

## Choose Your Foods: Exchange Lists for Diabetes: The 2008 Revision of Exchange Lists for Meal Planning

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Medical nutrition therapy (MNT) for diabetes has undergone many changes since 1550 BC when the Papyrus Ebers noted that “wheat grains, grits, grapes, and sweet beer” were the foods of choice for those who needed to “eliminate urine which is too plentiful,” the earliest known reference to diabetes mellitus.<sup>1</sup> *Exchange Lists for Meal Planning*, a well-known nutrition resource for individuals with diabetes since 1950,<sup>2</sup> has been designed as a diabetes nutrition education tool that places foods into groups that can be “exchanged” or traded within a group because of their similar nutrient content. *Exchange Lists for Meal Planning* has undergone revisions as advances in nutrition recommendations have occurred through the years.<sup>3–5</sup> In its most recent version, the 2008 *Exchange Lists for Meal Planning* has been given a new title,

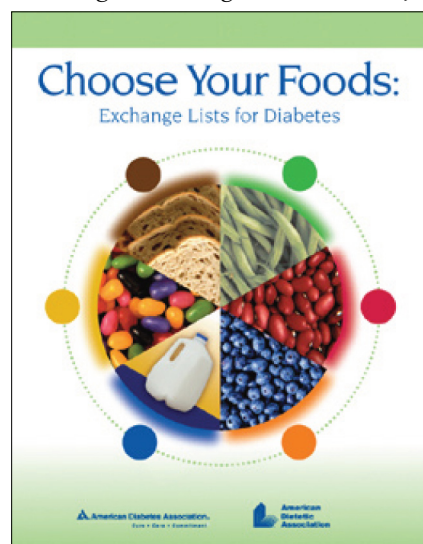


Figure 1. Cover of *Choose Your Foods: Exchange Lists for Diabetes*

*Choose Your Foods: Exchange Lists for Diabetes*,<sup>6</sup> and an updated look grounded in evidence-based nutrition recommendations for individuals with diabetes, as well as changes in the food marketplace and the eating patterns of Americans (Figure 1).

### Goals of MNT for Diabetes

MNT is an integral part of diabetes prevention and management and is best provided by a registered dietitian. Clinical trials and outcome studies of MNT have reported decreases in A1C of ~1% in type 1 diabetes and 1–2% in type 2 diabetes, depending on the duration of diabetes.<sup>7,8</sup> The American Diabetes Association (ADA) has updated its nutrition recommendations,<sup>9</sup> and the American Dietetic Association recently updated and expanded the Evidence Analysis Library ([www.adaevidencelibrary.com](http://www.adaevidencelibrary.com)) recommendations for type 1 and type 2 diabetes.<sup>10</sup>

The goals of MNT for individuals at risk for diabetes or who have prediabetes are to decrease the risk of diabetes and cardiovascular disease (CVD) by promoting healthy food choices and physical activity leading to moderate weight loss that is maintained. The goals of MNT for the treatment of individuals with diabetes are to achieve and maintain blood glucose levels in the normal range or as close to normal as is safely possible; achieve a lipid and lipoprotein profile that reduces the risk for vascular disease; and maintain blood pressure levels in the normal range or as close to normal as is safely possible. Additional MNT goals for diabetes treatment are to prevent, or at least slow, the rate of development

of the chronic complications of diabetes by modifying nutrient intake and lifestyle; to address individual nutrition needs, taking into account personal and cultural preferences and willingness to change; and to maintain the pleasure of eating by only limiting food choices when indicated by scientific evidence.<sup>9</sup>

*Choose Your Foods: Exchange Lists for Diabetes* has been designed to assist in translating evidence-based nutrition recommendations into food choices that promote the pleasure of eating healthfully. Key diabetes nutrition recommendations include adjusting insulin doses to match carbohydrate intake, maintaining consistency in carbohydrate intake, managing weight, increasing fiber to meet the Adequate Intake (14 g/1,000 kcal) recommended by the Dietary Reference Intakes (DRIs),<sup>11</sup> limiting saturated fats to < 7% of total calories, minimizing *trans* fat, lowering cholesterol to < 200 mg/day, and reducing sodium intake to < 2,300 mg/day. In terms of food choices, increased use of fruits, vegetables, whole grains, legumes, low-fat dairy products, lean meats, and unsaturated fats is suggested.

### *Choose Your Foods: The Revision Process*

The process for the fifth revision of the *Exchange Lists for Meal Planning* began when, under the direction of Madelyn Wheeler, MS, RD, FADA, CDE, and with the support of the ADA and the American Dietetic Association, the revision writing team was assembled. After a thorough review of the evidence base and recent updates to diabetes nutrition recommendations, the

Table 1. Resources

- The complete nutrient dataset may be accessed by going to the American Dietetic Association website, Food and Nutrition Information section ([www.eatright.org/knowledgecenter](http://www.eatright.org/knowledgecenter)) and then choosing Food Nutrient Data, under “Consumer Resources.” Accessed 28 June 2008
- *Choose Your Foods* purchasing information:
  - American Dietetic Association ([www.eatright.org](http://www.eatright.org))
  - American Diabetes Association ([www.diabetes.org](http://www.diabetes.org))
    - English and Spanish versions available
    - 25-pack: \$73.00 (nonmember), \$56.00 (member)
    - Single copy: \$3.25 (nonmember), \$2.49 (member)

team began its work by sending an online survey to 14,000 interested stakeholders from the ADA, the American Dietetic Association, and the American Association of Diabetes Educators. Results of the survey, which had a response rate of 22%, indicated that because the philosophy of food grouping is basic to diabetes nutrition education, the term “exchanges” should be retained. However, an updated tool should be developed that would have more emphasis on cultural diversity, offer a layout that is more consumer-friendly, and include more foods available in the current marketplace.

#### **Choose Your Foods: Highlights of the 2008 Edition**

The decision was made to change the title of the meal planning tool to *Choose Your Foods* to emphasize the self-management aspect of diabetes MNT. The subtitle *Exchange Lists for Diabetes* was added to inform health professionals and people with diabetes that the new teaching tool is a revision rather than an entirely new concept.

One of the most obvious changes in the 2008 revision is its emphasis on consumer-friendly language, helpful tips and tables, colorful food visuals, and an improved glossary and alphabetical index. The booklet is written for a reading level of 6th grade or less. The food list groupings are similar in macronutrients and calories per serving size and have also undergone extensive revision.

**Starch.** The “Starch + Fat” category has been deleted from the Starch list. Instead, foods from this category have been repositioned into the other Starch lists and marked with a label indicating “Extra fat or prepared with added fat.” For example, potato chips are found in

the Crackers and Snacks section, marked with a symbol indicating that 9–13 chips should be counted as 1 starch + 1 fat.

**Fruits.** Dried fruits, such as blueberries, cherries, cranberries, and mixed fruit, have been added, with 2 tablespoons counted as one fruit choice.

**Milk.** A new category has been added to the Milk list: “Dairy-Like Foods.” In this category, serving size information is given for foods such as rice drinks, smoothies, and soy milk. The yogurt listings have been expanded to include those with fruit and low-carbohydrate yogurt choices.

**Sweets, Desserts, and Other Carbohydrates.** This list has been greatly expanded to include foods more commonly eaten by consumers today, such as energy/sports drinks, meal replacements/shakes, and frozen yogurt.

**Nonstarchy Vegetables.** A wider variety of ethnic favorites, including amaranth, bok choy, chayote, and oriental radish or daikon, are now included in this list. In addition, salad greens (chicory, endive, escarole, lettuce, romaine, spinach, arugula, radicchio, and watercress) have been moved from this list to the Free Foods list.

**Meat and Meat Substitutes.** Revisions to this list include integrating Very Lean Meats into the Lean Meat List, as well as adding a new category: “Plant-Based Proteins,” in which beans, soy-based foods, nut spreads, and tofu are found.

**Fats.** Tips are given for reducing saturated and *trans* fats, as well as increasing unsaturated fats and omega-3 fatty acids. Bacon (1 slice) and peanut butter (1½ teaspoons) in small amounts are counted as fat choices; in larger amounts (bacon, 2

slices; peanut butter, 1 tablespoon), they are counted as high-fat meats.

**Free Foods.** The fat-free category in this list is now called “Modified-Fat Foods with Carbohydrate” to remind consumers that fat-free foods, such as salad dressings, can contain a considerable amount of carbohydrate per serving.

The **Combination Foods** and **Fast Food** lists have been subdivided for ease of use and contain more extensive listings to reflect current consumer eating trends.

An **Alcohol** list has been added to provide adults who choose to drink alcohol with information about calories and carbohydrates. Choices are listed as alcohol equivalents, which contain ~ 100 calories each.

*Choose Your Foods: Exchange Lists for Diabetes* contains information on > 700 foods, with appropriate serving sizes and nutrients referenced against the U.S. Department of Agriculture’s Nutrient Database for Standard Reference.<sup>12</sup> The complete nutrient dataset may be accessed by going to the American Dietetic Association website, [www.eatright.org](http://www.eatright.org) (Table 1).

#### **Choose Your Foods: From Revision to Practice**

*Choose Your Foods: Exchange Lists for Diabetes* is a consumer-friendly tool designed to be used with the guidance of a registered dietitian. It can be used in all phases of the nutrition care process: assessment, diagnosis, intervention, and evaluation/monitoring.<sup>13</sup> The booklet contains a “Your Meal Plan” page for use in individualized meal planning or for assessing food intake, as well as a simple meal-planning template table. When working with individuals with diabetes, professionals should keep the following

guidelines in mind:

- A wide variety of foods, including carbohydrate from fruits, vegetables, whole grains, legumes, and low-fat dairy products, should be encouraged for good health.
- Because each food list is based on a range of individual food values, estimates of energy in calculated meal plans should be rounded off, for example, to the nearest 50–100 calories.
- Percentages of macronutrients in the meal plan should be based on metabolic goals and the ability, need, and willingness of clients to make lifestyle changes. Although there is no specific recommendation for macronutrient percentages for the diabetes meal plan, the Dietary Reference Intakes' Acceptable Macronutrient Distribution Range of 45–65% of calories from carbohydrate is a reasonable starting point. Protein can provide 15–20% of total daily energy, and fat can provide the remainder.
- Focus on the carbohydrate choices in the meal plan. Foods in the Starch, Fruit, and Milk lists each contain a similar amount of carbohydrate (~15 grams) and calories (~80 calories) per serving and can be interchanged or "exchanged." Encourage frequent monitoring of blood glucose to aid in determining the optimal amount of carbohydrate needed to keep blood glucose levels within the target range.
- Dietary fiber and sugar alcohols are incompletely digested, absorbed, and metabolized.<sup>14</sup> Therefore, if the amount of either is > 5 grams per serving, subtract half the grams of fiber or sugar alcohol from the total carbohydrate grams to determine the total adjusted carbohydrate grams. This calculation may be particularly relevant in determining the insulin-to-carbohydrate ratio for patients using multiple daily insulin injections or an insulin pump.

### Summary

The 2008 *Exchange Lists for Meal Planning* has been given a new title, *Choose Your Foods: Exchange Lists for Diabetes*, and an updated look grounded in evidence-based nutrition recommendations, input from stakeholders, and the current food marketplace. It retains the validated system of dividing food into groups of similar nutrient content and features more foods, practical tips, and helpful information designed to make it easier for individuals with diabetes to enjoy the pleasure of eating healthfully.

### Acknowledgments

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Special recognition goes to Ms. Wheeler, the "guardian angel" of this project, as well as the nutrient data files on which *Choose Your Foods* is based. Her dedicated efforts enable individuals with diabetes to enjoy eating in good health every day.

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