

Nutrition Management of Low Blood Sugar without Diabetes (Postprandial Syndrome and Reactive Hypoglycemia)

What is Hypoglycemia?

Hypoglycemia is a medical term for low blood sugar (glucose). Glucose is the sugar that our bodies use for energy. In most people, a normal level of blood sugar is within a range of 70 to 99 mg/dL. Hypoglycemia can be a concern for people with diabetes, but it also affects people who do not have diabetes. Two conditions that can affect people without diabetes are postprandial syndrome and reactive hypoglycemia. The nutrition guidelines we recommend for treatment are the same for both.

- **Postprandial syndrome** is when someone develops symptoms of low blood sugar within 4 hours after eating but blood sugar doesn't actually drop below normal. Postprandial means after eating. Having these symptoms may be related to eating a high carbohydrate meal.

- **Reactive hypoglycemia** is symptoms of low blood sugar along with a blood sugar level less than 70 mg/dl. This too most often occurs about 4 hours after a meal and symptoms improve right away with intake of carbohydrates.

Symptoms:

In postprandial syndrome or reactive hypoglycemia, symptoms may occur within 2 to 4 hours after a meal. People have some or all of these symptoms:

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|-------------------------------------|--------------------------------|
| • Hunger | • Double vision/blurred vision |
| • Sweating | • Fast pulse rate |
| • Shakiness | • Headache |
| • Weakness | • Anxiety |
| • Fatigue | • Craving for sweets |
| • Nausea/vomiting | • Flushing |
| • Numbness/coldness in arms or legs | • Confusion |
| • Mood swings | • Irritability |

Diagnosis and Treatment

Hypoglycemia is diagnosed by measuring blood glucose when you are having symptoms. A small blood sample is taken and sent to a lab. If blood glucose is below normal (less than 70 mg/dL) and the symptoms disappear when food is eaten, reactive hypoglycemia is most often the cause of these symptoms. To manage this type of hypoglycemia you need to make changes in your eating habits. The goal is to maintain a blood glucose between 70 to 99 mg/dL and prevent symptoms. If blood sugar is not below 70 mg/dl this is likely postprandial syndrome (symptoms of low blood sugar but blood sugars remain in normal range).

Eating to Prevent Hypoglycemia

- **Limit foods high in sugar and concentrated sweets.** Eating these foods can cause a rapid increase in blood glucose. This may lead to excessive increase of insulin, resulting in a rapid fall in blood glucose.

Foods high in sugar include:

- Cakes
 - Cookies
 - Pies
 - Puddings and Custards
 - Regular Soda
 - Lemonade, Kool-Aid™, Punch
 - Sugar, Brown sugar
 - Ice cream, Sherbet, Frozen Yogurt
 - Jelly and Jams
 - Candy and Candy bars
 - Gelatin, Jello™
 - Nectars (Agave)
 - Honey
 - Syrups (Corn, Pancake, Maple)
 - Fruit juice greater than 4 ounces
 - Sweet Tea and Flavored Coffee
- **If you have something sweet try to have it with a meal.** You can handle sweet foods better if eaten with a meal since the other foods at the meal reduce the effects of the sugar.
 - **Reduce intake of foods and drinks that have caffeine.** Caffeine stimulates the production of adrenaline and can cause the same symptoms as hypoglycemia.
 - **Limit or avoid alcoholic drinks.** Drinking alcohol can cause hypoglycemia all by itself, especially on an empty stomach. If you choose to drink alcohol, do so in small amounts and always consume it with food. One serving of alcohol is 12 oz. beer, 4 oz. wine and 1.5 oz liquor.
 - **Spread your intake of carbohydrate foods throughout the day.** Eating large amounts of rice, bread, cereal, pasta at one time can cause your body to produce large amounts of insulin. This is much like simple sugars or sweets and can cause glucose levels to drop sharply.
 - **Try to eat every 3 to 4 hours.** Eating many small meals and snacks each day rather than 3 larger meals can help to regulate the amount of glucose in your bloodstream.
 - **Aim for 2 to 4 servings of carbohydrate at each meal (30 to 60 grams) and 1 to 2 servings (15 to 30 grams) at snack times.** One carbohydrate serving has 15 grams of total carbohydrate.

Each of these foods contains about 15 grams of carbohydrate:

- 1 regular slice of bread
- ½ English muffin, hot dog or hamburger bun
- ½ cup rice, pasta, cooked cereal
- 1 medium potato (about ½ cup)
- 1 small apple (tennis ball size)
- ½ cup fruit canned in its own juice
- ¾ cup high fiber cold cereal
- 1 cup plain, light or Greek yogurt
- 6 saltines
- 3 cups popcorn
- ½ 3-inch bagel
- 1 (6") flour tortilla
- 1 medium orange
- ¾ cup grapes
- 1 cup cantaloupe
- 1 cup skim or 1% milk

- **Choose whole grains and increase high fiber foods.** Whole grains take longer to break down. This helps to keep blood glucose levels more consistent. Whole grain breads and cereals, legumes/beans, vegetables and whole fruits are high in fiber. These foods will help you eat at least 25 grams of fiber daily.
- **Include lean protein at each meal and snack.** Our body breaks down protein more slowly than carbohydrate. This mixture of carbohydrate and protein can give a long-lasting source of energy. Good sources of lean protein foods include skinless poultry, fish, low-fat cheese, eggs, peanut butter, and soy-based foods.
- **Enjoy foods high in healthy fats in small amounts throughout the day.** Fats are also digested slowly and can help to balance the blood sugar. Choose healthy fats such as nuts, seeds, avocado, olives and olive oil. Try to enjoy fats in small amounts because they are also high in calories and can lead to weight gain.
- **Keep some non-perishable foods on hand to prevent or treat low blood sugar symptoms.** Granola bars with protein, or nuts and dried fruit mix are examples of quick, healthy snacks. Keeping these foods on hand is a good choice instead of getting a high calorie candy bar from the vending machine or store.

Sample 1-Day Menu

Breakfast 2 slices 100% whole wheat toast (2 carbohydrate servings) 1 egg or 2 tablespoon peanut butter 1 cup skim milk (1 carbohydrate serving)
AM Snack 6 Triscuit crackers (1 carbohydrate serving) 2 tablespoons hummus
Lunch 2 slices 100% whole wheat bread (2 carbohydrate servings) 2 oz lean Turkey ¼ Avocado, sliced 17 Grapes (1 carbohydrate serving) Raw carrot and celery sticks 1-2 T low fat salad dressing as dip
PM Snack 1 cup of Greek yogurt (1 carbohydrate serving)
Evening Meal 3 oz skinless chicken breast ½ large baked potato (2 carbohydrate servings) 2 tablespoons light sour cream ½ cup cooked broccoli Small dinner salad with 1 tablespoon salad dressing 1 cup skim milk (1 carbohydrate serving) 1 cup strawberries (1 carbohydrate serving)
Evening Snack 3 cups light popcorn (1 carbohydrate serving) 2 tablespoons almonds

Your Meal Plan

Use this template to help you plan your meals and snacks.

Breakfast	AM Snack	Lunch
PM Snack	Dinner	Evening Snack

Teach Back:

What is the most important thing you learned from this handout?

What changes will you make in your diet/lifestyle, based on what you learned today?

If you are a UW Health patient and have more questions please contact UW Health at one of the phone numbers listed below. You can also visit our website at www.uwhealth.org/nutrition

Nutrition clinics for UW Hospital and Clinics (UWHC) and American Family Children's Hospital (AFCH) can be reached at: **(608) 890-5500**

Nutrition clinics for UW Medical Foundation (UWMF) can be reached at:
(608) 287-2770

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 2/2016 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Clinical Nutrition Services Department and the Department of Nursing. HF#396