

BLOOD SUGAR: WAYS TO REDUCE IT

And Become More “Insulin Sensitive”

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Scan through this list to see if there are things you could be doing to lower your blood sugar. Avoiding blood sugar spikes is a goal for everyone, not just those with a diabetes diagnosis. Reduced blood sugar helps reduce insulin - and this is associated with health and longevity.

Use fasting/intermittent fasting/meal spacing and timing strategies.

Simply not eating for a period of time will help reduce blood sugar. Fasting overnight for 12 hours (for example, don't eat between 7 pm and 7 am) and not eating in between meals (snacking/grazing) are great strategies to use daily. It's best to not eat within 2-3 hours of bedtime (it interferes with your sleep cycle); and you can delay breakfast (until you are actually hungry and ready to eat!) to extend your fasting time. Then, teach yourself to eat satisfying meals, and avoid grazing in between them.

Reduce carbs in your diet.

Carbohydrate foods (see handout “**Fuel Sources**” for a visual of these foods or click on [this Healthline article](#)) contain the most sugar - so they will increase your blood sugar far more than protein or fats. Following a plan that reduces total carbohydrate intake is a great way to reduce blood sugar. Eating less than 100 grams of carbs/day is a good long-term goal. Eating far less than that (20-30 grams/day) is often a good way to get started and can even be a good long-term plan for some.

Reduce use of ultra-processed foods and easy-to-digest carbs.

Ultra processed foods are everywhere! We eat them without even thinking about it. Snack foods like you might find at a gas station; anything that is flaked, puffed, or popped (including cereals); treats like candy, cake, pie, cookies; sweetened drinks like sodas, milkshakes and many coffee concoctions; and many fast food options - these all raise blood sugar quickly. Avoid them for more steady energy and a more stable blood sugar.

Choose carbs with a lower glycemic index (will usually have some/more fiber).

Glycemic index (GI) refers to how quickly a carbohydrate-containing food will raise blood sugar. Berries are a fruit option with a lower glycemic index; non-starchy veggies are also a good choice. Beans/legumes are a good fiber source with a moderate GI, but they also contain lots of carbs. Although some resources will encourage a daily fiber goal (like 25 grams/day), this is unnecessary. Most fiber-containing foods also contain some carbs, so “encouraging a fiber goal” is simultaneously encouraging you to eat more carbs. Instead, just understand that the fiber naturally present in some foods will help reduce the total spike in blood sugar - so the best carb sources will also -naturally- contain some fiber.

Save carbs for one meal per day.

Try following a very low carb diet during the day, and then allowing more carbs at the dinner meal. This will keep blood sugar and insulin low(er) all day, only substantially increasing it once/day. An example of this strategy is to have coffee in the morning (fat can be included in the coffee, but not sugar); optional light breakfast of boiled eggs; grilled chicken salad for lunch; and then dinner that may include a small amount of rice, potato or other starchy food along with the protein, healthy fats and non-starchy veggies.

Be selective about sugar substitutes.

Artificial sweeteners like sucralose, aspartame and saccharin have the potential to raise blood sugar (and insulin) even though these items don't contain calories. [Sugar alcohols](#) are another category of sweetener; some are ok to use and others aren't as good. Natural sweeteners from plants are a third option (stevia leaf is an example). **Best choices** (these are the least processed and don't seem to increase blood sugar and/or insulin) include **stevia, monk fruit, xylitol and allulose**. Use in moderation and according to your personal tolerance. See handout "[Sugar and Sugar Substitutes](#)" for more information.

Eat your protein and fat first, before the carbs/sugars.

This strategy can work with a meal like a "meat and 3" where the protein is not mixed into the meal as it is in a soup, casserole, etc. If you are having steak or chicken, for example, eat those items (and your non-starchy veggies) first; save the starchy item for last (treat it like it is dessert!). This will slow the absorption of the starch and result in less of a blood sugar spike.

Include some healthy fats at the meal.

Fat can help slow down digestion and absorption of sugars in the meal, which will result in less of a spike in blood sugar. Healthy fats include avocado, olives, coconut and the oils made from these; MCT oil; butter (grass fed preferred); and the fats that are naturally part of food (as in eggs, cheese, and other animal products). Choose the highest quality animal products you can afford since animals store toxins in their fat. Look for wild caught fish and animals that have eaten a species appropriate diet, as well as ones that have not been given growth hormones and antibiotics. A dash of pumpkin seeds or other nuts can also provide flavor and texture to the meal.

Stay hydrated.

Drink plenty of water and/or water alternatives (see "[Best Choices in Beverages](#)" handout for options) throughout the day. Many times we eat food (which will raise blood sugar) when we are really just thirsty. Staying hydrated can prevent unnecessary hunger and snacking. Also, becoming dehydrated *sends an alarm signal* to your body; when this happens, your body will take measures to become "insulin resistant" to help you conserve water. This is the opposite of what we want!!! Stay hydrated to prevent this from happening. Dr. Permuter discusses this in his book "Drop Acid", and also in [this YouTube video](#). Other facts about water and staying hydrated can be found here: [Water and Diabetes: Are You Drinking Enough Water?](#)

Walk/activity/daily steps/micro workouts or "exercise snacks"

Just moving around and being active will help reduce blood sugar. Get your steps in over the course of the day even if you don't do more intense exercises like running, biking, etc. You can also strategically time some walks/increased activity (active house chores) after meals to help decrease the amount of blood sugar spike generated from the previous meal. Make this a new habit, to be active for 5-10 minutes after every meal!

Build more muscle.

Muscle is active tissue and is the biggest reservoir of stored sugar in the body. The more muscle you have, the better your blood sugar control will usually be. Make it your mission to include some resistance training as part of your exercise plan. See handout "[Exercise Tips](#)" for visuals of exercises you can incorporate into your day.

Use some apple cider vinegar before meals.

Apple cider vinegar can help reduce blood sugar. It also improves gut health by encouraging the healthy bacteria to thrive. Strategically using a tablespoon or two (diluted in water) before a meal can help reduce the impact of the carbs eaten at that meal on your subsequent blood sugar. Read this article for more information: [6 Health Benefits of Apple Cider Vinegar, Backed by Science](#).

Add lemon or lime to your water or beverage.

Both the juice and the peel or zest from lemons/limes/citrus fruits can have beneficial effects. They seem to block enzymes involved in the digestion of starch, which can lead to reduced blood sugar associated with the meal. [Here](#) is a humorous article that details some of these benefits, plus gives tips on ways to include more lemons (or limes) in your diet.

Berberine supplement with meals.

Berberine is a supplement you can buy over-the-counter. Lots of research is being done on this powerful compound, which has the ability to sensitize our bodies to the effects of insulin. This is good because it reduces the total amount of insulin your body needs. Berberine works in much the same way as the diabetes medication called metformin. Information about berberine can be found on the “Healthy Eating” tab in the “Supplements” section or [here](#). Let your doctor know if you would like to try this supplement as part of your plan.

Get some sunshine – make your D.

We are now recognizing how important **vitamin D** is to almost every aspect of our health, and research will continue to clarify this for us. Low vitamin D levels are associated with diabetes; [here’s a Healthline article](#) which discusses this association. **Low vitamin D is also associated with poor sleep, which indirectly affects blood sugar regulation.** Our bodies are designed to make vitamin D from sunshine – but most of us avoid the sun due to fears of cancer and other problems from excess exposure. However, there are safe ways to get sunshine and make our own vitamin D ([this free app](#) can help!). Supplementation is also a good option, when done correctly. The best supplement plan will include vitamin D along with vitamin K2. Read more about this in the handout “**Vitamin D: Know Your Number**”, and discuss with your doctor.

Get your micronutrients.

Whole and minimally processed foods are naturally packed with fiber and other nutrients that our bodies need. **Animal protein foods** are particularly dense in nutrients – listen to Dr. Ted Naiman as he discusses this [here](#). Every time you eat, you have an opportunity to bring these nutrients into your body, based on the types of foods selected. These nutrients affect the gut microbiome population too; the presence or absence of some micronutrients can cause certain bacterial populations to thrive, which will directly impact your health, immunity and glucose metabolism. Examples of studies that are trying to quantify the relationship between micronutrients, the gut microbiome and blood sugar regulation – as well as the impact on other aspects of health – can be found [here](#) and [here](#). Some of the important micronutrients that are particularly important for blood sugar management include boron, chromium, magnesium, selenium and zinc, but others are being studied too. As we wait on research to further quantify the effects of various nutrients, the best approach is to prioritize **nutrient-dense foods** over ultra-processed foods, which means choosing foods in their most natural form and including animal-based proteins in your plan.

Get quality sleep.

Sleep is important for MANY reasons, including blood sugar management. During sleep, hormones can get rebalanced, stress levels come down, and blood sugar can come down along with it. Read more about sleep in this handout: "[Sleep: Your Reset Button](#)".

 Manage your stress levels.

We all have stress in our lives. Some sources are out of our control, while others could be reduced or managed better by making different choices and adopting new habits. Learning to manage it in healthier ways is important to long-term health. Stress causes changes in hormones that result in higher blood sugar. If this happens repeatedly, your blood sugar will run higher than it should all the time. Make "stress management" a priority in your life. Refer to the handout "[Stress Management](#)" on the Direct Access website (found on the Healthy Eating page). Also check out [this excellent resource](#). And this article has great short-term and longer-term tips: [Effective Stress Relievers for Your Life](#).

This article discusses some of the tips named above as well as a few others not included here. [14 Easy Ways to Lower Blood Sugar Levels Naturally](#). I agree with all of the tips with the exception of the advice to eat more frequent meals. This strategy MAY work for some folks but most people will benefit more by eating less frequently.