

The Exchange List System for Diabetic Meal Planning

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If you or someone you know has diabetes, you may be worried about what the future holds. Diabetes is likely to cause changes in your life, but with proper care, most diabetics can live much as they did before developing the disease.

Diabetes is a condition whereby the body does not make enough insulin or use it properly. Without insulin, the body cannot utilize food for energy. People with diabetes have high blood glucose levels and many have high blood cholesterol and triglyceride levels.

The two main types of diabetes are:

- **Type 1 or insulin-dependent**
- **Type 2 or non-insulin-dependent**

Type 1 is treated with daily insulin injections, regular exercise, and a balanced meal plan. The daily meal plan is tailored to an individual's needs. It is likely to include three meals and two or three snacks eaten at set times each day.

Type 2 is treated with an individualized diet plan that usually restricts calories, especially calories from fat, so the individual can reach and maintain a healthy weight. Treatment also includes following a regular exercise plan. If diet and exercise do not control blood glucose, oral medication or insulin injections may be needed.

The nutritional goals for management of diabetes include the following:

- Maintain desirable blood glucose and blood lipid (fat) levels.
- Maintain optimal nutritional status.
- Reach and maintain a healthy weight.

Usually, a doctor will prescribe a visit with a registered dietitian who can help the diabetic work out a specific meal plan. Often, the meal plan is a guide which shows the number of food choices to eat at each meal and snack using the **diabetic exchange lists**.

The **exchange lists** group foods together because they are alike. Foods on each list have about the same amount of carbohydrate, protein, fat and calories. In the amounts given, all choices on each list are equal. Any food on the list can be exchanged or traded for any other food on the list. The lists are grouped into three main groups: carbohydrate group; meat and meat substitute group; and fat group.

The carbohydrate group contains the starch, fruit, milk, other carbohydrates and vegetable lists. Grouping foods this way allows for more convenient exchange among these lists and more flexibility in choosing foods. The meat and meat substitute group contains very lean, lean, medium-fat, and high-fat meat and substitute lists. The fat group contains monounsaturated, polyunsaturated and saturated fat lists.

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Starch List

Each item on this list contains approximately 15 grams of carbohydrate, 3 grams of protein, a trace of fat and 80 calories. Whole grain products average about 2 grams of fiber per serving. As a general rule, 1/2 cup of cereal, grain or pasta and 1 ounce of a bread product equals one serving.

Dried Beans/Peas/Lentils

Beans and peas, cooked (such as kidney, white, split, blackeye)	1/2 cup
Lentils, cooked	1/2 cup
Lima beans	2/3 cup

Starchy Vegetables

Corn	1/2 cup
Corn on the cob, 6-inch	1
Peas, green	1/2 cup
Potato, baked or boiled	1 small (3 oz)
Potato, mashed	1/2 cup
Squash, winter (acorn or butternut)	1 cup
Yam, sweet potato, plain	1/2 cup
Baked beans	1/3 cup

Cereals/Grains/Pasta

Bran cereals	1/2 cup
Bulgur	1/2 cup
Cooked cereals	1/2 cup
Cornmeal, dry	3 tbsp
Grape-Nuts®	1/4 cup
Grits, cooked	1/2 cup
Cereals, ready-to-eat unsweetened	3/4 cup
Cereals, sugar-frosted	1/2 cup
Pasta, cooked	1/2 cup
Puffed cereal	1 1/2 cup
Rice, white or brown (cooked)	1/3 cup
Shredded wheat	1/2 cup
Wheat germ	3 tbsp

Bread

Bagel	1/2 (1 oz)
Bread, reduced-calorie	2 slices (1 1/2 oz)
Bread-white, wheat, rye	1 slice (1 oz)
Bread sticks, crisp	
4 inches long, 1/2 inch thick	2 (2/3 oz)
English muffin	1/2
Frankfurter or hamburger bun	1/2 (1 oz)
Pita, 6 inches across	1/2
Plain roll, small	1 (1 oz)
Raisin, unfrosted	1 slice (1 oz)
Tortilla, 6 inches across	1

Crackers/Snacks

Animal crackers	8
Graham crackers, 2 1/2 inches	3
Matzoth	3/4 oz
Melba toast	4 slices
Oyster crackers	24
Popcorn (popped, no fat added)	3 cups
Pretzels	3/4 oz
Rice Cakes, 4 inches across	2
Saltine-type crackers	6
Whole wheat crackers (no fat added)	2-5 (3/4 oz)

Starchy Foods Prepared With Fat

(Count as 1 starch/bread serving plus 1 fat serving)

Biscuit, 2 1/2 inches across	1
Chow mein noodles	1/2 cup
Corn bread, 2 inch cube	1 (2 oz)
Cracker, round butter type	6
Croutons	1 cup
French fried potatoes	16-25 (3 oz)
Granola	1/4 cup
Muffin, plain, small	1
Pancake, 4 inches across	2
Stuffing, bread (prepared)	1/3 cup
Taco shell, 6 inches across	2
Waffle, 4 1/2 inches square	1
Whole wheat crackers (fat added)	4-6 (1 oz)
Popcorn, microwave	3 cups
Sandwich crackers, cheese/peanut butter	3

Fruit List

Each item on this list contains about 15 grams of carbohydrate and 60 calories. Fresh, frozen and dry fruits have about 2 grams of fiber per serving. Fruit juices contain very little dietary fiber.

Use fresh fruits or fruits frozen or canned without added sugar. Unless stated otherwise, the serving size for one fruit exchange may include one of the following:

- 1/2 cup of fresh fruit or fruit juice
- 1/4 cup of dried fruit

Apple (raw, 2 inches across)	1 apple
Applesauce (unsweetened)	1/2 cup
Apricots (medium, raw)	4 apricots
Apricots (canned)	1/2 cup
Banana (small)	1 banana
Blackberries (raw)	3/4 cup
Blueberries (raw)	3/4 cup
Cantaloupe (5 inches across)	1/3 melon
(cubes)	1 cup
Cherries (large, raw)	12 cherries
Cherries (canned)	1/2 cup
Figs (raw)	1 1/2 large or 2 medium
Fruit cocktail (canned)	1/2 cup
Grapefruit (large)	1/2 fruit
Grapefruit, segments	3/4 cup
Grapes (small)	17 grapes
Honeydew (medium)	1 slice (10 oz)
(cubes)	1 cup
Kiwi (large)	1 fruit
Mandarin oranges	3/4 cup
Mango (small)	1/2 mango or 1/2 cup
Nectarine (small)	1 nectarine
Orange (small)	1 orange
Peach (medium)	1 peach 3/4 cup
Peaches (canned)	1/2 cup 2 halves
Pear	1/2 large
Pears (canned)	1/2 cup 2 halves

Pineapple (raw)	.3/4 cup
Pineapple (canned)	.1/2 cup
Plums (small)	.2 plums
Raspberries (raw)	.1 cup
Strawberries (raw, whole)	.1 1/4 cup
Tangerine (small)	.2 fruits
Watermelon, cubes	.1 1/4 cup

Dried Fruit

Apples	.4 rings
Apricots	.8 halves
Dates	.3 medium
Figs	.1 1/2
Prunes	.3 medium
Raisins	.2 tbsp

Fruit Juices

Apple juice/cider	.1/2 cup
Cranberry juice cocktail	.1/3 cup
Cranberry juice cocktail, reduced-calorie	.1 cup
Grapefruit juice	.1/2 cup
Grape juice	.1/3 cup
Orange juice	.1/2 cup
Pineapple juice	.1/2 cup
Prune juice	.1/3 cup
Fruit juice blends, 100% juice	.1/3 cup

Milk List

Each serving of milk or milk product on this list contains about 12 grams of carbohydrate and 8 grams

of protein. Calories vary depending on the amount of fat in the kind of milk you choose. The list is divided into skim/very lowfat milk, lowfat milk and whole milk.

Skim and Very Lowfat Milk

(One exchange contains 12 grams of carbohydrate, 8 grams of protein, 0-3 grams of fat and 90 calories.)

Skim milk	.1 cup
1/2% milk	.1 cup
1% milk	.1 cup
Nonfat or lowfat buttermilk	.1 cup
Evaporated skim milk	.1/2 cup
Dry nonfat milk	.1/3 cup
Plain nonfat yogurt	.3/4 cup
Nonfat or lowfat fruit-flavored yogurt with aspartame or non-nutritive sweetener	.1 cup

Lowfat Milk

(One exchange contains 12 grams of carbohydrate, 8 grams of protein, 5 grams of fat and 120 calories.)

2% milk	.1 cup
Plain lowfat yogurt	.3/4 cup

Whole Milk

(One exchange contains 12 grams of carbohydrate, 8 grams of protein, 8 grams of fat and 150 calories.)

Limit choices from the whole milk category as much as possible.

Whole milk	.1 cup
Evaporated whole milk	.1/2 cup
Goat's milk	.1 cup

Other Carbohydrate List

Foods in this list can be substituted for foods from the starch, fruit or milk lists. Some will also count as one or more fat exchanges.

Food	Serving size	Exchanges Per Serving
Angel food cake, unfrosted	.1/12 cake	.2 carbohydrates
Brownie, small, unfrosted	.2" square	.1 carbohydrate, 1 fat
Cake, unfrosted	.2" square	.1 carbohydrate, 1 fat
Cake, frosted	.2" square	.2 carbohydrates, 1 fat
Cookie	.2 small	.1 carbohydrate, 1 fat
Cookie, fat free	.2 small	.1 carbohydrate
Doughnut, plain cake	.1 medium	.1 1/2 carbohydrates, 2 fats
Doughnut, glazed	.1 (3 3/4" across)	.2 carbohydrates, 2 fats
Fruit spreads, 100% fruit	.1 tbsp	.2 carbohydrates
Gelatin, regular	.1/2 cup	.1 carbohydrate
Granola bar	.1 bar	.1 carbohydrate, 1 fat
Ice cream	.1/2 cup	.1 carbohydrate, 2 fats
Ice cream, light	.1/2 cup	.1 carbohydrate, 1 fat
Ice cream, fat-free, no sugar added	.1/2 cup	.1 carbohydrate
Pie, fruit, 2 crusts	.1/6 pie	.3 carbohydrates, 2 fats
Pie, pumpkin or custard	.1/8 pie	.1 carbohydrate, 2 fats
Pudding, regular, with lowfat milk	.1/2 cup	.2 carbohydrates
Pudding, sugar-free, lowfat milk	.1/2 cup	.1 carbohydrate
Snack chips	.1 oz	.1 carbohydrate, 2 fats
Sherbet, sorbet	.1/2 cup	.2 carbohydrates
Spaghetti sauce, canned	.1/2 cup	.1 carbohydrate, 1 fat
Sweet roll	.1 (2 1/2 oz)	.2 carbohydrates, 2 fats
Syrup, regular	.1 tbsp	.1 carbohydrate
Yogurt, frozen, lowfat, fat-free	.1/3 cup	.1 carbohydrate, 0-1 fat
Yogurt, lowfat with fruit	.1 cup	.3 carbohydrates, 0-1 fat

Vegetable List

Each vegetable on this list contains about 5 grams of carbohydrate, 2 grams of protein, 0 grams of fat and 25 calories. Vegetables contain 2-3 grams of dietary fiber. Unless stated otherwise, one vegetable exchange is as follows:

- 1/2 cup of cooked vegetable or vegetable juice
- 1 cup of raw vegetables

Artichoke
 Artichoke hearts
 Asparagus
 Beans (green, wax, Italian)
 Bean sprouts
 Beets
 Broccoli
 Brussels sprouts
 Cabbage
 Carrots
 Cauliflower
 Celery
 Cucumber
 Eggplant
 Greens (collard, kale, mustard, turnip)
 Green onions
 Kohlrabi
 Leeks
 Mixed vegetables (without corn, peas, or pasta)
 Mushrooms (cooked)
 Okra
 Onions
 Pea pods
 Peppers (all varieties)
 Radishes
 Salad greens
 Sauerkraut
 Spinach
 Summer squash
 Tomato
 Tomato sauce
 Tomato/vegetable juice
 Turnips
 Water chestnuts
 Watercress
 Zucchini

Meat and Meat Substitute List

Each serving of meat and substitute on this list contains about 7 grams of protein. The amount of fat and calories varies, depending on the choice. The list is divided into very lean meat, lean meat, medium-fat meat and high-fat meat. One meat exchange is as follows:

- 1 ounce of meat, poultry, fish or cheese
- 1/2 cup dried beans

Very Lean Meat and Substitutes List

(One exchange has 7 grams of protein, 0-1 grams fat and 35 calories and equals any one of the following items.)

Poultry: Chicken or turkey (white meat no skin),
 Cornish hen (no skin) 1 oz
 Fish: Fresh or frozen cod, flounder, haddock, halibut,
 trout; tuna, fresh or canned in water 1 oz
 Shellfish: Clams, crab, lobster, scallops,
 shrimp, imitation shellfish 1 oz
 Game: Duck or pheasant (no skin), venison,
 buffalo, ostrich 1 oz
 Cheese with 1 gram or less fat per ounce:
 Nonfat or low-fat cottage cheese 1/4 cup
 Fat-free cheese 1 oz
 Other: Processed sandwich meats with 1 gram or
 less fat per ounce, such as deli thin, shaved
 meats, chipped beef, turkey ham 1 oz
 Egg whites 2
 Egg substitutes, plain 1/4 cup
 Hot dogs with 1 gram or less fat
 per ounce 1 oz
 Kidney (high cholesterol) 1 oz
 Sausage with 1 gram or less fat
 per ounce 1 oz
 Count as one very lean meat and one starch exchange:
 Dried beans, peas, lentils (cooked) 1/2 cup

Lean Meat and Substitutes

(One exchange has 7 grams of protein, 3 grams of fat, 55 calories and equals any one of the following items.)

Beef: USDA Select or Choice grades
 of trimmed lean round, sirloin, and
 flank steak; tenderloin; and
 roast (rib, chuck, rump);
 steak (t-bone, porter house, cubed);
 ground round 1 oz
 Pork: Lean pork such as fresh ham;
 canned, cured, or boiled ham;
 Canadian bacon, tenderloin;
 center loin chop 1 oz
 Lamb: Roast, chop, leg 1 oz
 Veal: Lean chop, roast 1 oz
 Poultry: Chicken (white meat with skin),
 chicken (dark meat, no skin),
 turkey (dark meat, no skin),
 domestic duck or goose (well drained
 of fat, no skin) 1 oz
 Fish: Oysters6 medium
 Tuna (canned in oil, drained) 1 oz
 Herring 1 oz
 Salmon (fresh or canned), catfish 1 oz
 Sardines (canned) 2 medium
 Wild Game: Goose (without skin), rabbit 1 oz
 Cheese: Cottage cheese (4.5% fat) 1/4 cup
 Grated parmesan 2 tbsp
 Diet cheeses (3 grams fat or less) 1 oz
 Other: Hotdogs with 3 grams or less
 fat/ounce 1 1/2 oz
 luncheon meat with 3 grams or less
 fat/ounce 1 oz

Medium-Fat Meats

(One exchange has 7 grams of protein, 5 grams of fat, 75 calories and equals any one of the following items:

Beef: Most beef products fall into this category. Examples are ground beef, meatloaf, corned beef short ribs, prime grades of meat trimmed of fat such as prime rib	1 oz
Pork: Chops, top loin, Boston butt, cutlets	1 oz
Lamb: Rib, roast, ground	1 oz
Veal: Cutlet (unbreaded)	1 oz
Poultry: Chicken (dark meat with skin), ground turkey or ground chicken, fried chicken (with skin)	1 oz
Fish: Any fried fish product	1 oz
Cheese: With 5 grams of fat or less fat per ounce	
Ricotta	2 oz
Mozzarella	1 oz
Feta	1 oz
Other: Egg (limit to 3 per week)	1
Tofu (2 1/2 inches x 2 3/4 inches x 1 inch)	4 oz or 1/2 cup
Sausage with 5 grams or less fat/ounce	1 oz
Soy milk	1 cup

High-Fat Meats

(One exchange has 7 grams of protein, 8 grams of fat, 100 calories and is equal to any one of the following items.)

Pork: Spareribs, ground pork, sausage	1 oz
Cheese: All regular cheeses, such as American, Cheddar, Swiss, Monterey Jack	1 oz
Other: Luncheon meat with 8 grams or less fat per ounce, such as bologna, pimento loaf, salami	1 oz
Sausage, such as Polish, Italian	1 oz
Frankfurter (turkey or chicken)	1
Bacon	3 slices
Count as one high-fat meat exchange plus one fat exchange:	
Frankfurter (beef or pork)	1
Peanut butter	2 tbsp

Fats List

Fats are divided into monounsaturated, polyunsaturated, and saturated fats. Each serving on the fat list contains 5 grams of fat and 45 calories. Items on this list should be used sparingly.

Monounsaturated Fats

Avocado, medium	1/8 (1 oz)
Oil (canola, olive, peanut)	1 tsp
Olives: ripe (black)	8 large
green, stuffed	10 large

Nuts:

almonds, cashews	6 nuts
mixed (50% peanuts)	6 nuts
peanuts	10 nuts
pecans	4 halves
Peanut butter, smooth or crunchy	2 tsp
Sesame seeds	1 tbsp

Polyunsaturated Fats

Margarine, (stick, tub, squeeze)	1 tsp
Margarine, reduced-fat	1 tbsp
Mayonnaise, regular	1 tsp
Mayonnaise, reduced-fat	1 tbsp
Miracle Whip, regular	2 tsp
Miracle Whip, light	1 tbsp
Oil (corn, safflower, soybean)	1 tsp
Salad dressings, regular	1 tbsp
Salad dressings, reduced-fat	2 tbsp
Seeds, pumpkin or sunflower	1 tbsp

Saturated Fats

Butter, stick	1 tsp
whipped	2 tsp
Butter, reduced fat	1 tbsp
Bacon	1 slice
Chitterlings	1/2 oz
Coconut, shredded	2 tbsp
Cream, light or half and half	2 tbsp
Cream, sour, regular	2 tbsp
Cream, sour, reduced fat	3 tbsp
Cream, heavy, whipping	1 tbsp
Cream cheese, regular	1 tbsp
Cream cheese, reduced fat	2 tbsp
Salt pork	1/4 oz
Shortening or lard	1 tsp

Free Foods

A free food is any food or drink that contains less than 20 calories or less than 5 grams of carbohydrate per serving. Use as much as you want for those items that have no serving size specified. Items that have a specific serving size should be limited to 3 servings per day.

Fat-free or Reduced-fat Foods

Cream cheese, fat-free	1 tbsp
Creamers, nondairy, liquid	1 tbsp
Creamers, nondairy, powdered	2 tsp
Mayonnaise, fat-free	1 tbsp
Mayonnaise, reduced-fat	1 tsp
Margarine, fat-free	4 tbsp
Margarine, reduced-fat	1 tsp
Non-stick cooking spray,	
Salad dressing, mayonnaise-type, fat free	1 tbsp
Salad dressing, mayonnaise-type, reduced fat	1 tsp
Salad dressing, fat free	1 tbsp
Salad dressing, fat-free, Italian	2 tbsp
Salsa	1/4 cup
Sour cream, fat free	1 tbsp
Whipped topping	2 tbsp

Sugar-free or Low-sugar Foods

- Candy, hard, sugar-free1 candy
- Gelatin, sugar-free
- Gum, sugar-free
- Jam/jelly, sugar-free2 tsp
- Pancake syrup, sugar-free2 tbsp
- Sugar substitute

Drinks

- Bouillon or broth without fat
- Bouillon, low-sodium
- Carbonated drinks, sugar-free
- Club soda
- Cocoa powder, unsweetened1 tbsp

- Coffee/tea
- Drink mixes, sugar-free
- Tonic water, sugar-free

Condiments

- Catsup1 tbsp
- Horseradish
- Lemon or lime juice
- Mustard
- Pickles, unsweetened1 1/2 large
- Soy sauce
- Taco sauce1 tbsp
- Vinegar

Combination Foods

Many foods we eat are combinations of foods that do not fit into only one exchange list. This list gives average values for some typical combination foods and can help you fit these foods into your meal plan.

Food	Amount	Exchange
Casseroles, homemade	1 cup (8 oz)	2 carbohydrates, 2 medium-fat meats
Cheese pizza, thin crust	1/4 of 10"	2 carbohydrates, 2 medium-fat meats, 1 fat
Pizza, meat topping, thin crust	1/4 of 10"	2 carbohydrates, 2 medium-fat meats, 2 fat
Macaroni and cheese, beans	1 cup (8 oz)	2 carbohydrates, 2 medium-fat meats
Soups		
Bean	1 cup (8 oz)	1 carbohydrate, 1 very lean meat
Cream, made with water	1 cup (8 oz)	1 carbohydrate, 1 fat
Split pea made with water	1/2 cup (4 oz)	1 carbohydrate
Vegetable, beef, or chicken noodle	1 cup (8 oz)	1 carbohydrate

A diabetic's meal plan is flexible and can be adjusted for varying needs, likes and dislikes. Check with your dietitian regularly to review your meal plan and ask any questions you may have. Your county Extension agent - family and consumer sciences can also provide information on healthy eating.

Reference: *Exchange Lists for Meal Planning*, The American Diabetes Association and the American Dietetic Association, 1995.

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