

## Education

### Diabetes: Food Management

#### Why is food management important?

If you have type 1 diabetes, your body makes little or no insulin. Insulin is a hormone that helps sugar enter the body's cells and controls the level of sugar in the blood. When there is not enough insulin in the body, the amount of sugar in the blood reaches very high levels and can be very dangerous.

Type 1 diabetes is treated with insulin, but diet (food management) and exercise are still very important parts of managing the blood sugar and preventing complications. The goal of food management is to try to keep your blood sugar at a normal level through the day. This is done by matching your insulin doses with the types and amounts of food you eat. Meal plans can be designed to fit your lifestyle.

In type 2 diabetes you are unable to use your body's insulin efficiently. This causes your blood sugar to rise. Sometimes you can control your blood sugar with just diet and exercise. Or you may also need to take oral medicine or insulin shots.

In all cases, understanding how the food you eat affects your blood sugar is an important part of taking good care of yourself.

#### What are the types of meal plans?

There are several common ways to plan meals to help manage diabetes. Your diabetes care provider will help you find a meal plan that works for you. Most plans are based on measuring carbohydrates, or carbs, in food because carbs have the biggest effect on your blood sugar level.

Three common types of meal plans are:

- **Constant carbohydrate meal plan:** You eat the same amount of carbs each day to match a relatively consistent dosage of insulin.
- **Carbohydrate counting meal plan:** You figure out how many carbs you are going to eat at a meal and adjust your insulin dose accordingly. The amount of carbohydrate may vary from day to day.
- **Exchange meal plan:** Foods are grouped into lists. Foods on each list have similar carb and calorie content. This plan is called the exchange diet because you can exchange one choice on a list for another knowing that it will have the same food value. Your dietitian helps you plan a diet that includes a set number of exchanges to eat each day and which food lists the exchanges should come from. This plan is not used very often anymore.

It is important to meet with a dietitian to develop a meal plan that fits your lifestyle.

#### What are the principles of food management?

All meal plans are based on the following principles:

- **Eat a well-balanced diet.** A healthy diet contains 10 to 20% of calories from protein (milk, cheese, yogurt, meat, poultry, fish, egg white, nuts and seeds), 50 to 60% from carbohydrate (fruits, vegetables, and whole grains), and 20 to 35% from fat (saturated fats, such as butter and red meats should provide less than 7% of your calories).
- **Keep the day-to-day calories consistent.** If you eat about the same amount of calories each day, your insulin and food will be in balance. If you eat less one day, you may have too much insulin and have a low blood sugar reaction (hypoglycemia). If you eat more one day, you will have too little insulin and have a high blood sugar. You should also try to eat similar amounts of carbohydrate, fat, and protein each day. Your body will need more or less insulin depending on how much carbohydrate you eat. It is important for you to eat a consistent amount of food at the same times each day. If you are taking a relatively constant insulin dose, the constant carbohydrate and the exchange food plans both help keep the daily amount of carbs consistent.
- **Eat meals at the same time each day.** The insulin you inject will be working to lower your blood sugar whether you eat or not. Therefore, it is important not to miss meals and to eat at about the same time each day to prevent low blood sugar. Carry snacks for emergencies, such as a sudden change in your schedule

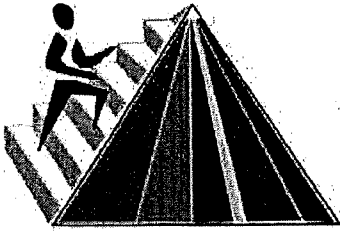
that affects your mealtime.

- **Use snacks to prevent insulin reactions.** Snacks help to balance insulin activity. Peaks in insulin activity vary from person to person. You will learn from experience when you need a snack. You may need a snack before lunch, in the late afternoon, or at bedtime. Almost everyone with diabetes needs a bedtime snack. Do not skip snacks. The type of snack is also important. Sugar from fruits will last only 1 or 2 hours. Fruits are good for a morning or afternoon snack. Proteins with fat, such as cheese or meat, convert to sugar more slowly. A solid snack containing protein, fat, and starch is best for bedtime. It will last through the night better.
- **Manage carbs carefully.** Carbs make up half of the food you eat each day. Because insulin is needed for the body to use carbs, it is very important to keep track of how much carbohydrate you eat and when you eat it. You also need to make sure you have enough insulin in your system when you eat carbs. The effect of carbs on your blood sugar depends on the type of carbs and what other foods you eat with the carbs. The complex carbs in whole grains, beans, fruits, and most vegetables break down into sugar more slowly than simple carbs such as the sugar in candy and cakes. Testing your blood sugar 1 to 2 hours after a meal will help you learn how different combinations of foods affect your blood sugar.
- **Reduce fat in the diet.** Diabetics have a higher risk of getting heart disease, so it is important to watch the fat in your diet. Cholesterol and triglyceride are 2 of the major fats in the blood. Cholesterol is found in many foods, but it is particularly high in egg yolks, organ meats, and large portions of high-fat red meat (for example, prime rib). Blood cholesterol and triglyceride levels can become high if blood sugar levels are too high. Your blood cholesterol level and triglyceride level should be checked once a year. If a high level is found, your dietitian can make suggestions to help lower it.
- **Maintain an appropriate weight.** Ask your dietitian how many calories should be in your daily diet to maintain a normal weight. If you are overweight, talk to your dietitian about making a plan for gradual weight loss. The exchange food program can help you follow a recommended calorie intake.
- **Eat more fiber.** Fiber is the roughage in our food that is not absorbed into the body. Adding fiber may reduce the rise in blood sugar levels. For example, your blood sugar may not be as high 2 hours after eating an apple (15 grams of carbohydrate) as it is 2 hours after drinking 1/2 cup of apple juice (also, 15 grams of carbohydrate). Raw fruits, vegetables, legumes, high-fiber cereals, and whole-wheat breads are the most effective high-fiber foods.
- **Avoid foods high in salt (sodium).** Eating a lot of salt may raise your blood pressure. Increased blood pressure is a risk factor for heart, eye, and kidney complications of diabetes. Therefore, it is important not to eat large amounts of salt. Try to eat less than 2300 milligrams (mg) of sodium (1 tsp of table salt) each day. Discuss sodium with your dietitian.
- **Avoid eating too much protein if you have kidney problems.** Eating too much protein is bad for diabetics who have kidney problems. Spaghetti, pasta, and casseroles that do not have a lot of meat may be healthier for you than a hamburger or steak. However, you should eat a bedtime snack that includes carbohydrate, protein, and fat to help keep your blood sugar at a reasonable level through the night.


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# Food Guidance System

## My Pyramid Plan



The My Pyramid Plan is based on your age, gender, and how much exercise you get each day. You can find out how many calories you should eat each day and the amount of the foods you should eat by going to [www.mypyramid.gov](http://www.mypyramid.gov). The example below is for a diet of 2000 calories per day.

|   | Amount per day |
|---|----------------|
| <b>Grains</b>   | 6 ounces       |
| <b>Vegetables</b>   | 2 ½ cups       |
| <b>Fruits</b>   | 2 cups         |
| <b>Milk</b>   | 3 cups         |
| <b>Meat &amp; Beans</b>   | 5.5 ounces     |
|  | 6 teaspoons    |

Limit extra fats and sugars to less than 265 calories per day



Get 30 minutes (or more) of moderate to vigorous physical activity

### Healthy Eating Tips

- Half of the grains you eat should be whole grains.
- Vary your veggie choices. Eat some dark green, orange, and starchy vegetables every week.
- Make most of your fruit choices whole or cut-up fruit rather than juice so you get more fiber.
- Choose fat-free or low-fat milk and yogurt.
- Choose lean cuts of meat. Also eat beans (such as black, soy, or pinto beans) for protein.
- Look for foods that are low in saturated fats, trans fats, and cholesterol to help reduce your risk of heart disease.

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