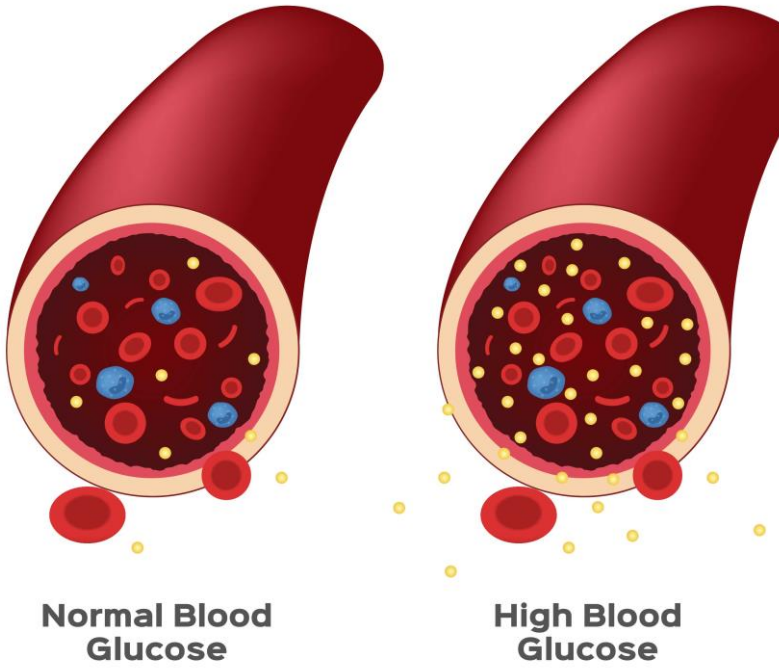
So What?

- If you **DO NOT HAVE** diabetes, your body breaks down the food you eat into glucose and sends it into the blood. Insulin then helps move the glucose from the blood into your cells. When glucose enters your cells, it is either used as fuel for energy right away or stored for later
- If you **DO HAVE** type 1 diabetes, your body does not make insulin to help process the excess glucose so blood glucose rises
- When blood glucose rises too high, it can lead to problems both in the short term and the long term
- This doesn't mean don't eat carbs, but it does mean when eating carbs, taking insulin will need to be considered



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Counting Carbohydrates

- Most children with diabetes learn how to estimate how much insulin they need to cover the carbohydrates they have eaten – it's thinking like a pancreas.
- This is called an insulin to carbohydrate ratio – how many grams of carbohydrate are covered with 1 unit of insulin?

Example:

- 1 unit per 15 grams of CARB
- 1 medium sized apple = 15 grams of CARB

So the child would be given 1 unit of insulin if he ate an apple

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Every Child is Different

- Carb ratios are different for each person and depend on a lot of factors
- Each body is just different in how much (if any) insulin they produce and how food impacts their blood glucose

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How do we help kids at camp?

We assist with carb counting in the following ways:

- Looking nutrition information for foods being served up online
- Having a printed carb counting guide available
- Providing measuring cups and serving spoons with the portions written on them
- Weighing foods on a smart scale

And then make the information available

- Posted in the dining hall or outside the dinning hall entrance
- By the food on the tables

Here is an example of a typical camp dinner with the serving size and carbs listed

Dinner Menu	Amount	Carbs
Macaroni and cheese	1 cup	30 grams
Green salad with dressing	1 cup	Trace
Blueberries	1/2 cup	10 grams
Oatmeal raisin cookie	1 large (size of adult palm)	30 grams

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Calculating the dose of insulin for a meal

- In the previous slide, the total carbs for the meal was 70 grams
- If the child's insulin to carb ratio is **1:5**, the child would take **14 units** of insulin to cover the food in the meal

70/5 = 14 units

- If the child's blood glucose is above target before the meal, the nurse would also add the correction dose

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How do we help kids at camp? (cont.)

- Some camps have a camp dietitian that has already counted the carbs for each meal and snack
- Provide the menu before the meal and share it with the campers, so they can decide how many carbohydrates they plan to have before the meal
- Once you sit down to the meal - make sure if they have taken their insulin, they match the insulin to the amount of carbs they actually eat!

Food	Amount	Carbs
Egg	1	0 grams
Toast	1 slice	12 grams
Milk	8 oz carton	11 grams
Applesauce	½ cup	15 grams

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Here are some helpful resources

- CalorieKing. App ★★★★★
- Fooducate. iPhone rating: ★★★★★
- Glooko. iPhone rating: ★★★☆☆
- Health2Sync. iPhone rating: ★★★★★
- Glucosio. Android rating: ★★★★☆
- MyNetDiary Calorie Counter. iPhone rating: ★★★★★
- Diabetes Tracker by MyNetDiary. iPhone rating: ★★★★★
- mySugr: Diabetes Tracker Log. iPhone rating: ★★★★★
- BG Monitor. Android rating: ★★★★★

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Encourage campers to keep learning through interactive ways at camp!

- Use food models or pictures of foods to show serving sizes
- Have campers guess the carb counts of real food
- Have campers make a balanced meal and count the carbs of their meal
    - *They can estimate their insulin doses for the meal they created*
- Add an activity by having food models around camp that they have to find and make a well balanced meal out of
- Play educational games to reinforce what campers have learned about carb counting, insulin dosing and exercise adjustments

Note: Age appropriate considerations should be made

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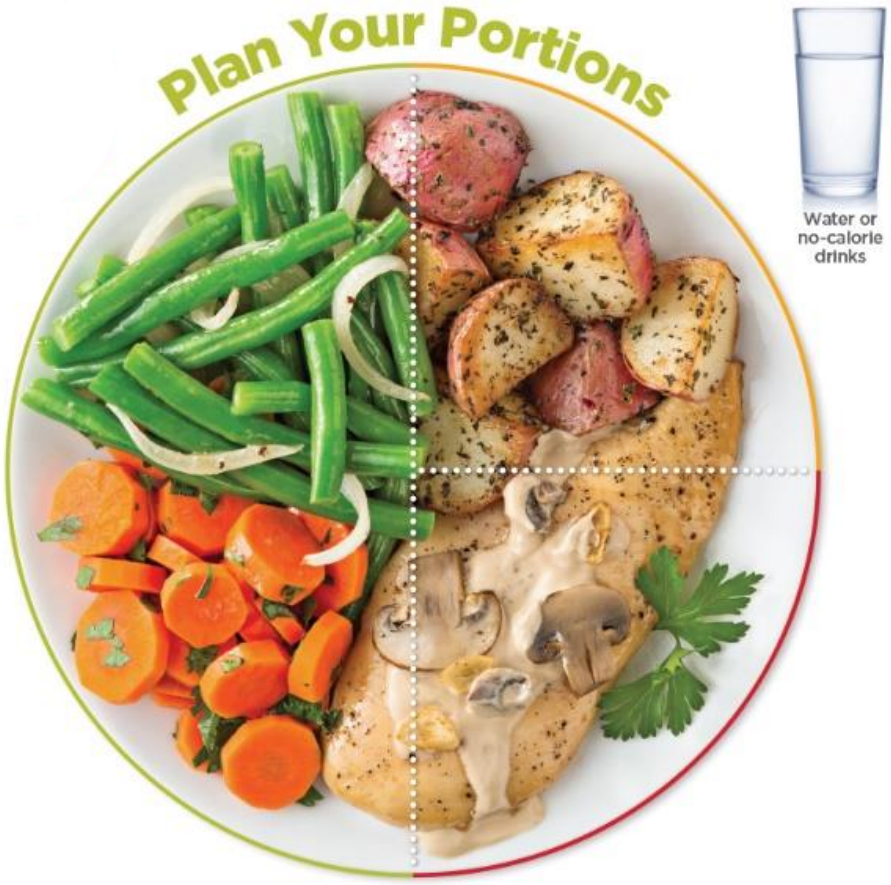
Summary

- Fruit, starchy vegetables, grains, milk and yogurt, sweets and sugar-sweetened drinks all contain carbohydrate
- All foods can impact blood glucose, but foods that contain carbohydrate have the largest impact
- Carbohydrate counting is one method to estimate how much insulin we will need for a meal
- Having a dietitian available to assist with carbohydrate counting at camp is ideal, but there are resources to help you learn these skills too!



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Assessment

1. Carbohydrate counting is a way to:

A. Determine the amount of insulin needed for a meal

B. Decide how much a child should eat

C. Restrict the amount of carbohydrates consumed

D. Determine the glycemic index of foods

2. Charlie reviewed the menu and decided to have 3 waffles with sugar free syrup and ½ cup of blueberries with 4 slices of bacon. Based on the nutrition information below how many grams of carbs is he going to eat?

A. 25 grams

B. 45 grams

C. 50 grams

D. 55 grams

Food item	Portion	CHO (grams)
Waffle	1	15
Sugar Free Syrup	1 Tbsp	0
Blueberries	1/2 cup	10
Bacon	2 slices	0

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Assessment

3. Julie is having cereal with milk, and a ½ a cup of orange juice. Her insulin to carb ratio is 1:15. Based on the menu on this slide how much insulin should she take to cover her meal?

A. 3 units
B. 4 units
C. 8 units
D. 10 units

Food item	Portion	CHO (grams)
Dry Cereal Crispies	1 cup	22
Small Orange	Small orange	11
Orange Juice	1 cup	30
Milk	1 cup	12

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