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## Diet guidelines for diabetes using the 1986 exchange list for meal planning

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### Quick Facts

Diet is important in the control of diabetes. A diet low in fat, especially saturated fat, and high in complex carbohydrates with fiber currently is recommended for most diabetics. Diet recommendations for diabetics are translated into diet orders by physicians or dietitians considering individual diet needs, exercise patterns and insulin usage. One common method of planning diabetic diets is through the use of exchange lists of foods; foods within each list can be substituted or traded for one another.

### Understanding the Diabetic Exchange Lists

The Exchange Lists are revised periodically to reflect current knowledge related to diet and diabetes. The Exchange Lists used in this fact sheet were revised in 1986. They differ from the former 1976 Exchange Lists in that the bread list is now called "Starch/Bread" and the meat list is called "Meat and Substitutes". Several foods were added and a number of portion sizes changed. The 1986 lists also use symbols to indicate foods high in fiber (three grams or more per exchange) and high in sodium (400 milligrams or more per exchange).

The exchange lists contain three categories each of meat and substitutes and of milk exchanges based on fat content. The fat exchange list is divided into unsaturated and saturated fat categories. The starch/bread exchange

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This information provided by:

The information in this fact sheet is designed to use with the *1986 Exchange Lists for Meal Planning*. Copies of this booklet can be purchased from the American Diabetes Association, Inc., 1660 Duke St., P.O. Box 25757, Alexandria, VA 22313 and its affiliate associations, or the American Dietetic Association, 216 West Jackson Blvd., Chicago, IL 60606-6995.

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1. Jennifer Anderson, Colorado State University Cooperative Extension foods and nutrition specialist and associate professor, food science and human nutrition; Pat Kendall, Cooperative Extension foods and nutrition specialist and professor. 12/92. ©Cooperative Extension, Colorado State University. 1994. For more information, contact your county Cooperative Extension office.

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list includes dried beans and starchy vegetables as well as breads, cereals and pasta. The vegetable list consists of low-calorie vegetables. In addition to the six lists, the 1986 exchange lists for meal planning includes a list of free foods (less than 20 calories per serving), exchanges for popular combination foods and a list of concentrated sources of carbohydrates as "Foods for Occasional Use."

The food exchange method allows a person to "measure" rather than weigh food; however, meat still needs to be weighed until the individual knows what 1 ounce of the item measures.

Any food may be substituted for another within the same food exchange list, but **not** with another food exchange list.

The food items traded within any given food exchange should be traded in the exact amount indicated on the list.

Tailor diabetic diet prescriptions to fit the individual's usual eating habits. Eat meals and planned snacks at about the same time each day. Do not skip meals or skip a prescribed exchange at any given meal or carry an exchange from one meal to the next.

## Managing Diabetes

The three cornerstones of diabetes management are diet, activity and medication (if needed). Food raises blood-glucose and blood-fat levels. Activity and medications (insulin or oral hypoglycemic agents) lower blood-glucose and blood-fat levels. A balance of these three leads to good management of diabetes.

The three nutritional goals of diabetes management are:

**Maintain appropriate blood glucose and blood fat levels.** Blood-glucose monitoring helps keep track of diabetes, and can show the effects of certain foods or activities on your blood-glucose levels. People with diabetes run a greater risk of developing heart disease than other people. Therefore, it's important for a person to know their blood-cholesterol and blood-triglyceride levels.

**Maintain reasonable weight.** It is important to eat the right amount of calories to reach and stay at a reasonable body weight. The amount of calories needed depends on size, age, and activity level. Eating the right number of calories is important for many reasons. Eating too many calories causes weight gain, which will worsen diabetes and increase the risks for high blood pressure

and heart disease. The body makes and/or uses insulin best when a person is at their desirable weight.

Eating too few calories causes a different problem. Children and teens with diabetes must eat enough calories to grow properly. Pregnant and nursing women must eat enough calories to provide for proper development of their babies.

Exercise also is very important. It is helpful for weight loss and good for the heart and blood vessels. A person can increase their activity level by walking, biking, or just taking the stairs instead of an elevator. Before a person begins an exercise training program they should check with their health care professional.

**Maintain good nutrition.** It is important to eat a variety of food each day. The body works better with a balanced diet that includes the right amounts of vitamins, minerals, carbohydrate, protein and fat. Carbohydrate is the major source of energy. Protein builds muscle and tissue and provides some energy. Fat is the storage form of energy. Most foods contain a mixture of these. Carbohydrate has four calories per gram of weight and is found in starches, bread, fruit, vegetables and milk. Protein also has four calories per gram. Protein is found in meat and milk, and small amounts of protein are found in starches, bread and vegetables. Fat is higher in calories--nine calories per gram of weight. Fat is found in meat, dairy products, oils and nuts and may be added to a variety of dishes. Insulin is needed to properly use carbohydrate, protein and fat.

## Principles of Good Nutrition

**Eat less fat.** Too much fat may cause heart and blood vessel disease. Watch portion sizes - it's easy to eat too much. Eat fewer high-fat foods such as cold cuts, bacon, nuts, gravy, salad dressing, margarine and solid shortening. Drink skim or low-fat milk and eat less ice cream, butter and high-fat cheese.

**Eat more carbohydrates (starches and breads), especially those high in fiber.** Carbohydrate foods are a good source of energy, vitamins and minerals. Fiber in foods may help to lower blood-glucose and blood-fat levels. To increase the fiber in your diet, eat more dried beans, peas and lentils, whole grain breads, cereals and crackers, and fruit and vegetables.

**Eat less sugar.** Most people, including those with diabetes, should eat less sugar. People who depend on insulin should avoid concentrated sweets, when possible.

Sugar has lots of calories, no vitamins or minerals and promotes dental cavities. Foods high in sugar include desserts such as frosted cake and pie, sugary breakfast foods, table sugar, honey and syrup. One 12-ounce can of regular soft drink has nine teaspoons of sugar!

**Use less salt.** Most people eat too much salt. The sodium in salt can cause the body to retain water, and in some people it may raise blood pressure. High blood pressure is made worse by eating too much salt and sodium. Try to use less salt in cooking and at the table.

**Drink alcohol in moderation.** It is best to avoid alcohol altogether. If you like to have an alcoholic drink now and then, ask a dietitian how to work it into the meal plan. If you take insulin, it is important to eat food with the drink.

### Selecting Food

When possible, select a diet from the same foods purchased for the rest of the family. When fresh fruits are out of season, use water-packed canned fruits (fruits canned without sugar). A person on a diabetic diet does not need special diet foods, such as artificially sweetened cookies and candies, since most diabetic diets contain a wide choice of foods.

**Always** read labels for the amount of protein, carbohydrate, fat and calories listed. Consult a physician about alcoholic beverages. If used, subtract them from the daily food allowance.

"Dietetic food" may or may not mean the food is suitable for diabetics. Products that contain fructose or sugar alcohols (Xylitol, Mannitol, Malitol or Sorbitol) are absorbed more slowly from the digestive tract than table sugar. The sugar alcohols may have a laxative effect if eaten in large quantities. Even food labeled "diabetic" may not be suitable. Always check with a dietitian before using a new food item on the market, especially if the food is labeled "fat free" or "sugar free."

### Using Nutritional Labeling

Many food products carry nutritional labels on their packages. This nutrition information makes it possible for diabetics to include a wide variety of foods in their diets with confidence, using the method described below. If you have questions about using this method to determine food exchanges or about the Diabetic Exchange Lists, be sure to consult a dietitian or physician.

Any company that uses nutritional labeling must follow the format set out by the U.S. Food and Drug Administration. Only the top part of the label is needed to work out the exchanges. An example is shown in Table 1.

Use the exchange list in Table 2 to work out food exchanges from nutritional labeling.

Tables 3 and 4 illustrate how to determine the number of exchanges in one serving of a prepared food, using pizza as an example. Using the label in Table 3, follow the steps listed in Table 4.

**Table 1: Sample nutritional label.**

<b>Pasta Salad</b>		
Nutrition Information Per Portion		
Portion Size	1/6 pkg.	
Portions Per Package	6	
	<b>1/6 pkg.</b>	<b>1/6 pkg. Plus 1 tsp. oil</b>
Calories	100	150
Protein, g	4	4
Carbohydrate, g	19	19
Fat, g	1	6
Sodium, mg	330	330
<b>Percentage of U.S. Recommended Daily Allowances (U.S. RDA)</b>		
Protein	6	6
Vitamin A	2	2
Vitamin C	4	4
Thiamin	10	10
Riboflavin	6	6
Niacin	6	6
Calcium	2	2
Iron	6	6

**Table 2: How to work out food exchanges using nutrition information labels.**

Exchange List	Carbohydrate (grams)	Protein (grams)	Fat (grams)	Calories
Starch/Bread	15	3	trace	80
Meat				
Lean	--	7	3	55
Medium--fat	--	7	5	75
High--fat	--	7	8	100
Vegetable	5	2	--	25
Fruit	15	--	--	60
Milk				
Skim	12	8	trace	90
Low--fat	12	8	5	120
Whole	12	8	8	150
Fat	--	--	5	45

**Table 3: One 10-inch cheese pizza--nutrition information per serving.**

Serving size	1/2 pizza
Servings per container	2
Calories per serving	450
Protein	25 g
Carbohydrates	52 g
Fat	16 g

**Table 4: Calculating food exchanges in 1/2 10-inch pizza.**

	Exchanges	Carbohydrate (grams)	Protein (grams)	Fat (grams)
1) List the grams of carbohydrate, protein and fat per serving from the pizza label		52	25	16
2) Choose a standard diabetic exchange, half of an exchange or multiples of an exchange that best compares to the food product. Subtract the grams of protein, carbohydrate and fat found in the standard diabetic exchange(s) from those in the food product. In the example, three bread exchanges are subtracted.	3 Starch/ Bread	-45	-9	tr
		7	16	16
3) Evaluate the grams of protein, fat and carbohydrate left over. Choose another standard exchange or half an exchange that best compares to the food product and subtract again. In the example, two medium-fat meat exchanges* are subtracted.	2 Medium-fat meat	-0	-14	-10
		7	2	6
4) Repeat steps 2 and 3 until you can no longer subtract a standard exchange or half an exchange.	1 Vegetable	-5	-2	-0
- 1 vegetable exchange		2	0	5
- 1 fat exchange	1 Fat	-0	-0	-5
		2**	0	0
	Calories***			
5) As a final check, 1/2 pizza (see label):	450	52 g	25 g	16 g
As per exchanges (3 bread, 2 medium-fat meat, 1 vegetable and 1 fat)	460	50 g	25 g	16 g

\* Select lean, medium-fat or high-fat meat depending on type of meat or cheese in product and number of grams of fat per serving.

\*\* A small negative or positive number after final subtraction is acceptable.

\*\*\* Carbohydrate and protein equal 4 calories/gram; fat equals 9 calories/gram.