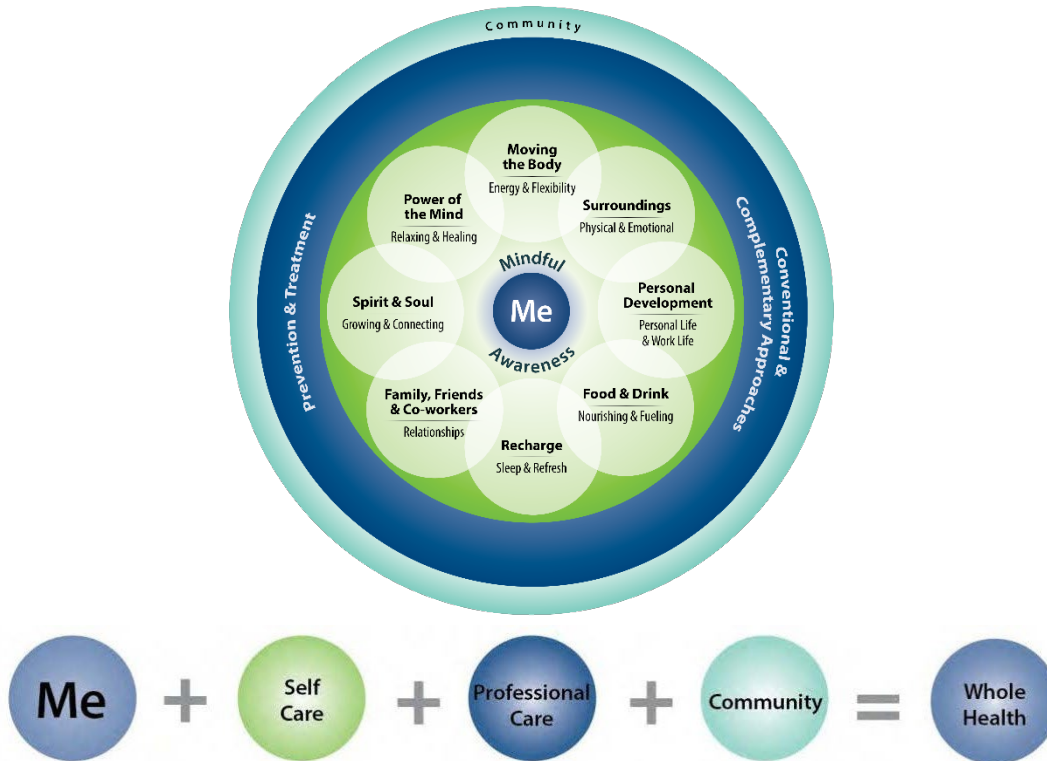


WHOLE HEALTH: INFORMATION FOR VETERANS

Carbohydrates and Your Health: Glycemic Index, Glycemic Load, and Blood Sugars



Whole Health is an approach to health care that empowers and enables YOU to take charge of your health and well-being and live your life to the fullest. It starts with YOU. It is fueled by the power of knowing yourself and what will really work for you in your life. Once you have some ideas about this, your team can help you with the skills, support, and follow up you need to reach your goals.

All resources provided in these handouts are reviewed by VHA clinicians and Veterans. No endorsement of any specific products is intended. Best wishes!

<https://www.va.gov/wholehealth/>

Carbohydrates and Your Health: Glycemic Index, Glycemic Load, and Blood Sugars

What do I need to know about carbohydrates?

There are 3 basic building blocks that make up the foods we eat: carbohydrates, fats, and proteins. Most foods are made from a combination of each of these building blocks. All 3 are needed to help you feel well, be healthy, and stay active throughout the day.

Carbohydrates include sugars, starches, and fiber. Many modern diets focus on cutting out most carbohydrates, but we know that low-carb diets are not helpful for the following reasons:

- There are both healthy and unhealthy carbohydrates. Fruits, vegetables, beans, and whole grains like oats, barley, and rye are some of the healthiest foods you can eat. In fact, studies show that you should aim for 7 to 9 servings of whole fruits and vegetables every day to reduce heart disease, diabetes, stroke, and other chronic diseases throughout your lifetime.¹
- Research shows that it is very difficult to cut out all carbohydrates from your diet. Most carbohydrate-free diets don't last long before people gain back the weight they lost at the beginning of the diet. Studies have shown that diets that restrict a lot of foods do not help for long. People on these sorts of diets—low-carb or low-fat—gained back much of the weight they lost after 2 years.²
- Carbohydrates give you energy that can be used right away. Cutting them out entirely means you will have no quick energy stores to help you move, think, and interact with others.

Think of carbohydrate-containing foods as falling along a spectrum. The least healthy include those made with sugar and refined flours. The healthiest are whole, plant-based foods in their natural state like fresh vegetables and fruits. Try to get most of your carbohydrates from the healthier end of the spectrum and limit your intake of those made with sugar and refined flours, such as:

- Most pastas, breads, bagels, cereals, tortillas, and pizza crust
- Snack foods like corn chips, pretzels, and crackers
- Waffles, pancakes, granola bars, and muffins
- Most desserts, including ice cream, cookies, cakes, pies, doughnuts, and candy
- Sweetened beverages including sodas, sports and energy drinks, fruit drinks, juices, and some flavored waters
- Jellies, jams, syrup, honey, agave, ketchup, honey mustard, and barbecue sauces
- Foods made with sugar, corn syrup, high-fructose corn syrup, dextrose, sucrose, cane juice, barley, malt, etc.

These common foods are more likely to increase your blood sugar than others with different carbohydrate content. As a result, you may gain weight and store energy as belly fat. Eating too much of these may increase your chances of getting diabetes, heart disease, stroke, and many other chronic diseases.³⁻⁶

What should I know about simple and complex carbohydrates?

Experts used to say that the goal was to eat more complex carbohydrates and fewer simple ones, but it depends on which food they are coming from. The point is, don't judge a carbohydrate based on whether or not it is simple or complex. There are other ways to figure out if a carbohydrate is healthy. We will discuss them below.

How do carbohydrates affect my blood sugar levels? Why is this important?

After you eat food, your blood sugar rises. The rise in blood sugar gives your body energy. But it can also be harmful in certain situations. When your blood sugar rises too fast, it also tends to drop quickly. These highs and lows cause your body to react by releasing hormones like adrenaline, insulin, and cortisol (the stress hormone). The combined effect of these hormones makes your mind feel tired and more stressed while your body converts more energy to fat, feels hungrier, and increases inflammation.⁷ Increased inflammation, in turn, increases pain and the risk of chronic diseases such as heart disease.

When you eat proteins and fats, your blood sugar rises slowly over 6 to 8 hours. In this case, your body doesn't react in a negative way. When you eat fruits, vegetables, beans, and whole grains, your blood sugar also rises steadily (over 3 to 4 hours). Your body can handle that. However, when you eat added sugars and refined carbohydrates (see above for examples), your blood sugar goes up and down in just 1 to 2 hours. Also, because of this blood sugar rollercoaster, you end up craving more carbohydrates. This becomes a vicious cycle of eating unhealthy foods and still feeling hungry enough to eat more unhealthy foods.⁸

What do glycemic index and glycemic load mean?

Glycemic index is the measure of how much a carbohydrate increases blood sugar 2 hours after it is eaten. Foods that cause a higher rise in blood sugar have a higher glycemic index. These are the foods to limit.

The problem with using glycemic index to help decide which foods with carbohydrates to eat is that it doesn't account for serving size. That is why we also measure glycemic load. Glycemic load adjusts for how many grams of carbohydrates are in each serving. To understand this better, you may want to look at a chart listing the glycemic index and load of different foods. You can see one in a Harvard Health Publication at the following link: <https://www.health.harvard.edu/diseases-and-conditions/glycemic-index-and-glycemic-load-for-100-foods>.

Try to avoid foods with a high glycemic load (20 or more). Cut down on foods with a moderate glycemic load (10 or more). Replace these foods with carbohydrates with a low glycemic load (less than 10).⁹ You can think of it like a stoplight. You have a green light to eat low glycemic load foods. Be careful about eating moderate glycemic load foods (yellow light). Stop before eating too many high glycemic load foods (red light).

There are many online tools and apps available to help you see which foods have low or high glycemic loads. But looking up these numbers can become very tiresome, so if you feel this is not practical, then just try to remember that foods made with added sugars and

refined flours generally have higher glycemic loads. Fruits, vegetables, beans, and whole grains tend to have low to moderate glycemic loads.

How does fiber affect my blood sugar level?

To better understand why certain carbohydrates have higher or lower glycemic loads/indexes, it is helpful to understand the role of fiber. Fiber is a carbohydrate that the body cannot digest. There are 2 types of fiber: soluble and insoluble. Insoluble fiber bulks up your stool and helps you to have more regular bowel movements.¹⁰ It is found in vegetables and most whole grains, like wheat. Soluble fiber—found in fruit, oats, barley, and beans—mixes with water in your stomach and intestines to form a gel. It slows down how quickly food moves through your body.¹¹ By doing this, soluble fiber prevents your blood sugar from rising sharply. Low glycemic foods tend to be high in soluble fiber, which makes them healthier for you. Higher glycemic foods are typically low in fiber, which makes them less healthy for you. Fruits are a great example of this. A whole orange has a low glycemic load because it is a good balance of sugar (fructose) and fiber. On the other hand, orange juice is sugar without the fiber. As a result, it has a moderate glycemic load.

Aim to eat at least 30-36 grams of fiber per day. This will help you keep better control of your blood sugar levels.

How can I simplify this process and apply it to my daily eating habits?

We covered a lot of material in this handout. It can become confusing to apply all of these lessons to every meal we eat. To simplify this process, consider the following recommendations:

- Eat as many servings of fruits, vegetables, beans, and whole grains as you can. Try to make these half of your plate during a meal.
- Cut down on refined carbohydrates and sugars. Keep in mind that the average American eats at least 17 teaspoons of added sugar per day (or 270 calories).¹² This accounts for more than 13 percent of the total daily calories. Most of this sugar is “hidden” in the foods we eat regularly. Almost half (47%) of all added sugars consumed by the U.S. population is from beverages (soft drinks, fruit drinks, sweetened coffee and tea, energy drinks and alcoholic beverages).¹² The other major source of added sugars (31%) is from snacks and sweets. Take a look at this list of foods with refined sugars so you know where the sugar in your diet comes from: <http://www.diagnosisdiet.com/refined-carbohydrate-list/>.
- Eat foods high in fiber. Aim for 30-36 grams of fiber daily.

For you to consider:

- Think about what you usually eat. Do you eat a lot of carbohydrates? Do these fall along the healthy or unhealthy end of the spectrum?
- Consider keeping track of the fiber you eat. How many grams of fiber do you usually eat each day?
- Based on the information in this handout, what one or two things will you do first to improve your blood sugars, which may improve your health?

The information in this handout is general. **Please work with your health care team to use the information in the best way possible to promote your health and happiness.**

For more information:

ORGANIZATION	RESOURCES	WEBSITE
Veterans Health Administration	A variety of Whole Health handouts on healthy eating	https://www.va.gov/WHOLEHEALTH/veteran-handouts/index.asp?topic=FoodDrink

This handout was written by Sagar Shah MD, Academic Integrative Health Fellow, Integrative Health Program, University of Wisconsin Department of Family Medicine and Community Health. It is based in part on an overview for clinicians, "Food and Drink" written by Samantha Sharp MD and a UW Integrative Health handout for patients, "Glycemic Index & Glycemic Load," written by David Rakel MD. The handout was reviewed and edited by Veterans and VHA subject matter experts.

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