



Diabetes and Carbohydrates

The prevalence of diabetes in the United States has skyrocketed over the last 10 years. Over 18 million Americans currently suffer from the disease and 1.3 million new cases of diabetes are diagnosed every year (1). What is happening?

The causes of diabetes are not fully known. Genetic predisposition is certainly a factor, but evidence also points to environmental triggers (such as obesity and a sedentary lifestyle), which means there *are* preventive measures you can take.

What Exactly Is Diabetes?

We take for granted an everyday miracle: We eat food and our bodies convert that food into the energy we need to live, work and play. The key to that process is insulin, a hormone secreted by the pancreas to process the protein and carbohydrates in food.

Insulin:

- Helps maintain the appropriate amount of glucose circulating in the blood, or blood glucose, so that the body can utilize stored energy.
- Allows the products of carbohydrate and protein digestion (i.e., glucose and amino acids, respectively) to enter the body's cells, where they are utilized for energy, stored, or in the case of amino acids, used for the synthesis of body proteins.

Diabetes disrupts this process. It is a physiological condition in which the body cannot secrete or produce enough insulin. In diabetes the metabolic processes which insulin directs (described above) become significantly impaired.

There are two types of diabetes:

- Type 1 is known as “insulin dependent diabetes” because the body *fails* to produce insulin. Those suffering from this type must get their insulin through injections. Only an estimated 5 to 10 percent of Americans who are diagnosed with diabetes have Type 1 (1).
- Type 2 is known as “non-insulin dependent diabetes” because the body does produce insulin (and sometimes excessive amounts of it), but for a variety of reasons the insulin is not fully “recognized” by the body's cells and therefore cannot carry out its physiological functions effectively. The vast majority (90 to 95 percent) of people diagnosed with diabetes have Type 2 (1).

If diabetes is “uncontrolled,” serious consequences can occur. Glucose is essential to proper functioning of our brains as well as our muscles. Mismanaged or uncontrolled diabetes can, over time, lead to blindness, circulatory problems, nerve conditions, kidney disease/failure, leg and foot amputations, even death. Diabetes is also a major contributing risk factor for heart disease and stroke.

To prevent these effects, medical treatment is critical; people with diabetes need to rely on medications – delivered via injections or pumps – as sources for insulin. In addition, nutrition therapy is essential to keep blood glucose in check.

Carbohydrate Controversy

People diagnosed with diabetes typically receive instruction on eating to manage blood glucose, but recently there has been a lot of conflicting information, and some outright misinformation, in the news about how insulin works in the body – particularly in relation to carbohydrate foods. For example, some groups tout the theory that carbohydrate foods can be classified as “good” or “bad” when it comes to their effect on insulin and, therefore, place in the diabetic diet. Nutritionists generally disagree with these categorizations, which

suggest shunning whole “categories” of foods. Mainstream nutritionists recommend getting a balance of nutrients by eating a variety of foods.

The American Dietetic Association does not endorse the elimination of any food group or category and supports a “total diet approach” where “all foods can fit” (2). Likewise, the American Diabetes Association conducted an extensive review of scientific studies and concluded that, for people with diabetes, the total amount of carbohydrate in meals and snacks, rather than the type, determines the body’s blood glucose response (3).

Carbohydrates are the main source of calories in fruits and vegetables. Eliminating fruits and vegetables from the diet means cutting out essential nutrients. In a recent study of 10,000 men and women from the University of Hawaii (4), the results showed that the greater the variety of fruits and vegetables consumed, the more likely the men and women were to reach recommended levels of vitamins and minerals. In short: the key to managing blood glucose is really the *amount* of foods consumed. **Cutting portion sizes is a better strategy than cutting out food categories.**

Controlling Portions = Controlled Blood Glucose

The American Diabetes Association and the American Dietetic Association jointly developed the “Exchange Lists for Meal Planning” to educate people with diabetes about how to eat right and manage blood glucose (5). Each carbohydrate exchange or serving contains approximately 15 grams of carbohydrate.

People with diabetes can use the Exchange Lists to enjoy potatoes as part of a healthy diet. The potato can make a significant contribution to your daily vitamin and mineral requirements. Potatoes eaten with the skin provide vitamin C, potassium and fiber. If you have diabetes, use a meal plan that provides the number and timing of food choices or exchanges you need every day. If you don’t have a plan, see a dietitian to create one that’s right for you. And refer to the chart below the next time you reach for a potato:

Potato, boiled ½ cup or ½ medium (3 oz.)
Potato, baked with skin ¼ large (3 oz.)
Potato, mashed ½ cup

For more information about meal plans for diabetes, contact the American Dietetic Association/Nutrition Hot Line (800-366-1655, www.eatright.org) or the American Diabetes Association (800-342-2383, www.diabetes.org).

- 1) American Diabetes Association All About Diabetes. Available at: <http://www.diabetes.org/> Accessed July1, 2004.
- 2) Freeland-Graves, J, Nitzke, S. Position of the American Dietetic Association: Total diet approach to communicating food and nutrition information. *J Am Diet Assoc.* 2002;102:100.
- 3) Franz, MJ et al. Evidence-Based Nutrition Principles and Recommendations for the Treatment and Prevention of Diabetes and Related Complications. *Diabetes Care.* 2002;25:148-198.
- 4) Murphy SP, Fotte JP, Wilken LP. Dietary variety increases the probability of nutrient adequacy. 2003 Experimental Biology meeting abstracts. *The FASEB Journal.* 2003;18:abstract#2432.
- 5) American Dietetic Association, American Diabetes Association. Exchange Lists for Meal Planning. 2003. For healthy recipes and nutrition information, go to: www.healthypotato.com

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