

# FACT SHEET

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## DEALING WITH THE DIABETIC DIET

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Diabetes affects four to five percent of the population with about 10 million new cases yearly. One-half of those suffering from diabetes are unaware that they have this disorder.

This publication explains the meaning of *diabetes mellitus*; the diabetic diet and the exchange lists provided by your physician; the importance of food in treatment; planning menus using the food exchange list; serving sizes; food preparation; foods to avoid; seasonings for diabetics and where to obtain other resources for diabetics.

### Abnormal Carbohydrate Metabolism

*Diabetes mellitus*, commonly called "sugar diabetes," is a condition in which either the beta cells of the pancreas do not produce enough of the hormone, insulin, or tissues cannot receive insulin because of inadequate receptor, or hormone-sensitive, cells. Insulin helps blood nourish the body with glucose. For a cell to absorb glucose, insulin must be present.

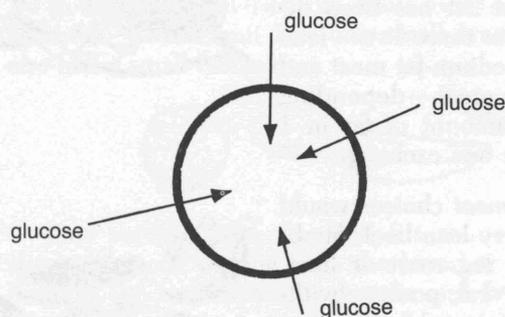


Figure 1a. Schematic drawing of a cell with insulin present.

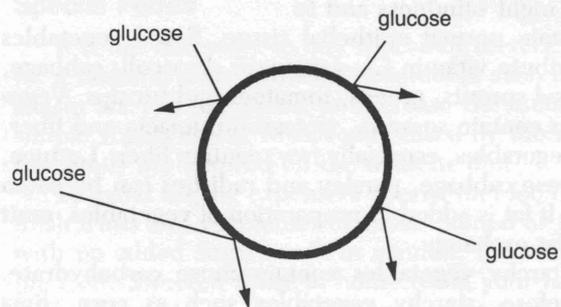
The digestive system breaks down starches and other carbohydrates in food to glucose which is then absorbed into the blood. If a cell cannot absorb glucose because of insufficient insulin, the glucose remains in the bloodstream and spills into the urine. If a person has diabetes, his or her body has abnormal carbohydrate metabolism that prevents the adequate

utilization of starches and other carbohydrates. This also affects fat and protein metabolism.

### Diabetic Diets

Food plays an important part in the control of diabetes. Treatment controls the level of glucose in the blood and prevents serious complications such as stroke or gangrene. Diabetes may be treated by diet alone, by diet and insulin administration or by diet and oral drugs. In mild cases of diabetes, especially in the overweight individual, the disease may be controlled by diet alone.

Diets for treating diabetes are designed to be nutritionally adequate; high in complex carbohydrates (starches) and fiber; low in simple sugars (table sugar); normal in protein and lower in fat. Carbohydrates are spaced throughout the day to reduce the strain of impaired carbohydrate metabolism. The nutrients required from a variety of foods are the same for the diabetic and the nondiabetic. The carbohydrate in each meal is distributed according to the type



b. Cell lacking insulin.

of insulin being used and is modified according to the individual's needs (height, weight, age, sex and activity) to ensure that carbohydrates are used at regular intervals. In the diabetic diet, the quantity of carbohydrate is constant. Too little carbohydrate in a meal is as undesirable as too much carbohydrate.

### Meal Planning

A doctor prescribes the diabetic diet. The most commonly used diabetic diet is the *Food Exchange*

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*Lists System* which can be ordered from the American Diabetes Association (see page 4) if not provided by your physician. The system can add variety to meal planning. The foods are grouped into six food choice or substitution lists according to amounts of carbohydrate, protein and fat. The food lists cover a wide range of food preferences and food costs. Each list includes a wide selection of foods that can be substituted freely within the list and still supply somewhat the same quantities of protein, fat, carbohydrate, calories, vitamins and minerals.

## Food Exchange Lists

### List 1—Milk

Milk is a leading source of calcium in the diet. All foods in the milk group supply carbohydrate, protein and a trace of fat. Use the amount of skim milk or skim buttermilk listed in your meal plan. If you prefer whole milk or low-fat milk, omit some fat from the fat exchange list because in skim milk<sup>1</sup> or skim buttermilk, the fat has been removed.



### List 2—Vegetables

Each ½-cup serving or exchange of vegetables contains some carbohydrate and protein. Dark green and deep yellow vegetables are good sources of vitamin A which is necessary to prevent night blindness and to maintain normal epithelial tissue. Some vegetables contribute vitamin C—asparagus, broccoli, cabbage, brussel sprouts, greens, tomatoes and turnips. Vegetables contain some B<sub>6</sub>, potassium, folacin and fiber. All vegetables, especially raw, contain fiber. Lettuce, Chinese cabbage, parsley and radishes can be eaten raw. If fat is added in preparation of vegetables, omit one fat exchange.



Starchy vegetables contain more carbohydrate. Therefore, starchy vegetables such as corn, lima beans, potatoes and green peas are listed in "List 4—Bread Exchanges."

### List 3—Fruits

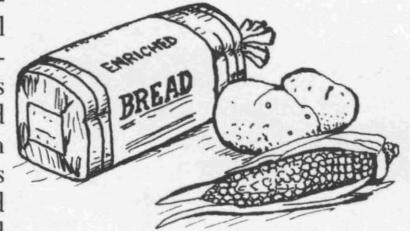
Fruits contain carbohydrates. The amount of fruit for one exchange varies because the amount of sugar in fruit varies. For example, dried fruits are high in sugar; only two dates or four apricot halves make one fruit exchange. One small apple or ¾ cup of fresh strawberries constitutes one fruit exchange.



Fruits contain vitamins, minerals and fiber. Citrus fruits and juices are good sources of vitamin C which is also found in raspberries, strawberries, cantaloupes and honeydews. The deep yellow fruits are good sources of vitamin A. Many fruits, particularly bananas, citrus fruits and melons are good sources of potassium. Fruits may be eaten fresh, dried, canned or frozen as long as no sugar is added.

### List 4—Bread

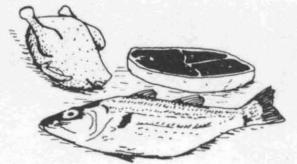
The bread list includes bread, cereal and starchy vegetables. Bread contains carbohydrates and protein. Whole grain and enriched breads and cereals, germ and bran products and dried beans and peas are good sources of iron and thiamin. The whole grain, bran and germ products are good sources of fiber, as are dried beans and peas. Starchy vegetables are in this list because they contain as much carbohydrate and protein as one slice of bread. Prepared foods that contain higher amounts of fat, such as corn muffins, pancakes and french fried potatoes, are noted in this list. One fat exchange must be omitted when these choices are made.



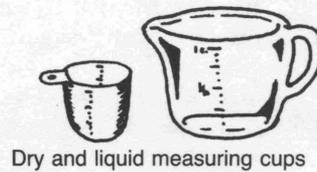
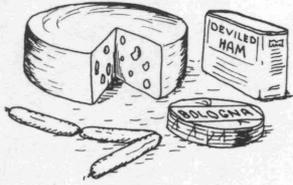
### List 5—Meat

All foods in the meat exchange list contain protein and fat. Because meats contain varying amounts of fat, the meat list has been divided into three lists—lean meat, medium-fat meat and high-fat meat—depending on the amount of fat in 1 ounce or one exchange.

- *Lean meat* choices would be: very lean beef, lamb, whole leg roast or ham, pork, veal, poultry (without skin), and fresh or frozen fish (unbreaded) and other fish listed.
- *Medium-fat meat* choices in which you must omit one-half fat exchange include: ground beef (15 percent fat), corned beef, rib eye and commercial ground round, pork loin and boiled ham, organ meats, eggs, cheese and peanut butter.



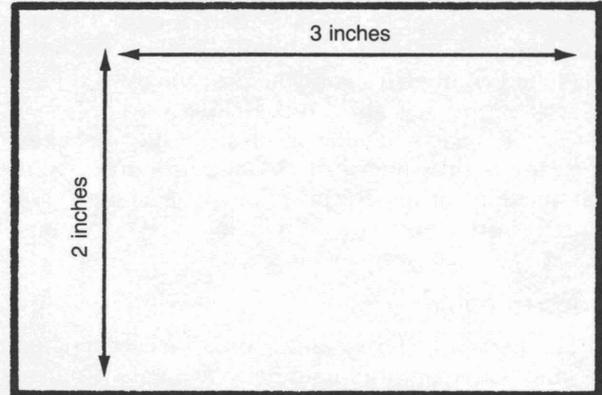
- *High-fat meat* choices in which you omit one fat exchange would be: ground beef with 20 percent fat, several beef steaks (club and rib), chuck and commercial hamburger, breast of lamb, pork spareribs, deviled ham, breast of veal, poultry such as capon and goose, cheddar cheese and cold cuts.



Dry and liquid measuring cups

Measuring spoons

Meat is measured in ounces. One ounce of cooked meat is a piece this size:



Choices will depend on the diet your physician prescribes based on your blood lipid (fat-like substances) values. An average 3-ounce serving of meat equals 4 ounces of raw meat. The fat content of beef, lamb, pork and veal cuts depends on the amount of fat left after trimming at the market. Meats should be baked, broiled or roasted. If meats are panfried, omit one fat exchange.

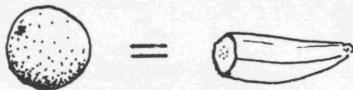
**List 6—Fats**

Each serving from the fat list contains fat and is a concentrated source of calories. Fats come from animals or vegetables and range from liquid oils to hard fats. To aid in planning a diet which is lower in saturated fat, the exchange lists identify the fat sources containing polyunsaturated fats. Foods from this list, such as butter or cooking oil, should be used for cooking or seasoning foods only if these exchanges have been added into the total number of calories in the meal plan for the day.

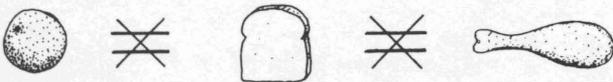


**Substitutions**

In using the food lists, substitute foods only within each list. In the fruit list, one small orange equals one-half a small banana.



One serving from the fruit list cannot be substituted for one serving from the bread or meat lists because the carbohydrate, protein and fat contents vary.



**Serving Size**

All foods included in the lists are in measured amounts. Most foods have been measured after they are cooked. The serving size of each food is defined in household measures—an 8-ounce measuring cup and standard measuring spoons.

Bread is measured according to units, for example, bread in slices or rolls in numbers. Cereals and starchy vegetables are listed in household measures.

**Special Foods**

It is not necessary to buy special or dietetic foods for a diabetic diet. Artificial sweeteners such as saccharin are recommended to decrease the amount of simple sugars eaten. Most foods eaten by the rest of the family are allowed on the diabetic diet.

To avoid buying expensive special diet foods, buy fresh fruits and vegetables or those canned or frozen with no added sugar, such as canned, unsweetened pie fruit. Sweeten these at home using your favorite artificial sweetener. You may even want to preserve fruits at home, freezing or packing them in water only. Fruits canned with sugar may be drained and rinsed in cold water to remove the syrup.

**Food Preparation**

Cook food without the addition of fat or sugar unless these have been figured into the total number of calories from the day's menu. Fry foods only in a portion of the fat given in the fat list for that particular meal. Trim all visible fat from meats before cooking. Recommended methods of food preparation for those on diabetic diets are boiling, baking, roasting or broiling.

Food for the diabetic may be prepared along with the meal for the entire family. Remove the diabetic's portion, however, before extra fat, flour, sugar, sauces or gravies are added.

Fat-free broth or bouillon cubes may be added to enhance the flavor of vegetables. Because the sodium content of bouillon cubes is concentrated, you may want to use other flavor enhancers such as lemon juice, vinegar and spices.

### Seasonings for the Diabetic

Herbs or spices such as parsley, mint, garlic, dry mustard and pepper can be used freely. Lemon, saccharine, vinegar, fat-free bouillon cubes, fresh unsweetened cranberries and rhubarb, unflavored gelatin, coffee and tea also are essentially calorie-free. You can enhance the flavor of any green salad by preparing a dressing with these calorie-free foods. Combinations of tomato juice and vinegar plus your favorite herbs and spices will add flavor without adding extra calories to your salad.

### Foods to Avoid

The person with diabetes should be careful about the kind and amount of food he or she eats. Concentrated sweets, such as pies, colas, candy, syrup and jelly, contain large quantities of sugar. Use only as directed by your physician. Certain alcoholic beverages contain carbohydrates and should be omitted unless allowed by the doctor.

Read the nutrition information on the label to determine the amounts of carbohydrate, protein and fat in the food. This will help to determine relative amounts of nutrients in some of the new foods and convenience foods. The term "dietetic" on processed foods does not mean that the food is necessarily intended for a diabetic person or that the food can be eaten in large quantities. Consult your physician or dietitian concerning the use of "sugar-free" or "fat-free" foods.

### Recommended Diabetic Resources

A physician prescribes a specific diabetic diet according to individual needs. Planning meals using the various food lists can add variety and interest to a diabetic's meals.

Some resources to aid in planning menus using the food lists are given here.

A free booklet, *Learning to Live with Diabetes*, can be obtained from:

Special Project Director  
Office of Program Planning  
State Department of Health Resources  
1100 West 49th Street  
Austin, Texas 78756

A free booklet, *Recipes for Diabetics*, can be obtained from:

Texas Department of Agriculture  
P. O. Box 12847, Capitol Station  
Austin, Texas 78756

Another booklet, *Exchange Lists for Meal Planning*, containing the six food lists, can be purchased for a minimal charge from any of the following addresses:

American Dietetic Association  
430 North Michigan Avenue  
Chicago, Illinois 60611

The American Diabetes Association, Inc.  
2 Park Avenue  
New York, New York 10016

The American Diabetes Association  
South Texas Affiliate, Inc.  
P. O. Box 14926  
Austin, Texas 78761

A positive attitude toward a diabetic diet helps. Learn to select the foods allowed on food lists whether eating at home, in a restaurant, in a friend's home or traveling.

If you are going to travel by commercial airlines, request a standard diabetic diet when making reservations. Most airlines require from 4 to 3 days notice.

Careful planning can mean that a diabetic can look forward to mealtime while protecting his or her health with well-balanced meals.

### References

- Texas Dietetic Diet Manual*, Texas Dietetic Association, Revised edition, 1980. *What Everyone Should Know about Diabetes*, American Diabetes Association, New York.  
*Exchange Lists for Meal Planning*, American Diabetes Association-American Dietetic Association, New York and Chicago.

### Acknowledgment

Appreciation for the review of this manuscript is expressed to: Michael E. Kahil, M.D., F.A.C.P., Bryan; the Nutrition Task Force, American Diabetes Association, South Texas Affiliate, Inc.; Gary C. Smith, head of department, and other staff members: Wayne Greene, Karen Kubena, Dana B. Ott, Jeffrey Savell and Gerald Schelling, Department of Animal Science, Texas A&M University, The Texas A&M University System. The author also acknowledges the assistance of Dymple Cooksey, Marilyn Haggard and Alice Hunt, Extension foods and nutrition specialists; Sally Coble and Frances Reasonover, former Extension foods and nutrition specialists; and Carol Suter, Extension foods and nutrition specialist-ENP; The Texas A&M University System.

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