

Making Sense of Macronutrients: Part One - Carbohydrates

Kristin Cuculovski, MS, RDN, CSO, LD/N
Oncology Nutrition Coordinator



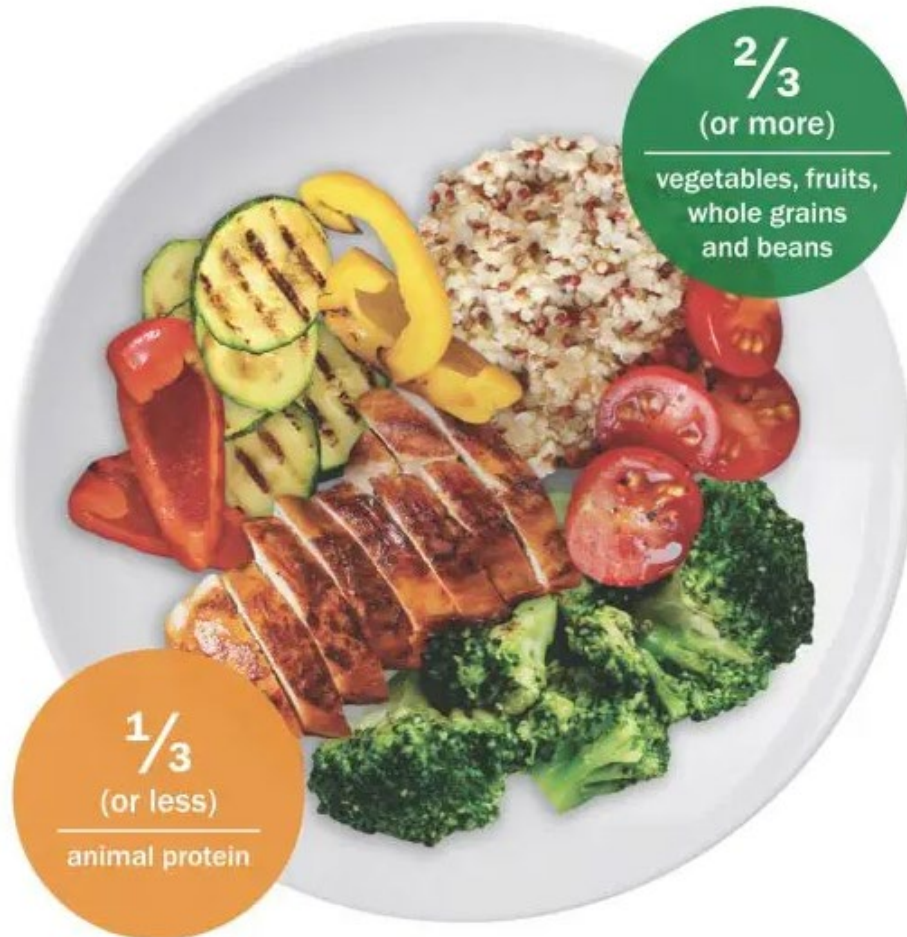
Macronutrients

- **Macronutrients** = nutritive components of food that the body needs for energy and to maintain the body's structure and systems
- Carbohydrates, fat and protein are all called macronutrients
- No healthy diet should **exclude** or **seriously restrict** any macronutrient



The New American Plate - AICR

The New American Plate



- Focus on foods rich in fiber, vitamins, and phytonutrients to protect against cancer.
- Modest 3-ounce serving of meat (fish, poultry, or red meat)
- Variety of foods
- Two kinds of vegetables
- Healthy serving of a tasty whole grain

The Plate Method

- Simple tool to make meal planning easier!
- Helps balance your nutrients
- Divide your plate into sections
 - $\frac{1}{2}$ non-starchy vegetables
 - $\frac{1}{4}$ lean protein
 - $\frac{1}{4}$ grains & starches



$\frac{1}{2}$ Non-Starchy Vegetables + $\frac{1}{4}$ Grains & Starches + $\frac{1}{4}$ Lean Protein
= 1 Great Plate

Carbohydrates (aka Carbs)

- Primary energy source – your body turns carbs into glucose (blood sugar) to give you energy to function
- Three types of carbohydrates:
 - Fiber
 - Starches
 - Sugars
- On the Nutrition Facts Food Label “Total Carbohydrates” includes a combination of all three types

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Carbohydrate Containing Foods

Fiber

- Beans
- Legumes
- Fruits
- Nuts/Seeds
- Whole Grains
- Vegetables

Starch

- Beans
- Legumes
- Fruits
- Whole Grains
- Vegetables

Sugar

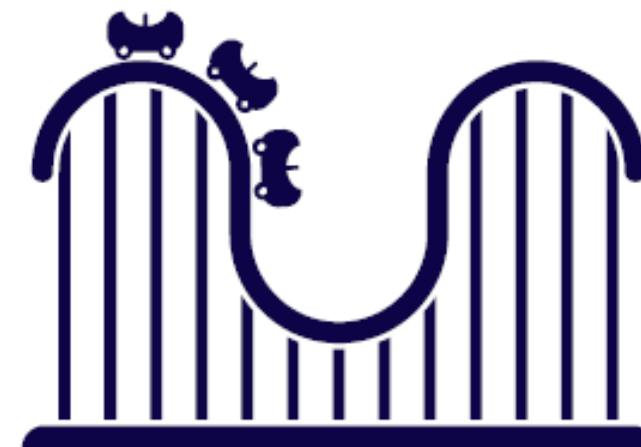
- Naturally occurring in milk and fresh fruits
- Added sugars – sweets, canned fruit, juice, soda, candy bars, ice cream, etc.

Processing/Digesting

- When you eat carbohydrates your digestive system breaks down the food into glucose or blood sugar
- Your bloodstream absorbs the glucose and your cells use it as energy to fuel your body
- The amount and types of carbs you eat affects your blood sugar
- Consuming a lot of carbs can raise your blood sugar levels and not consuming enough can cause low blood sugar

BALANCED BLOOD SUGAR

What Blood Sugar Should NOT Look Like



What Blood Sugar Should Look Like



Blood Sugar & Insulin

- When your blood sugar is elevated your body produces insulin
- Insulin is a hormone made by your pancreas – jobs include:
 - Helps sugar enter into a cell to be used as energy
 - Takes extra sugar to your liver to be stored for later (fat cells)
- Storing excess sugar as fat leads to overweight and obesity which increases risk of cancer, diabetes, and heart disease

BALANCED BLOOD SUGAR

What Blood Sugar Should NOT Look Like



What Blood Sugar Should Look Like



Simple vs. Complex Carbohydrates

Simple carbs are digested quickly and more likely to cause a spike in your blood sugar

- Can increase your weight and risk for diabetes, heart disease and high cholesterol



Complex carbs are less likely to cause a spike in your blood sugar due to the time it takes to digest

- They also contain vitamins, minerals, and fiber that your body needs



Complex Carbs: Fiber & Starches

Fiber

- Dietary fiber is found mainly in fruits, vegetables, whole grains and legumes
- Benefits of Fiber:
 - Normalizes bowel movements
 - Helps maintain bowel health
 - Lowers cholesterol levels
 - Helps control blood sugar levels
 - Aids in achieving a healthy weight
- Fiber Recommendations
 - Male = 30-38 gm/day
 - Female = 21-25 gm/day



Types of Fiber – Soluble Fiber

Soluble Fiber:

- Dissolves in water to form a gel-like material
- Can help **lower** blood cholesterol & glucose levels
- Found in:
 - Oats
 - Peas
 - Beans
 - Apples
 - Citrus Fruits
 - Carrots
 - Barley
 - Psyllium
 - Chia Seeds



Types of Fiber – Insoluble Fiber

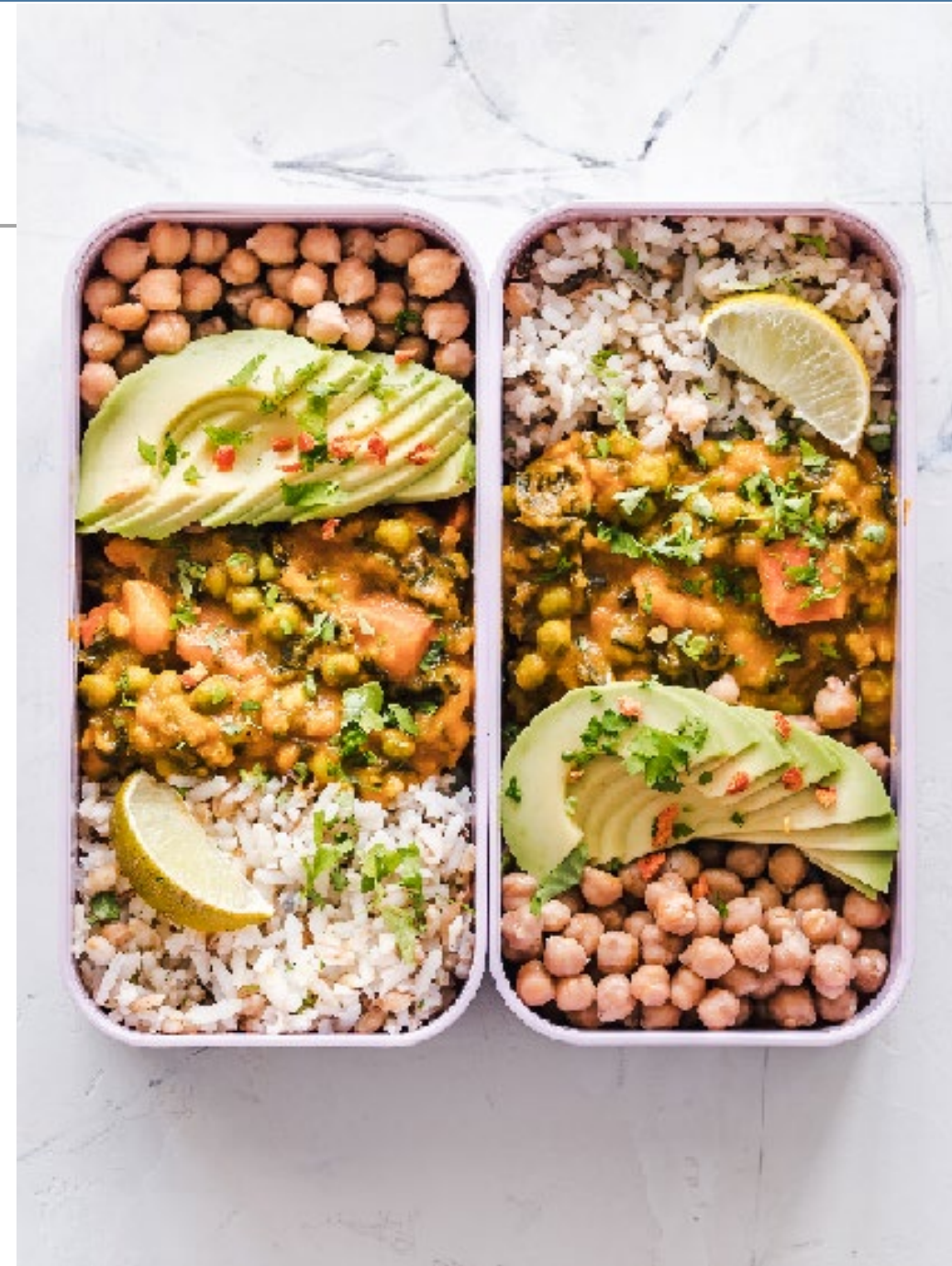
Insoluble Fiber:

- Promotes the movement of material through your digestive system & increases stool bulk
- Those who struggle with constipation or irregular stools can benefit from this type of fiber
- Found in:
 - Whole-wheat flour
 - Wheat Bran
 - Nuts
 - Beans
 - Vegetables



Starches

- Starches are complex carbohydrates
- They also provide vitamins and minerals
- Found in:
 - Beans and Legumes (black beans, lentils, chick peas)
 - Fruits (berries, apples, melons)
 - Whole Grain Products (brown rice, oatmeal)
 - Vegetables (corn, lima beans, peas, potatoes)
- Benefits of starches:
 - Helps control blood sugar levels (complex carb)
 - Aids in achieving a healthy weight – fullness lasts longer between meals



Simple Carbs: Sugar

Sugars

- Sugars are a simple carbohydrate
- Our body breaks down simple carbs quickly and causes blood sugars to rise and then drop quickly
- You may feel a burst of energy – followed by feeling tired/sluggish
- Two types of sugars:
 - Naturally occurring sugars – found in milk and fresh fruits
 - Added sugars – found in sweets, canned fruit, juice, sodas, etc.
- All sugars are processed the same – the body cannot tell the difference between natural or added sugars
- However – foods with natural sugars also provide vitamins, minerals and some fiber

Added Sugar

- Sugar goes by many names – check the food label ingredients:
 - Agave nectar
 - Cane syrup or corn syrup
 - Dextrose, fructose or sucrose
 - Honey
 - Molasses
 - Sugar
- Limiting “added sugar” is essential to keep blood sugar levels in the healthy range
- The American Heart Association recommends:
 - No more than 25gm per day of added sugar for women
 - No more than 36gm per day of added sugar for men

Added Sugar

- Be cautious with added sugars – they are simple sugars that we add to our foods
 - Adding sugar to your coffee or tea
 - Added by food manufacturers to processed and prepared foods
- 75% of packaged foods have added sugars
- The average American eats 22 teaspoons (88gm) per day of added sugars which adds up to 130 pounds of added sugar per year!

NEW LABEL / WHAT'S DIFFERENT

Servings: larger, bolder type		Nutrition Facts		Serving sizes updated	
		8 servings per container Serving size 2/3 cup (55g)		Calories: larger type	
		Amount per serving Calories 230			
		% Daily Value*		Updated daily values	
		Total Fat 8g 10%			
		Saturated Fat 1g 5%			
		Trans Fat 0g			
		Cholesterol 0mg 0%			
		Sodium 160mg 7%			
		Total Carbohydrate 37g 13%			
		Dietary Fiber 4g 14%			
		Total Sugars 12g			
		Includes 10g Added Sugars 20%			
		Protein 3g			
		Vitamin D 2mcg 10%			
		Calcium 260mg 20%			
		Iron 8mg 45%			
		Potassium 235mg 6%			
		* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.			

new:
added sugars

Change
in nutrients
required

Actual
amounts
declared

New
footnote

What to do?

- Focus on healthy, complex carbohydrates that are in fruits, vegetables, whole grains, and legumes (beans) which are foods that appear to fight cancer best
- Avoid “naked carbohydrates” or only eating carbohydrates by themselves
- When eating carbohydrate foods always pair them with a source of protein and/or fat for a balanced meal = more balanced blood sugars
- Example: instead of having 2 pieces of fruit for a snack, have 1 piece of fruit and a small handful of nuts (healthy fat, protein, and fiber).
- Join us next month for part two of this series on protein and fat



8 OZ. LOW
CALORIE
DRINK



1/2 CUP
FRUIT



1/2 Non-Starchy Vegetables + 1/4 Grains & Starches + 1/4 Lean Protein
= 1 Great Plate



Building Your Meal

- Fiber = 5-15 grams/meal
- Protein = 20-30 grams/meal
- Fat = 10-20 grams/meal

Grains & Starchy Vegetables	Fruit	Dairy	Non-Starchy Vegetables	Protein	Healthy Fats	Snacks
<p>One serving is 1/4 to 1 cup:</p> <p>Grains</p> <ul style="list-style-type: none"> Whole wheat flour Whole oats/oatmeal Popcorn Brown rice Whole rye Whole grain barley Whole farro Wild rice Buckwheat Millet Quinoa Sorghum <p>Starchy Vegetables</p> <ul style="list-style-type: none"> Parsnip Plantain Potato Pumpkin Acorn squash Butternut squash Green peas Corn <p>Legumes/Beans</p> <ul style="list-style-type: none"> Lentils Black beans Pinto beans 	<p>One serving is 1 small piece of whole fruit or 1/2 cup:</p> <ul style="list-style-type: none"> Apple Apricots Banana Blackberries Blueberries Cherries Fruit cocktail Grapefruit Grapes Kiwi Mango Melon Nectarine Orange Peaches Pears Pineapple Raspberries Plums Strawberries Watermelon 	<p>One serving is 1 cup:</p> <p>Milk/Yogurt</p> <ul style="list-style-type: none"> Fat-free milk Low-fat milk Plain non-fat yogurt Non-fat light yogurt Soy milk Rice milk Almond milk <p>Cheeses</p> <ul style="list-style-type: none"> Hard cheese (1 1/2 oz.) Shredded cheese (1/3 cup) Ricotta cheese (1/2 cup) Processed cheese (2 oz.) Cottage cheese (2 cups) 	<p>One serving is 1/2 cup cooked or 1 cup raw:</p> <ul style="list-style-type: none"> Asparagus Artichoke Beans (green/wax) Brussel sprouts Beets Broccoli Cabbage Carrots Cauliflower Celery Cucumber Eggplant Greens (collard, kale, mustard, spinach) Mushrooms Onions Pea pods Peppers Salad greens (romaine, arugula) Tomatoes Turnips Zucchini 	<p>One serving is 3-4 oz. of meat or seafood:</p> <ul style="list-style-type: none"> Beef Chicken Fish Ham Lamb Pork Seafood Veal <p>Meat Substitutes (check label for serving size)</p> <ul style="list-style-type: none"> Almond butter Cottage cheese Cheese Edamame Egg Egg substitute Egg whites Hummus Peanut butter Tempeh Tofu Albacore tuna Lentils Black beans Pinto beans 	<p>Check label for serving size</p> <p>Monounsaturated Fats</p> <ul style="list-style-type: none"> Avocado Canola oil Nuts (almonds, cashews) Olives Olive oil Peanut butter Peanut oil Sesame seeds <p>Polyunsaturated Fats</p> <ul style="list-style-type: none"> Corn oil Sunflower oil Walnuts Pumpkin seeds Sunflower seeds Mayonnalse Soft margarine Salad dressing <p>Omega-3 Fatty Acids</p> <ul style="list-style-type: none"> Soybean products Flaxseed oil Flaxseed Canola oil Salmon Albacore tuna Sardines 	<p>Less than 5 grams of carbs:</p> <ul style="list-style-type: none"> 15 almonds 3 celery sticks & 1 tbsp. of peanut butter 5 baby carrots 5 cherry tomatoes & 1 tbsp. of ranch dressing 1 hard-boiled egg 1/4 cup of fresh blueberries 1 cup light popcorn 2 saltine crackers 1/2 cup suga-free Jello <p>About 10-20 grams of carbs:</p> <ul style="list-style-type: none"> 1/4 cup of dried fruit & nut mix 1 cup chicken noodle soup 1 small apple or orange 3 cups light popcorn 1/3 cup hummus & 1 cup raw, fresh-cut veggies 2 rice cakes & 1 tbsp. of peanut butter <p>About 30 grams of carbs:</p> <ul style="list-style-type: none"> 6 oz. light yogurt & 3/4 cup of berries 1 English muffin & 1 tsp. low-fat margarine 3/4 cup whole grain cereal & 1/2 cup of fat free milk 1 medium banana & 1 tbsp. peanut butter

Through better meal planning, you can start living a healthier lifestyle. Above is a food list to help guide you at each meal. It is important to plan your choices and use the Plate Method to create healthy and well balanced meals. Don't forget to think about portion sizes, too. Sometimes the portion you're planning to eat may not be the same as the recommended serving size. Serving sizes are not exact and do not indicate the carb counts.

Carbohydrate Summary

- Carbohydrates are the primary energy source for your body to function
- AICR's current recommendations include 2/3 of your plate be from complex carbohydrates
- Choose foods that contain fiber and starch
- Limit added sugars
- Strive for balanced meals that include carbohydrates, protein, and fats at each meal to balance your blood sugar!

BALANCED BLOOD SUGAR

What Blood Sugar Should NOT Look Like



What Blood Sugar Should Look Like



Questions?

Resources

- <https://www.aicr.org/news/creating-plant-based-meals-with-aicrs-new-american-plate/>
- <https://my.clevelandclinic.org/health/articles/15416-carbohydrates>
- <https://www.mdanderson.org/publications/focused-on-health/FOH-cancer-love-sugar.h14-1589835.html>