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REPORT OF THE DIETARY GUIDELINES ADVISORY COMMITTEE ON THE DIETARY GUIDELINES FOR AMERICANS, 1995

To the Secretary of Health and Human Services and
the Secretary of Agriculture

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LETTER TO THE SECRETARIES

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Office of the Assistant Secretary for Health
Washington DC 20201

June 16, 1995

The Honorable Donna Shalala
Secretary of Health and
Human Services
Washington, D.C. 20201

The Honorable Daniel Glickman
Secretary of Agriculture
Washington, D. C.
20250

Dear Madam Secretary and Mr. Secretary:

I am pleased to submit the "Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 1995." The Committee was charged with reviewing the 1990 edition of NUTRITION AND YOUR HEALTH: DIETARY GUIDELINES FOR AMERICANS and determining if, on the basis of current scientific and medical knowledge, revisions are warranted. This report concludes the duties of the Committee.

The members of the Committee are pleased to have been invited to review the Government's key policy document on nutrition and commend the predecessors on the quality of the Third Edition of the DIETARY GUIDELINES. The 1990 Guidelines contain messages that remain sound and of key importance for choosing healthful diets. Revisions to the Guidelines are, however, suggested by the present Committee to reflect new scientific evidence, increased consensus among health authorities on certain diet and health issues, and public response to the current edition. The changes and their rationale form the basis for this report.

The Committee recommends that the two Departments publish and widely distribute the Fourth Edition of the DIETARY GUIDELINES, using the proposed text submitted herein. The Committee applauds the efforts of the Departments to conduct consumer testing prior to release of the DIETARY GUIDELINES and hopes suggestions and concerns will be addressed before the bulletin is published. The Committee also highly recommends the development of supplemental materials based on the DIETARY GUIDELINES that target specific populations.

If, during the course of Departmental review, changes are made to the suggested wording of the bulletin, the Committee would appreciate the opportunity to comment on these revisions.

Finally, the Committee notes that the Food and Agriculture Organization of the United Nations and the World Health Organization have mandated that each country develop Food-Based Dietary Guidelines. This effort was the subject of an international FAO/WHO consultation in Nicosia, Cyprus in March, 1995. Two members of this Advisory Committee, Drs. Barbara Schneeman and Irwin Rosenberg, participated in the Cyprus conference. The promulgation of Food-Based Dietary Guidelines is a major element of national commitments made at the United Nations-sponsored International

Nutrition Conference in Rome in December, 1992. This Committee considers the 1995 DIETARY GUIDELINES FOR AMERICANS, as recommended in his report, to be fully responsive to this international mandate. The GUIDELINES represent an integral component of our long-standing national commitment to improve nutrition and health consistent with the terms of the International Conference on Nutrition.

Sincerely,

Doris Howes Calloway, Ph.D.
Chair
Dietary Guidelines Advisory Committee

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EXECUTIVE SUMMARY

The Dietary Guidelines Advisory Committee was established jointly by the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA). The committee's assignment was to advise the Secretaries of HHS and USDA whether revisions in the 1990 edition of NUTRITION AND YOUR HEALTH: DIETARY GUIDELINES were warranted and, if so, to recommend revisions of the GUIDELINES to the Secretaries.

The committee commends the excellence of earlier editions of the bulletin and the efforts of their originators. It recognizes that the existing DIETARY GUIDELINES are well established as Federal nutrition policy and serve as the central dietary guidance message for healthy Americans. The committee is also aware of the importance of stability and consistency in messages designed to educate the public about nutrition and health.

The Dietary Guidelines Advisory Committee believes that some revision of the third edition is warranted. Since the third edition was issued in 1990, scientists have generated additional research on associations between diet and health. Prior to the publication of the third edition, major reviews of the scientific evidence were conducted by the Public Health Service, the National Research Council, and other scientific groups. More recently, the World Health Organization has reviewed this evidence, and the Public Health Service will soon release a

review of dietary fat and health. These reports will reinforce various sections of the DIETARY GUIDELINES.

The committee concluded that the messages in the seven guidelines, as presented on the cover of the third edition, remain sound and of major importance in choosing food for a healthful diet. Some changes to the guidelines are proposed. The changes and the reasons for the changes are shown in table 1.

The committeeÕs proposed text for a fourth edition is presented in this report (pages 5-19), and a discussion of the changes appears on pages 20-35. As in the past, the guidelines in the fourth edition are directed to Americans 2 years of age and older.

Finally, the committee would like to direct the attention of the two Departments' Secretaries to additional recommendations on the use, implementation, and future development of the Dietary Guidelines. These can be found on pages 36-37 of this report.

CHARGE TO THE COMMITTEE

Public Law 101-445, Section 3, directs the Secretary of Health and Human Services and the Secretary of Agriculture to jointly issue at least every 5 years a report entitled DIETARY GUIDELINES for Americans. The law instructs that this publication shall contain nutritional and dietary information and guidelines for the general public, shall be based on the preponderance of scientific and medical knowledge current at the time of publication, and shall be promoted by each Federal agency in carrying out any Federal food, nutrition, or health program. The 1980, 1985, and 1990 editions were issued voluntarily by HHS and USDA. In contrast, the 1995 edition will be the first of these reports mandated by statute.

The Secretaries of HHS and USDA jointly appointed the Dietary Guidelines Advisory Committee to review the 1990 edition of the DIETARY GUIDELINES and to determine if, on the basis of current scientific and medical knowledge, revisions were warranted. If so, the committee was to develop recommendations for revisions in a report to the Secretaries that would contain proposed text for the bulletin's fourth edition and rationale for suggested modifications to the third edition. Authority for the committee is provided by 42 U.S. Code 217a, Section 222, of the Public Health Service Act, as amended. The committee is also governed by the provision of Public Law 92-463, as amended (5 U.S. Code, Appendix 2), which sets forth standards for the formation and use of advisory committees.

The two Departments identified major resources for the review. Agency staff searched Medline and AGRICOLA databases for literature related to each guideline and supplied results to the committee. Selection criteria for this literature mainly included original research or review articles, reports of current research findings from studies conducted with human subjects, research conducted in the United States, research published in peer-reviewed journals, and comprehensive reports.

The committee served without pay under the regulations for Federal advisory committees. Its meetings, announced in the Federal Register, were open to the public and held in accordance with the Federal Advisory Committee Act. The public was encouraged to provide written comments to the committee through the four executive secretaries - two from HHS and two from USDA. Oral comments were solicited during the second meeting of the committee.

The mandate to the committee is to advise the Secretaries of HHS and USDA; thus, the two Departments reserve the right to review and amend the text recommended by the committee prior to publication.

The Dietary Guidelines Advisory Committee recognizes that providing complete and detailed information to interpret the Guidelines for special audiences and to help these audiences implement the guidelines is beyond the scope of this single short bulletin. The committee recommends that supplemental materials be issued by both Departments to focus on specific target groups and that these publications make every effort to be consistent with related Federal dietary guidance materials, such as the FOOD GUIDE PYRAMID and the Nutrition Facts Label.

COMMITTEE ACTIVITIES

The committee held three meetings - on September 22-23, 1994; January 11-13, 1995; and March 29-31, 1995, respectively. The first and third meetings were held in Washington, DC, and the second in San Francisco. One telephone conference call was held in preparation for the third meeting. All meetings were open to the public and recorded in full.

The first meeting included a presentation on the historical overview and chronology of the DIETARY GUIDELINES. The Departments reviewed the criteria that were used in the past to develop the Guidelines, summarized uses of the Guidelines by USDA, and reviewed the charge to the committee. The remainder of the meeting was devoted to presentations and discussions by members on each of the guidelines and related topics. The presentations addressed changes in the science base since the 1990 Guidelines were released, identified key issues for review, and made preliminary recommendations for changes. No attempt was made to reach consensus at the first meeting. The committee members in attendance agreed to undertake revision of the 1990 DIETARY GUIDELINES, discussed plans for future activities related to the Guidelines, and formed working groups to draft each guideline.

At the second meeting, 23 professional associations, health organizations, industry representatives, and interested citizens presented comments at a public hearing and then responded to comments and questions from the committee. The committee discussed the first version of each draft guideline in light of current literature, expert testimony, public comments, and committee comments. Part of the meeting was devoted to a review

and discussion of guidelines redrafted by working groups. The meeting concluded with a discussion of the introductory section and issues related to the format of the DIETARY GUIDELINES. At the third meeting, the committee reviewed and edited several drafts of each guideline and discussed issues related to the report to the Secretaries. Graphic design staff from HHS and USDA presented potential layouts for the bulletin.

COMMITTEE RECOMMENDATIONS

In response to its charge, the committee recommends the text for the bulletin, DIETARY GUIDELINES FOR AMERICANS, fourth edition, presented in this section. The committee offers additional suggestions concerning use and implementation of the guidelines and the process for development of future editions in a subsequent section (page 36).

Recommended Content of the Fourth Edition

The text for the fourth edition, presented on pages 5-19, is intended to serve as the primary dietary guidance message for the diverse American population. As in previous editions, the text offers advice, together with an exposition of the health associations that give the advice its importance. Because the Guidelines are directed to readers with different levels of scientific sophistication, the messages need to be clear and unambiguous. To this end, the proposed text makes limited use of the qualifying words and phrases - the probably's, whereas's, could's and might's - that fairly characterize the evolving science. The committee judges that the Guidelines accurately reflect current knowledge and that the advice is scientifically sound as well as prudent and practical.

After considering new scientific findings and experience with implementation accumulated since 1990, the committee concluded that while much of the third edition remains valid, changes in format and text are warranted. The changes are described and discussed on pages 20-35.

DIETARY GUIDELINES FOR AMERICANS

What should Americans eat to stay healthy?

These GUIDELINES are designed to help answer this question. They provide advice for healthy Americans ages 2 years and over about food choices that promote health and prevent disease. To meet the DIETARY GUIDELINES, choose a diet with most of the calories from grains, vegetables, and fruits, low-fat dairy products, lean meats, fish, and poultry. Choose fewer calories from fats and sweets.

Eating is one of life's greatest pleasures

Food choices depend on history, culture, and environment, as well as on energy and nutrient needs. People also eat foods for enjoyment. Family, friends, and beliefs play a major role in the ways people select foods and plan meals. This booklet describes some of the many different and pleasurable ways to combine foods to make healthful diets.

Diet is important to health at all stages of life

Many genetic, environmental, behavioral, and cultural factors can affect health. Understanding family history of disease or risk factors - body weight and fat distribution, blood pressure, and blood cholesterol, for example - can help people make more informed decisions about actions to improve health. Food choices are among the most pleasurable and effective of these actions.

Healthful diets help children grow, develop, and do well in school. They enable young and older adults to work productively and feel their best. Food choices also can help to prevent chronic diseases, such as heart disease, certain cancers, diabetes, stroke, and osteoporosis, that are leading causes of death and disability among Americans. Good diets can reduce major risk factors for chronic diseases - factors such as obesity, high blood pressure, and high blood cholesterol.

Foods contain energy, nutrients, and other components that affect health

People require energy and certain other essential nutrients. These nutrients are essential because the body cannot make them and must obtain them from food. Essential nutrients include vitamins, minerals, certain amino acids, and certain fatty acids. Foods also contain fiber and other components that are important for health. Although each of these food components has a specific function in the body, all of them together are required for overall health. People need calcium to make bones, for example, but many other nutrients also take part in building and maintaining bones.

The carbohydrates, fats, and proteins in food supply energy, which is measured in calories. Carbohydrates and proteins provide 4 calories per gram. Fat contributes more than twice as much - 9 calories per gram. Alcohol is also high in energy and supplies 7 calories per gram. Foods that are high in fat are also high in calories.

Physical activity fosters a healthful diet

Energy needs vary by age. Older adults, for example, need less food than younger and more active individuals. People who are inactive or trying to lose weight may eat little food and have difficulty meeting their nutrient needs in a satisfying diet. Nearly all Americans need to be more active, because a sedentary lifestyle is unhealthy. Increasing the energy spent in daily activities helps to maintain health and allows people to eat a nutritious and enjoyable diet.

What is a healthful diet?

Healthful diets contain the amounts of essential nutrients and energy needed to prevent nutritional deficiencies and excesses. Healthful diets also provide the right balance of carbohydrate, fat, and protein to reduce risks for chronic diseases, and they are obtained from a variety of foods that are available, affordable, and enjoyable.

The Recommended Dietary Allowances refer to nutrients

Recommended Dietary Allowances (RDA's) are the amounts of nutrients that will prevent deficiencies and excesses in most healthy people. Although some people with average nutrient requirements may eat adequately at levels below the RDA, diets that meet RDA's are almost certain to ensure intake of enough essential nutrients. The DIETARY GUIDELINES describe food choices that will help you meet these recommendations. Like the RDA's, the Guidelines apply to diets consumed over several days and not to single meals or foods.

The DIETARY GUIDELINES describe food choices that promote good health

The DIETARY GUIDELINES are designed to help Americans choose diets that will meet nutrient requirements, promote health, support active lives, and reduce chronic disease risks. Research has shown that certain diets raise risks for chronic diseases. Such diets are high in fat, saturated fat, cholesterol, and salt. They are low in vegetables, fruit, and fiber, and they contain more energy than the body uses. The Guidelines help you choose foods, meals, and diets that will reduce those risks.
Food labels help you make food choices

The Nutrition Facts Label is designed to help you select foods that will meet the DIETARY GUIDELINES. Most processed foods now carry nutrition information. However, foods like coffee and tea (which contain no significant amounts of nutrients), ready-to-eat foods like deli and bakery items, and restaurant food are not required to carry nutrition labels. Labels are also voluntary for many raw foods, but grocers can supply this information for the raw fruits, vegetables, fish, meat, and poultry that are consumed most frequently. Use the new food label to choose healthful foods each day.

Eat a Variety of Foods

To obtain the nutrients and other substances needed for good health, vary the foods you eat

Foods contain combinations of nutrients and other healthful substances. No single food can supply all nutrients in the amounts you need. For example, oranges provide vitamin C but no vitamin B12. Cheese provides vitamin B12 but no vitamin C. To make sure you eat all of the nutrients and other substances needed for health, choose the recommended number of daily servings from each of five different food groups displayed in the

Food Guide Pyramid (figure 1).

Use foods from the base of the Food Guide Pyramid
as the foundation of your meals

Americans do choose a wide variety of foods. However, people often choose higher or lower amounts from some food groups than recommended in the Food Guide Pyramid. The pyramid shows that foods from the grain group, along with vegetables and fruits, are the basis of healthful diets. Enjoy meals that have rice, pasta, potatoes, or bread at the center of the plate, accompanied by vegetables and fruit, and lean and low-fat foods from the other groups. Limit fats and sugars added in food preparation. Compare the recommended servings in box 1 with what you usually eat.

Box 1. Choose Foods From Each of Five Food Groups

The Food Guide Pyramid shows the recommended balance among food groups in a daily eating pattern. Most of the daily servings of food should be selected from the food groups that are the largest in the picture and closest to the base of the pyramid.

- Choose most of your calories from foods in the grain group (6-11 servings), the vegetable group (3-5 servings), and the fruit group (2-4 servings).
- Eat moderate amounts of foods from the dairy group (2-3 servings) and the meat and beans group (2-3 servings).
- Choose fewer foods high in fat and sugars (consume sparingly).

Note: A range of servings is given for each food group. The smaller number is for people who consume about 1,600 calories a day. The larger number is for those who consume about 2,800 calories a day

What counts as a serving?

See box 2 for suggested serving sizes in the Food Guide Pyramid food groups. Notice that some of the serving sizes are smaller than what you might usually eat. For example, many people eat a cup or more of pasta in a meal, which is equal to two or more servings. So, it is easy to eat the number of servings recommended.

Box 2 What Counts as a Serving?*

Bread, Cereal, Rice, and Pasta
- 1 slice of bread
- 1 ounce of ready-to-eat cereal
- 1/2 cup of cooked cereal, rice, and pasta

Vegetables

- 1 cup of raw leafy vegetables
- 1/2 cup of other vegetables - cooked or chopped raw
- 3/4 cup of vegetable juice

Fruit
- 1 medium apple, banana, orange
- 1/2 cup of chopped, cooked, or canned fruit
- 3/4 cup of fruit juice

Milk, Yogurt, and Cheese
- 1 cup of milk or yogurt
- 1-1/2 ounces of natural cheese
- 2 ounces of process cheese

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts
- 2-3 ounces of cooked lean meat, poultry, or fish
- 1/2 cup of cooked dry beans, 1 egg, or 2 tablespoons of peanut butter count as 1 ounce of lean meat.

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*Some foods fit into more than one category. Starchy vegetables such as potatoes, corn, sweet potatoes, and taro(poi), can be counted as servings in the grain products group instead of as vegetables. Dry beans, peas, and lentils are in the meat group but can be counted as servings of vegetables instead. These crossover foods can be counted as servings from either one or the other group, but not both.

Choose different foods within each food group

You can achieve a healthful, nutritious eating pattern with many combinations of foods from the five food groups. Choosing a variety of foods within and across food groups improves dietary patterns because foods within the same group have different combinations of nutrients and other beneficial substances. For example, some vegetables and fruits are good sources of vitamin C or vitamin A, while others are high in folate (see page 13); still others are good sources of calcium or iron. Choosing a variety of foods within each group also helps to make your meals more interesting from day to day.

What about vegetarian diets?

Some Americans eat vegetarian diets for reasons of culture, belief, or health. Most vegetarians eat dairy products and eggs and, as a group, these lacto-ovo-vegetarians enjoy excellent health. Vegetarian diets are consistent with the Dietary Guidelines and can meet Recommended Dietary Allowances for nutrients. Protein is not limiting in vegetarian diets as long as the variety and amounts of foods consumed are adequate. Meat, fish, and poultry are major contributors of iron, zinc, and B vitamins in most American diets, and vegetarians should pay special attention to these nutrients.

Vegans eat only food of plant origin. Because animal products

are the only food sources of vitamin B12, vegans must supplement their diets with a source of this vitamin. In addition, vegan diets, particularly those of children, require care to assure adequacy of vitamin D and calcium, which most Americans obtain from dairy products.

Foods vary in their amounts of calories and nutrients
Some foods such as grains, vegetables, and fruits have many nutrients and other healthful substances but are relatively low in calories. Fat and alcohol are high in calories. Foods high in both sugars and fat contain calories but often are low in vitamins, minerals, or fiber.

People who do not need many calories or who must restrict their food intake, need to choose nutrient-rich foods from the five major food groups with special care. They should obtain most of their calories from foods that contain a high proportion of essential nutrients.

Growing children, teenage girls, and women
have higher needs for some nutrients

Many women and adolescent girls need to eat more calcium-rich foods to get the calcium needed for healthy bones throughout life. By selecting low-fat or fat-free dairy items and other low-fat calcium sources, they can obtain adequate calcium and keep fat intake from being too high (box 3). Young children, teenage girls, and women of childbearing age should also eat enough iron-rich foods, such as lean meats and whole-grain or enriched white bread to keep the body's iron stores at adequate levels (box 4).

Box 3. Some Good Sources of Calcium*

- Most foods in the dairy group (see dairy group note below)
  - -milk and dishes made with milk, such as potato soup, puddings
  - -cheeses like mozzarella, cheddar, swiss, and Parmesan
  - -yogurt.
- Canned fish with soft bones such as sardines, anchovies, and salmon or the tips of chicken leg bones
- Leafy greens of the cabbage family, such as kale, mustard greens, and turnip tops, and pak choi.
- Tofu, if processed with calcium sulfate. Read the labels.
- Tortillas made from lime-processed corn. Read the labels.

* Table does not include complete list of examples. You can obtain additional information from 'Good Sources of Nutrients,' USDA, January 1990.
Note about dairy group - Some foods in this group are high in fat or cholesterol or both. Choose lower fat and cholesterol foods most often.

Box 4. Some Good Sources of Iron*

- Meats - beef, pork, and lamb and especially liver and other organ meats
- Poultry - chicken, duck, and turkey, especially liver and dark meat
- Fish - shellfish, like clams, mussels, and oysters; sardines; anchovies; and other fish
- Leafy greens of the cabbage family, such as broccoli, kale, turnip greens, collards; lima beans, green peas; dry beans and peas, such as pinto beans, black-eyed peas, and canned baked beans
- Yeast-leavened whole wheat bread and rolls
- Iron-enriched white bread, pasta, rice, and cereals. Read the labels.

* Table does not include complete list of examples. You can obtain additional information from 'Good Sources of Nutrients,' USDA, January 1990.
Note about meat, pultry and fish: Some foods in these categories are high in fat or cholesterol or both. Choose lean, lower fat and lower cholesterol foods most often.

Enriched and fortified foods have essential nutrients added to them

National policy requires that specified amounts of nutrients be added to enrich some foods. For example, enriched flour and bread contain added thiamin, riboflavin, niacin, and iron; skim milk, low-fat milk, and margarine are usually enriched with vitamin A; and milk is usually enriched with vitamin D. Fortified foods may have one or several nutrients added in extra amounts. The number and quantity of nutrients added vary among products. Fortified foods may be useful for meeting special dietary needs. Read product labels to know which nutrients are added to foods and in what amounts (figure 2). How these foods fit into your total diet will depend on the amounts you eat and the other foods you consume.

Where do vitamin, mineral, and fiber supplements fit in?

Supplements of vitamins, minerals or fiber also may help to meet special nutritional needs. However, supplements do not supply all of the nutrients and other substances present in foods that are important to health. Supplements of some nutrients taken regularly in large amounts are harmful. Daily vitamin and mineral supplements at or below the Recommended Dietary Allowances are considered safe but are rarely needed by people who eat a variety of foods as recommended in the Food Guide Pyramid.

Sometimes supplements are needed to meet specific nutrient requirements. For example, older people and others with little

exposure to sunlight may need a vitamin D supplement. Women of childbearing age may reduce the risk of certain birth defects by consuming folate-rich foods or folic acid supplements. Iron supplements are recommended for pregnant women. However, because foods contain many nutrient and other substances that promote health, the use of supplements cannot substitute for proper food choices.

Advice for today

Enjoy eating a variety of foods. Get the many nutrients your body needs by choosing among the varied foods you enjoy from five groups: grain products, vegetables, fruits, milk and milk products, and other protein-rich plant and animal foods (meat, poultry, fish, eggs, beans, and nuts). Many foods you eat contain servings from more than one food group. For example, soups and stews may contain meat, beans, noodles, and vegetables.

figure 2.*[Graphic showing food label]

Balance the Food You Eat With Physical Activity. Maintain or Improve Your Weight.

Many Americans are overweight and gain weight as they grow older. Both overweight and adult weight gain are linked to high blood pressure, heart disease, stroke, diabetes, certain types of cancer, arthritis, breathing problems, and other illness. Therefore, most adults should not gain weight. If you are overweight and have one of these problems, you should try to lose weight. If you are uncertain about your risk of developing a problem associated with overweight, you should consult a health professional.

How to maintain your weight

In order to stay at the same body weight, people must balance the amount of energy in food with the amount of energy the body uses. Physical activity is an important way to use up food energy. Most Americans spend much of their working day in activities that require little energy. In addition, many Americans of all ages now spend a lot of leisure time each day being inactive, for example, watching television. To use up dietary energy, spend less time doing sedentary activities like sitting. Spend more time doing activities like walking to the store or around the block. Climb stairs rather than using elevators. Less sedentary activity and more vigorous activity may help you reduce body fat and disease risk. Try to do 30 minutes or more of moderate physical activity on most - preferably all - days of the week (see box 6, page 12).

The kinds and amounts of food people eat affect their ability to maintain weight. High-fat foods contain more calories per serving than other foods and may increase the likelihood of weight gain. However, even when people eat less high-fat food, they still can gain weight from eating too much of foods high in starch, sugar, or protein. Eat a variety of foods. Fruits, vegetables, pasta, rice, bread, and other whole-grain foods are filling but are lower in calories than foods rich in fats or

oils.

The pattern of eating may also be important. Snacks provide a large percentage of daily calories for many Americans. Unless nutritious snacks are part of the daily meal plan, snacking may lead to weight gain. A pattern of binge eating and fasting may also contribute to weight problems.
Maintaining weight is equally important for older people who begin to lose weight as they age. Some of that weight is muscle. Maintaining muscle through regular activity helps to keep older people feeling well and helps to reduce the risk of falls and fractures.

How to evaluate your body weight

The chart to the right lists healthy weight ranges for adults. See where your weight falls on the chart for people of your height. The chart applies to men and women of all ages. The health risks due to excess weight appear to be the same for older adults as for younger adults. Weight ranges are given in the chart because people of the same height may have equal amounts of body fat but different amounts of muscle and bone. However, the ranges do not mean that it is healthy to gain weight, even within the same weight range. The higher weights in the healthiest weight range apply to people with more muscle and bone.

figure 3.[chart showing healthy weight ranges for men and women]

Are you overweight?[chart used to determine proper weight or degree of obesity]

Location of body fat

Research suggests that the location of body fat also is an important factor in health risks for adults. Excess fat in the abdomen (stomach area) is a greater health risk than excess fat in the hips and thighs. Extra fat in the abdomen is linked to high blood pressure, diabetes, early heart disease, and certain types of cancer. Smoking and too much alcohol increase abdominal fat and the risk of diseases related to obesity. Vigorous exercise helps to reduce abdominal fat and decrease the risk of these diseases. The easiest way to check your body fat distribution is to use a tape measure to see if you have more fat in your stomach area than around your hips. If you are in doubt, your doctor can advise you.

Problems with excessive thinness

Being too thin can occur with anorexia nervosa, other eating disorders, or loss of appetite, and is linked to menstrual irregularity and osteoporosis in women and greater risk of early death in women and men. Many people - especially women - are concerned about body weight, even when their weight is normal. Excessive concern about weight may cause or lead to such unhealthy behaviors as excessive exercise, self-induced vomiting, and the abuse of laxatives or other medications. These practices

may only worsen the concern about weight. Excessive exercise may also affect hormone production, increase the loss of calcium from bones, and increase the risk of fractures. If you lose weight suddenly or for unknown reasons, see a physician. Unexplained weight loss may be an early clue to a health problem.

If you need to lose weight

You do not need to lose weight if your weight is already within the healthiest range in the figure, if you have gained less than 10 pounds since you reached your adult height, and if you are otherwise healthy. If you are overweight and have excess abdominal fat, a weight-related medical problem, or a family history of such problems, you need to lose weight (see box 5). The same practices that help people maintain a healthy weight may also help them lose weight. It is important to recognize that overweight is a chronic condition which can only be controlled with long-term changes. To reduce caloric intake, eat less fat and control portion sizes. If you are not physically active, spend less time in sedentary activities such as watching television, and be more active throughout the day. As people lose weight, the body becomes more efficient at using energy and the rate of weight loss may decrease. Increased physical activity will help you to continue losing weight and to avoid gaining it back (box 6).

Many people are not sure how much weight they should lose. Weight losses of only 5-10 percent of body weight may improve many of the problems associated with overweight, such as high blood pressure and diabetes. Even a smaller weight loss can make a difference. If you are trying to lose weight, do so slowly and steadily. A generally safe rate is 1/2-1 pound a week until you reach your goal. Avoid crash weight-loss diets that severely restrict calories or the variety of foods. Extreme approaches to weight loss, such as self-induced vomiting or the use of laxatives, amphetamines, or diuretics, are not appropriate and can be dangerous to health.

Weight regulation in children

Children need enough food for proper growth. To promote growth and development and prevent obesity, teach children to eat grains, vegetables, and fruits, as well as low-fat dairy and other protein-rich foods, and to participate in vigorous activity. Limiting television time and encouraging children to play actively in a safe environment are helpful steps. Although limiting fat intake may help to prevent excess weight gain in children, fat should not be restricted for children younger than 2 years of age. Helping overweight children to achieve a healthy weight along with normal growth requires more caution. Modest reductions in dietary fat, such as the use of low-fat milk rather than whole milk, are not hazardous, but major efforts to change a child's diet should be reviewed by a health professional.

Advice for today

Try to maintain your body weight by balancing what you eat with physical activity. If you are sedentary, try to become more

active. If you are already very active, try to continue the same level of activity as you age. More physical activity is better than less, and any is better than none. If your weight is not in the healthiest range, try to reduce health risks through better eating and exercise habits. Take steps to keep your weight within the healthiest range (neither too high nor too low). Have children's heights and weights checked regularly by a health professional.

Box 5. To Decrease Calorie Intake

- Eat a variety of foods that are low in calories and high in nutrients.
- Eat less fat and fewer high-fat foods.
- Eat smaller portions and limit second helpings.
- Eat more vegetables and fruits.
- Eat pasta, rice, breads, and cereals without fats and sugars added in preparation or at the table.
- Eat less sugar and fewer sweets (like candy, cookies, cakes, soda).
- Drink less or no alcohol.

Box 6.To Increase Energy Expenditure by Physical Activity

Remember to accumulate 30 minutes or more of moderate physical activity on most - preferably all - days of the week.

[chart showing
Examples of moderate physical activities
for healthy U.S. adults]

Source: Adapted from Pate et al. Journal of the American Medical Association 273:404, 1995.

Choose a Diet With Plenty of Grain Products, Vegetables, and Fruits

Grain products, vegetables, and fruits are key parts of a varied diet. They are emphasized in this guideline because they provide vitamins, minerals, complex carbohydrates (starch and dietary fiber), and other substances that are important for good health. They are also low in fat. Most Americans of all ages eat fewer than the recommended number of servings of grain products, vegetables, and fruits, even though these foods are associated with a substantially lowered risk of many chronic diseases, including certain types of cancer.

Most of the calories in your diet should come from grain products, vegetables, and fruits

These include grains high in complex carbohydrates - breads, cereals, pasta, rice - found at the base of the Food Guide

Pyramid, as well as vegetables such as potatoes and corn. Dry beans (like pinto, navy, kidney, and black beans) are included in the meat group of the pyramid, but they can count as servings of vegetables instead of meat alternatives. Plant foods are generally low in fats, depending on how they are prepared and what is added to them at the table.

Plant foods provide fiber

Fiber is found only in plant foods like whole-grain breads and cereals, beans and peas, and other vegetables and fruits. Because there are different types of fiber in foods, choose a variety of foods daily. Eating a variety of fiber-containing plant foods is important for proper bowel function and can reduce symptoms of chronic constipation, diverticular disease, and hemorrhoids, as well as lower the risk of heart disease and some cancers. However, some of the health benefits associated with a high-fiber diet come from other components present in these foods, not just from fiber itself. For this reason, fiber is best obtained from foods rather than supplements.

Plant foods provide a variety of vitamins and minerals essential for health

Most fruits and vegetables are naturally low in fat and provide many essential nutrients and other food components important for health. These foods are excellent sources of carotenes (including those which form vitamin A), vitamin C, vitamin B6, and folate (see box 7). The antioxidant nutrients found in plant foods (vitamin C, carotene, vitamin E, and the mineral selenium) are presently of great interest to scientists and the public because of their potentially beneficial role in reducing the risk of cancer and certain other chronic diseases. Scientists are also trying to determine if other substances in plant foods protect against cancer.

Folate, also called folic acid, is a B vitamin that, among its many functions, reduces the risk of a serious type of birth defect (see box 8). Minerals such as potassium, calcium, and magnesium, found in a wide variety of vegetables and fruits, may help reduce the risk for high blood pressure (see pages 17-18). The availability of fresh fruits and vegetables varies by season and region of the country, but frozen and canned fruits and vegetables ensure a plentiful supply of these healthful foods throughout the year. Read the Nutrition Facts Label to help choose foods that are rich in carbohydrates, fiber, and nutrients and low in fat and sodium.

Box 7. Some Good Sources of Carotenes*

Colorful vegetables and fruits
dark green, yellow, orange, and some red ones - such as spinach, tomatoes, broccoli, carrots, turnip greens, collards, pumpkins, calabasa, sweet potatoes, oranges, mango, papayas, and melons like cantaloupe

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* Does not include complete list of examples. You can obtain additional information from 'Good Sources of Nutrients,' USDA, January 1990.

Box 8. Some Good Sources of Folate*

- Dry beans (like red beans, navy beans, soy beans, and lentils), chickpeas, cow peas, and peanuts
- Many vegetables, especially leafy greens (spinach, cabbage, brussel sprouts, romaine, loose-leaf lettuce), peas, okra, sweet corn, beets, and avocados
- Yeast and yeast-leavened breads and rolls and wheat germ. Read the labels.

* Does not include a complete list of examples. You can obtain additional information from 'Good Sources of Nutrients,' USDA, January 1990.

Advice for today

Eat more grain products (breads, cereals, pasta, and rice), vegetables, and fruits. Eat dry beans, lentils, and peas more often. Increase your fiber intake by eating more of a variety of fiber-rich vegetables and fruits such as broccoli, tomatoes, leafy greens, apples, and bananas (box 9).

Box 9.For a diet with plenty of grain products, vegetables and fruits, eat daily

6-11 servings* of grain products (breads, cereals, pasta, and rice)

- Eat products made from a variety of whole grains, such as wheat, rice, oats, corn, and barley.
- Eat several servings of whole-grain breads and cereals daily.
- Prepare and serve grain products with little or no fats and sugars.

3-5 servings* of various vegetables and vegetable juices

- Choose dark-green leafy and deep-yellow vegetables often.
- Eat dry beans, peas, and lentils often.
- Eat starchy vegetables, such as potatoes and corn.

2-4 servings* of various fruits and fruit juices

- Choose citrus fruits or juices, melons, or berries regularly.
- Eat fruits as desserts or snacks.
- Drink fruit juices.

Choose a Diet Low in Fat, Saturated Fat, and Cholesterol

Some dietary fat is needed for good health. Fats supply energy and essential fatty acids and promote absorption of the fat-soluble vitamins A, D, E, and K. Most people are aware that

high levels of saturated fat and cholesterol in the diet are linked to increased blood cholesterol levels and greater risk of heart disease. More Americans are now eating less of fat, saturated fat, and cholesterol-rich foods than in the recent past, and fewer people are getting the most common form of heart disease. Still, many people continue to eat high-fat diets, the number of overweight people has increased, and the risk of heart disease and certain cancers (also linked to fat intake) remains high. This guideline emphasizes the continued importance of choosing a diet with less total fat, saturated fat, and cholesterol.

Foods high in fat should be used sparingly

Some foods and food groups in the Food Guide Pyramid are higher in fat than others. Fats and oils and some types of desserts and snack foods that contain fat provide calories but few nutrients. Many foods in the milk and milk products group and in the meat group (which includes eggs and nuts, as well as poultry and fish) are also high in fat, as are some processed foods in the grain product group. Choosing lower fat options among these foods allows you to eat the recommended servings from these groups and to increase the amount and variety of grains, fruits, and vegetables in your diet without going over your calorie needs.

Choose a diet low in fat

Fat, whether from plant or animal sources, contains more than twice the number of calories as an equal amount of carbohydrate or protein. Choose a diet that provides no more than 30 percent of total calories from fat. The upper limit on the grams of fat in your diet will depend on the calories you need. Cutting back on fat can help you consume fewer calories. For example, at 2,000 calories per day, the suggested upper limit of calories from fat is about 600 calories. Because each gram of fat contains 9 calories, 600 calories are about 65 grams of fat. On the Nutrition Facts Label, 65 grams of fat is the Daily Value for a 2,000-calorie intake (figure 4).

[figure 4 food label graphic]

Choose a diet low in saturated fat

Fats contain both saturated and unsaturated monoun-
saturated and polyunsaturated) fatty acids. Your diet should provide less than 10 percent of calories from saturated fat. The fats from meat, milk, and milk products are the main sources of saturated fats in most diets. Lesser amounts are obtained from various vegetable oils. On the Nutrition Facts Label, 20 grams of saturated fat (9 percent of caloric intake) is the Daily Value for a 2,000-calorie level.

Monounsaturated and polyunsaturated fat

Olive and canola oils are particularly high in monoun-
saturated fats; most other vegetable oils, nuts, and high-fat

fish are good sources of polyunsaturated fats. Both kinds of unsaturated fats reduce blood cholesterol when they replace saturated fats in the diet. The fats in fish are low in saturated fatty acids and contain a type of polyunsaturated fatty acid (omega-3) that has been associated with a decreased risk of heart disease in certain people. Remember that the total fat in the diet should be consumed at a moderate level - that is, no more than 30 percent of calories. Mono- and polyunsaturated fat sources should replace saturated fats within this limit.

Partially hydrogenated vegetable oils, such as those used in many margarines and shortenings, contain a particular form of unsaturated fat (trans fatty acids) that is less effective than mono- or polyunsaturated fats in reducing blood cholesterol.

Choose a diet low in cholesterol

The body makes and requires cholesterol. In addition, cholesterol is obtained from food. Dietary cholesterol comes from animal sources such as egg yolks, meat (especially organ meats such as liver) poultry, fish, and higher fat dairy products. Many of these foods are also high in saturated fats. Choosing foods with less cholesterol and saturated fat will help lower your blood cholesterol levels. The Nutrition Facts Label lists the Daily Value for cholesterol as 300 mg. You can keep your cholesterol intake at this level or lower by emphasizing intakes of grains, vegetables, and fruits and by limiting intake of egg yolks, including those used in cooking.

Advice for children

Advice in the previous sections does not apply to infants and toddlers below the age of 2 years. After that age, children should gradually adopt a diet that, by about 5 years of age, contains no more than 30 percent of calories from fat. As they begin to consume fewer calories from fat, children should replace these calories by eating more grain products, fruits, vegetables, and low-fat dairy products and other protein-rich foods.

Advice for today

To reduce your intake of fat, saturated fat, and cholesterol, follow recommendations in the Food Guide Pyramid, which apply to diets consumed over several days and not to single meals or foods.

- Use fats and oils sparingly.
- Use the Nutrition Facts Label to help you choose foods lower in fat, saturated fat, and cholesterol.
- Eat plenty of grain products, vegetables, and fruits.
- Choose low-fat dairy foods, lean meats, fish, poultry, beans, and peas to get essential nutrients without substantially increasing calorie and saturated fat intakes.

For a Diet Low in Fat, Saturated Fat,

and Cholesterol

Fats and Oils
- Use fats and oils sparingly in cooking and at the table.
- Use small amounts of salad dressings and spreads such as butter, margarine, and mayonnaise. Consider using low-fat or fat-free dressings for salads.
- Choose vegetable oils and soft margarines most often because they are lower in saturated fat than solid shortenings and animal fats, even though their caloric content is the same.
- Check the Nutrition Facts Label to see how much fat and saturated fat are in a serving; choose foods lower in fat and saturated fat.

Vegetables, Fruits, and Grains
- Choose low-fat sauces with pasta, rice, and potatoes.
- Use as little fat as possible to cook vegetables and grains.
- Season with herbs, spices, lemon juice, and fat-free or low-fat salad dressings.

Meat, Poultry, Fish, Eggs, Beans, and Nuts
- Choose up to two to three servings of lean fish, poultry, and meats daily. Use meats labeled 'lean' or 'extra lean.' Trim fat from meat; take skin off poultry. (Three ounces of cooked lean beef or chicken without skin - a piece the size of a deck of cards - provides about 6 grams of fat; a piece of chicken with skin or untrimmed meat of that size may have as much as twice this amount of fat.)
- Eat beans and bean products. Most are almost fat free and are a good source of protein and fiber.
- Limit intake of high-fat processed meats, such as sausages, salami, and other cold cuts; choose lower fat varieties by reading the Nutrition Facts Label.
- Use egg yolks and organ meats in moderation. (One egg yolk has about 215 mg of cholesterol; one ounce of cooked chicken liver has about 250 mg of cholesterol.)

Milk and Milk Products
- Choose skim or low-fat milk, fat-free or low-fat yogurt, and low-fat cheese.
- Have up to two to three low-fat servings daily. Add extra calcium to your diet without added fat by choosing fat-free yogurt and low-fat milk more often. [One cup of skim milk has almost no fat, 1 cup of 1 percent milk has 2.5 grams of fat, 1 cup of 2 percent milk has 5 grams (one teaspoon) of fat, and 1 cup of whole milk has 8 grams of fat.]

Choose a Diet Moderate in Sugars

Sugars come in many forms

Sugars are carbohydrates. Dietary carbohydrates also include the complex carbohydrates starch and fiber. During digestion all carbohydrates except fiber break down into sugars. Sugars and starches occur naturally in many foods - including milk, fruits, some vegetables, breads, cereals, and grains - that also supply other nutrients. Americans eat sugars in many forms, and most

people like their taste. Some sugars are used as natural preservatives, thickeners, and baking aids in foods; they are often added to foods during processing and preparation or when they are eaten. The body cannot tell the difference between naturally occurring and added sugars because they are identical chemically.

Sugars, health, and weight maintenance

Scientific evidence indicates that diets high in sugars do not cause hyperactivity or diabetes. The most common type of diabetes occurs in overweight adults. Avoiding sugars alone will not correct overweight. To lose weight reduce the total amount of food you eat and increase your level of physical activity (see pages 9-12.)

To maintain your weight when you eat less fat, replace the lost calories from fat with equal calories from carbohydrates, mainly from the plant foods in the lower half of the Food Guide Pyramid. Some foods that contain a lot of sugars supply calories but few or no nutrients (box 10). These foods are located at the top of the pyramid. For very active people with high calorie needs, sugars can be an additional source of energy. However, because maintaining a nutritious diet and a healthy weight is very important, sugars should be used in moderation by most healthy people and sparingly by people with low calorie needs. This guideline cautions about eating sugars in large amounts and about frequent snacks of foods and beverages containing sugars that supply unnecessary calories and few nutrients.

Sugar substitutes

Sugar substitutes such as sorbitol, saccharin, and aspartame are ingredients in many foods. Most of the sugar substitutes do not provide significant calories and therefore may be useful in the diets of people concerned about calorie intake. Foods containing sugar substitutes, however, may not always be lower in calories than similar products that contain sugars. Unless you reduce the total calories you eat, the use of sugar substitutes will not cause you to lose weight.

Sugars and dental caries

Both sugars and starches can promote tooth decay. The more often you eat foods that contain sugars and starches and the longer these foods are in your mouth before you brush your teeth, the greater the risk for tooth decay. Thus, frequent eating of foods high in sugars and starches as between-meal snacks may be more harmful to your teeth than eating them at meals and then brushing. Regular daily dental hygiene, including brushing and flossing and an adequate intake of fluoride, will help you prevent tooth decay (see box 11).

Advice for today

Use sugars in moderation - sparingly if your calorie needs are

low.

Avoid excessive snacking, and brush and floss your teeth regularly. Read the Nutrition Facts Label on foods you buy. The food label lists the content of total carbohydrate and sugars, as well as calories.

Box 10. On a Food Label, Sugars Include -

brown sugar
corn sweetener
corn syrup
fructose
fruit juice concentrate
glucose (dextrose)
invert sugar
lactose
maltose
molasses
raw sugar
[table] sugar (sucrose)

A food is likely to be high in sugars if one of the above terms appears first or second in the ingredients list, or if several of them are listed.

Box 11. For Healthier Teeth and Gums

- Eat fewer foods containing sugars and starches between meals.
- Brush and floss teeth regularly.
- Use a fluoride toothpaste.
- Ask your dentist or doctor about the need for supplemental fluoride, especially for children.
- If you use a nursing bottle to pacify your infant, serve only water in the bottle.

Choose a Diet Moderate in Salt and Sodium

Sodium and salt are found mainly in processed and prepared foods

Sodium and sodium chloride - known commonly as salt - occur naturally in foods, usually in small amounts. Salt added during preparation or before eating enhances the taste of many foods, and some people are accustomed to the taste of highly salted foods. Salt and other sodium-containing ingredients also have many uses in food processing. Although some people add salt to their food at the table, most dietary sodium or salt comes from foods to which salt has already been added during processing or preparation.

Sodium is associated with high blood pressure

In the body, sodium plays an essential role in regulating fluids and blood pressure. However, many studies in diverse populations have shown that a high sodium intake is associated with more cases of high blood pressure. Most evidence suggests that many people at risk for high blood pressure may reduce their chances of developing this condition by consuming less salt or sodium. Some questions remain about this relationship, partly because

many other factors interact with sodium to affect blood pressure.

Other factors affect blood pressure

Following other guidelines in the DIETARY GUIDELINES may also help prevent high blood pressure. An important example is the guideline on weight and physical activity. The role of body weight in blood pressure control is well documented. Blood pressure increases with weight and decreases when weight is reduced. The guideline to consume a diet with plenty of fruits and vegetables also is relevant. Many fruits and vegetables are high in potassium (see box 12). Studies suggest that eating foods high in potassium helps to counter some of the effects of high salt consumption on blood pressure. Alcohol consumption has been associated with high blood pressure. Having an adequate intake of calcium may also be protective. High salt intakes may increase the amount of calcium excreted in the urine and, therefore, increase the body's need for calcium.

[Box 12: chart showing some good sources of potassium]

Most Americans consume more salt than is needed

Sodium has an important role in the body. However, most Americans consume more sodium than is needed. The Nutrition Facts Label lists a Daily Value of 2,400 mg per day for sodium (2,400 mg sodium per day is contained in 6 grams of salt). Most people consume more than this amount.

There is no way at present to tell who might develop high blood pressure from eating too much sodium. However, consuming less salt or sodium can be recommended for everyone in the population because it is not harmful to the healthy normal adult (box 13).

Advice for today

Fresh fruits and vegetables have very little sodium, but all groups in the Food Guide Pyramid can include some foods that are high in sodium and other foods that have very little sodium or can be prepared in ways that add flavor without adding salt. Read the Nutrition Facts Label to help identify foods lower in sodium within each group. Use herbs and spices to flavor food. Try to choose versions of foods that you frequently consume which are lower in sodium and salt.

Box 13. To Consume Less Salt and Sodium -

- Read the Nutrition Facts Label to determine the amount of sodium in the foods you purchase. The sodium content of foods within processed food categories - such as cereals, breads, soups, and salad dressings - often varies widely.
  Choose foods lower in sodium, and ask your grocer or supermarket to offer more low-sodium foods. Request less salt in your meals when eating out or traveling.

- If you salt foods in cooking or at the table, add small amounts. Learn to use spices and herbs rather than salt to heighten the flavor of food.
- When planning meals, consider that fresh and most plain frozen vegetables are low in sodium.
- When selecting canned foods, select those prepared without salt.
- Fresh fish, poultry, and meat are lower in sodium than most canned and processed ones.
- Many frozen dinners, packaged mixes, canned soups, and salad dressings contain a considerable amount of sodium. Choose foods lower in sodium content. Remember that condiments such as soy and other sauces, pickles, olives, ketchup, and mustard are high in sodium. Choose lower sodium varieties.
- Fresh fruits and vegetables are a lower sodium alternative to salted snack foods.

If You Drink Alcoholic Beverages, Do So in Moderation

Alcoholic beverages have been used to enhance the enjoyment of meals by many societies throughout human history. Alcoholic beverages supply calories but few or no nutrients. The alcohol in these beverages has physiologic drug effects and is harmful when consumed in excess. The drug effects of alcohol alter judgment and can lead to dependency and a great many other serious health problems. If adults choose to drink alcoholic beverages, they should consume them only in moderation (see box 14).

[chart showing what is moderation(what counts as a drink)]

Current evidence suggests that moderate drinking, as defined in box 14, is associated with a lower risk of coronary heart disease in some individuals. However, higher levels of alcohol intake raise the risk for high blood pressure, stroke, heart disease, certain cancers, accidents, violence, suicides, birth defects, and overall mortality (deaths). Too much alcohol may cause cirrhosis of the liver, inflammation of the pancreas, and damage to the brain and heart. Heavy drinkers also are at risk of malnutrition because alcohol contains calories that may substitute for those in more nutritious foods.

Who should not drink?

Some people should not drink alcoholic beverages at all. These include

- Children and adolescents.

- Individuals of any age who cannot restrict their drinking to moderate levels. This is a special concern for recovering alcoholics and people whose family members have alcohol problems.

- Women who are trying to conceive or who are pregnant. Major birth defects, including fetal alcohol syndrome, have been attributed to heavy drinking by the mother while pregnant. While there is no conclusive evidence that an occasional drink is harmful to the fetus or to the pregnant woman, a safe level of alcohol intake during pregnancy has not been established.

- Individuals who plan to drive or take part in activities that require attention or skill. Most people retain some alcohol in the blood up to 2-3 hours after a single drink.

- Individuals using prescription and over-the-counter medications. Alcohol may alter the effectiveness or toxicity of medicines. Also, some medications may increase blood alcohol levels or increase the adverse effect of alcohol on the brain.

Advice for today

If you drink alcoholic beverages, do so in moderation, with meals, and when consumption does not put you or others at risk.

Acknowledgments

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Some of the scientific basis for these guidelines

- DIET, NUTRITION, AND THE PREVENTION OF CHRONIC DISEASES, No. 797. Geneva, World Health Organization, 1990.

- THE SURGEON GENERAL'S REPORT ON NUTRITION AND HEALTH. U.S. Department of Health and Human Services, Public Health Service, 1988.

- DIET AND HEALTH: IMPLICATIONS FOR REDUCING CHRONIC DISEASE RISK. National Academy of Sciences, National Research Council, 1989.

- RECOMMENDED DIETARY ALLOWANCES, 10th ed. National Academy of Sciences, National Research Council, 1989.

Information on how to put the guidelines into practice

- Contact the Center for Nutrition Policy and Promotion, USDA, 1120 20th Street, NW, Suite 200 North Lobby, Washington, DC 20036, to order

  - THE FOOD GUIDE PYRAMID, HG-252, 1992
  - DIETARY GUIDELINES AND YOUR DIET, HG-253-1 through 8, 1993. A packet of eight information bulletins on nutrition and your health.

- Contact the Cancer Information Service, Office of Cancer Communications, National Cancer Institute, Building 31, Room 10A16, 9000 Rockville Pike, Bethesda, MD 20892; National Heart, Lung, and Blood Institute Information Center, P.O. Box 30105, Bethesda, MD 20824-0105; Weight-Control Information Network of the National Institute of Diabetes and Digestive and Kidney Diseases, 1 Win Way, Bethesda, MD 20892;

Office of Food Labeling, Food and Drug Administration (HFS-150), 200 C Street, SW, Washington, DC 20204.

- Contact your county extension home economist (cooperative extension system) or a nutrition professional in your local public health department, hospital, American Red Cross, dietetic association, diabetes association, heart association, or cancer society.

DISCUSSION OF PROPOSED CHANGES

General Issues

In its discussions, the Dietary Guidelines Advisory Committee determined that research conducted since 1990 continues to support most of the text of the third edition of the Dietary Guidelines. This section of the report describes suggested changes to the third edition. For the most part, these changes are aimed at clarification and emphasis of key points. Overall, the committee suggests that the fourth edition -

- Define terms more precisely
  To help clarify discussion, the committee suggests that specific terms be given operational definitions in the text.

- Add section headings as subtitles
  To guide readers to key points and to make the text easier to read, the committee suggests that text sections be headed by titles or statements related to their content. For example, the first sentence in the 1990 Guidelines is used as the first title in the 1995 text.

- Refer readers to the Food Guide Pyramid
  The pyramid was published by USDA and HHS in 1992 as an implementation guide to the 1990 Guidelines. The committee views this publication as a helpful educational tool to be used in conjunction with the DIETARY GUIDELINES and recommends that the pyramid graphic replace the former representation of the recommended Daily Food Guide. This recommendation is made with an understanding that the purpose of this graphic is to explain and interpret rather than to determine the Guidelines. Thus, revisions to the pyramid in accordance with revisions to the

Guidelines are considered appropriate.

- Refer readers to the new food label
  The Nutrition Labeling and Education Act of 1990 (NLEA) and subsequent Food and Drug Administration regulations specify nutrition information required on food labels. The committee suggests that the guidelines refer readers to relevant sections of the food label and encourage them to use the label to make food choices consistent with the Guidelines. Including examples of the food label will help readers to better understand key points and facilitate cross-referencing.

- Add tables to the text
  The committee suggests the addition of tables listing a few food sources of key nutrients - those most limited in the diets of certain population groups. Tables have been added for food sources of calcium, iron, carotenoids, folate, and potassium.

- Omit specific medical criteria
  The committee suggests that the text of the Guidelines relate specifically to dietary issues and omit specific guidelines for such medical advice as desirable levels of blood cholesterol, blood pressure, and blood glucose.

- Limit quantitative recommendations
  The committee suggests continuation of the quantitative guidelines for percentage of energy from fat and saturated fat given in the third edition. The text refers readers to food label standards for cholesterol and sodium without making specific recommendations.

  The committee received many communications from the public and some professionals, requesting that the guidelines quantify the recommendations for intakes of other nutrients (including sugar, fiber, mono- and polyunsaturated fats, trans fatty acids, and antioxidants). The committee has concluded that the state of scientific evidence is insufficient at present to provide quantitative guidelines for most of these nutrients that would be applicable to both sexes and all ages above 2 years. In addition, the committee is concerned that emphasis on numeric goals and limits for nutrients adds undue complexity to the food selection process for most consumers.

Introduction to the Bulletin

The committee suggests that the introduction be designed to provide a broad overview of the purpose and content of the specific guidelines, to introduce readers to the principal concepts, and to avoid redundancies. Therefore, the committee recommends that the introduction state basic principles of healthful diets, explain how diet affects health, define basic terms related to food consumption, nutrient requirements, and energy balance, and refer readers to common sources of information about healthful diets.

Much of the information is contained in the 1990 text. To clarify that text and expand its content, the committee suggests the following additions:

- Explain basic concepts of food composition
  The committee thinks it will be helpful to readers to explain basic concepts of nutrition pertinent to the various guidelines: Humans require nutrients and energy; foods contain energy, nutrients, and other important components in different proportions; and food proteins, fats, and carbohydrates contain different amounts of energy.

- Explain the basis of body weight
  To relate healthful diets to body weight, the committee suggests that the introduction should emphasize the importance of both energy intake and expenditure in weight maintenance.

- Distinguish the DIETARY GUIDELINES from Recommended Dietary Allowances
  The committee thinks it is helpful to readers to clarify the difference between the nutrient-based recommendations of the RDA's and the food-based recommendations of the Guidelines, particularly because RDA's are the basis of some of the information provided on food labels.

Eat a Variety of Foods Guideline

Guideline

The wording of this guideline and its priority as the first of the DIETARY GUIDELINES remain unchanged in the 1995 version. The importance of this guideline stems primarily from nutritional adequacy concerns. Studies of the association of dietary variety with nutrient intake have indicated beneficial effects of variety on meeting RDA's but not on meeting objectives with respect to moderating fat, saturated fat, or sodium intake (1,2). The recommended text for 1995 attempts to focus this guidance more specifically on dietary adequacy. General statements equating varied diets with healthful diets and referring to prevention of chronic diseases have been moved to the expanded introduction. In this way, the variety guideline becomes a less global statement of positive dietary values and a more focused, stronger statement indicating that a narrow set of food choices may result in inadequate intakes of essential nutrients. The phrase and other substances needed for health has been added throughout this guideline to emphasize that the term nutrients does not cover all of the food components that may be beneficial. This guideline continues to stress the total eating pattern in order to provide a context for integrating and putting into perspective the guidance regarding specific nutrients or types of food.

Overview

The committee recognizes a need to counteract the impression that the DIETARY GUIDELINES overall foster a negative view of many foods as 'bad' for health, by suggesting language that is deliberately positive and intended to convey a message of enjoyment of foods as an underlying principle. The text has been revised to explain systematically what is meant by variety, why it is generally important, and where certain population groups have special concerns in relation to food choices for nutritional adequacy.

New areas of emphasis include an explanation of the principle of dietary variety in relation to vegetarian diets and a more comprehensive explanation about supplementing nutrients or other food constituents in the diet, including comments about dietary fiber supplements and fortified and enriched foods.

Present the Food Guide Pyramid and serving sizes

The committee recommends inclusion of the Food Guide Pyramid graphic in this edition and considers the variety guideline the most appropriate place to introduce this visual aid. Because the serving sizes used in the pyramid, food labels, food composition databases, and food exchanges are not the same and are frequently smaller than servings typically consumed by the public, the committee thinks it is helpful to define serving sizes in a table. For the sake of consistency, the table gives serving sizes derived from the pyramid.

Emphasize the base of the pyramid as the foundation of meals

The guidance to choose the largest number of servings of food from the grain products group represents a shift in the current dietary pattern of most Americans. The wording emphasizes building meals to encourage an integrated perspective on overall food choices.

Choose different foods within each food group

There is no strong evidence linking food variety within groups to overall dietary adequacy beyond effects accomplished by choosing foods from different groups. However, the committee considers it important to educate consumers about the differences in food composition (in relation to nutrients and other potentially beneficial substances) within food categories.

What about vegetarian diets?

Vegetarian diets are not discussed in the 1990 Guidelines. The committee considers that the absence of clear advice in relation to vegetarian diets is a deficiency of the Guidelines, given the increasing public interest in this dietary regimen. In adding this section the objective is to acknowledge the practice of vegetarianism, demonstrate the compatibility of vegetarian diets with the advice in the DIETARY GUIDELINES, and draw attention to the specific nutritional adequacy issues associated with limitation on intake of products of animal origin (3).

Foods vary in content of calories and nutrients

The low caloric intake levels associated with sedentary lifestyles, coupled with a limited variety of foods, is likely to result in marginal intakes of some essential nutrients (4). The language in this section attempts to address nutrient density in a factual manner, highlighting the differences in the amounts of

vitamins and minerals relative to calories in various foods. Thus, not only are there statements about the need for variety to obtain the different nutrients contained in different types of foods but also there are statements about the need for attention to the relative proportions of nutrients in foods used to obtain calories, particularly when food intake is restricted.

Special needs, fortified foods, and supplementation

The special considerations related to adequacy of nutrients during growth and for women are highlighted here as an appropriate elaboration of the principle of dietary variety and lead into a discussion of supplementation. The proposed text argues more strongly than did the 1990 edition that consumers should not routinely rely on supplements to meet nutritional goals.

The committee recognizes a need to clarify the role of enriched and fortified foods in the diet. To help avoid a perceived contradiction in the advice to consume certain enriched products and not to rely on supplements and by implication fortified foods, a distinction is made between foods to which nutrients are added as a matter of national policy and other foods to which nutrients may have been added optionally. Consumers are advised to consider the use of these foods in the context of their total diets with the aid of the information on food labels. While the general recommendation is not to rely on supplements, examples are given of circumstances in which supplements may be needed. Concerns about problems associated with fiber supplements make it necessary to mention them explicitly in this section.

Advice for today

This section restates the overall principle of dietary variety beginning with a positive statement about enjoyment of foods. A reminder to use food labels to help guide dietary choices that are in accordance with the other guidelines is considered to be very important, since choosing a variety of foods does not necessarily yield an eating pattern that is low in fat, cholesterol, or sodium or sufficient in fiber.

Balance the Food You Eat With Physical Activity.
Maintain or Improve Your Weight.

Guideline

The committee suggests several substantive changes in this guideline. The revised title reflects a new emphasis on energy balance as the appropriate approach to weight maintenance. Overall, the revised guideline places less emphasis on weight loss and more emphasis on weight maintenance. The recent well-documented increases in the prevalence of obesity emphasize that weight control represents the essential first step toward a reduction in the prevalence of obesity in the population. The previous guideline was based on the presumption that a healthy weight could be maintained or achieved. Although the

maintenance of a healthy weight is reasonable for those who are already within the healthy weight guideline, the high rates of relapse after weight loss suggest that this goal may be impossible for the large number of overweight persons in the United States. Therefore, the guideline now emphasizes the importance of weight maintenance at any age. Its current wording is based on the premise that the prevention of weight gain at any age is achievable and will have a profound effect on the morbidity and mortality associated with weight gain (5-7). The goal of weight maintenance differs from the goal of achieving a healthy weight for all Americans. However, weight maintenance for the population represents the necessary first step to achieve a healthy weight.

Definition of Healthy Weight

Maintenance of a healthy weight is still a major goal but is now secondary to weight maintenance at any level. Use of a cutoff Body Mass Index (BMI) to establish the upper bound of a healthy weight is based on the use of a definition of obesity that is related to pathologic sequelae rather than an arbitrary definition. The cutoff point used to define obesity will depend on whether the cutoff point is based on morbidity or mortality. For example, several recent studies designed to address this problem have demonstrated that mortality increases significantly above a BMI of 25 (5-7). However, the prevalence of diabetes begins to increase well below a BMI of 25 (8,9). Because the most significant and reliable consequence of a disease is mortality and because the designation of obesity at a point below a BMI of 25 will label well over half of the population obese, the committee suggests that use of a BMI of 25 to define the upper boundary of healthy weight appears the most reasonable definition. Use of this cut point is consistent with the cut point recommended by the American Institute of Nutrition Consensus Conference (10). Because body fat cannot be readily measured, weight appears to be the most appropriate surrogate.

Inclusion of a graphic that shows a graded risk for weights for height above a BMI of 25 has substantial merit, insofar as a graded risk is consistent with the dose effect of a rising BMI and helps move the perception of weight from an either-or discussion. The principal difficulty with a graded risk approach is the determination of where to draw the lines. The use of colors to indicate that the risks are not clear-cut is a format preferable to the use of lines. A relative risk of two for death and diabetes occurs between a BMI of 25 and 33 (range 26.9-32.9)(references 5-9). Although arbitrary, these data would suggest that a risk-related gradient should utilize a BMI of 25 to 28 or 29. Use of shading reflects the lack of a clear-cut point or consensus on where the line should be drawn and emphasizes that risk varies with the severity of the disease.

The area below the healthiest weight represents a BMI of less than 19 (15th percentile). This area is not named because it is not clear whether a weight below this BMI is unhealthy. Further data are necessary to demonstrate the point at which the risks associated with a low BMI increase. The revised guideline states that there may be risks associated with a low BMI, particularly if involuntary weight loss has occurred.

Age-neutral adult standards

Based on published data, there appears to be no justification for the establishment of a cut point that increases with age. Although the nadir of mortality curves increase with age in several studies, these studies have failed to control for a history of smoking, which appears to affect mortality at all ages. Furthermore, several large published studies fail to show an increase with age in the BMI associated with the lowest mortality (5,7,11).

Body fat distribution

Fat distribution and total body fat affect the risks of obesity-associated co-morbidities. The current guideline places less emphasis on how fat distribution should be determined and more emphasis on factors that affect fat distribution. Although waist-to-hip ratio has been used as a measure of fat distribution, more recent data suggest that waist circumference may be as powerful as the waist-hip ratio in the prediction of morbidity. However, no data have been published that permit recommendations regarding limits on the growth of waist circumference with age. Heredity accounts for approximately 20-30 percent of the variance in fat mass, fat- free mass, and fat distribution (12). However, central fat distribution appears to increase with cigarette smoking (13-15), stress (14,16), and alcohol use (15,17). Exercise represents one of the few factors that reduces central body fat (14,15,18). Most of the studies of the association of smoking, alcohol intake, or activity with fat distribution control for confounding variables such as BMI and other behaviors that might influence fatness and fat distribution.

Goal for weight loss

The committee suggests that recommendations for weight loss should be based on a loss of between 5-10 percent of body weight (19). This recommendation has a solid basis in literature and eliminates the need for a weight-based recommendation that may not be applicable across all increased BMI categories. A specific recommendation appears more appropriate than a general recommendation that is subject to misrepresentation.

Activity, health, and weight

The revised guideline emphasizes the importance of activity for both weight control and health. The role of exercise on health depends strongly on the outcome variable of interest. For example, the effects of activity on fitness appear dissociated from the effects of activity on lipoprotein levels. In a walking intervention designed to have three groups of women walking 4.8 km at different rates 5 days per week, maximal oxygen uptake increased in a dose-response manner, but high-density lipoprotein levels were not dose related and increased significantly in all groups (20). However, in comparisons of the same quantity of

moderate to vigorous exercise conducted as a single interval or divided into three separate intervals, comparable effects on fitness were noted (21), but high-density lipoprotein levels increased significantly only in the group that exercised at intervals (22).

Weight has rarely been used as an outcome variable in studies of the effects of activity. However, fitness, defined as treadmill time, appears inversely related to activity. The fitness standard that appears to produce the lowest mortality is equivalent to a brisk walk of 30-60 minutes per day (23).

The effects of activity on morbidity and mortality, the dose-response nature of the effect, and the recognition that intermittent bouts of exercise may have the same cardiovascular benefits as continuous exercise led to the recommendation that all adults should accumulate 30 minutes or more of moderate-intensity physical activity on most, or preferably all, days of the week (24). In most of the major studies of cardiovascular mortality (24), the relative effect of some exercise compared to none appears to have the greatest effect at moderate levels of physical activity. The effect of some exercise compared to none on morbidity appears comparable (25). Based on the observation that an activity equivalent to 1 MET is about 1.2 kcal.min-1 or approximately 1 kcal.kg-1.hr-1, these recommendations would suggest the equivalent of 10-18 MET's per week. Although the goal of an expenditure of 10-18 MET's per week represents the ideal, the best outcome would be for those at almost any level of activity to increase their activity further. Therefore the revised guideline advises that a sedentary individual should become nonsedentary, and individuals who participate in light activity try to increase their activity further. A list of examples of moderate activity is included to aid in implementation.

Reductions in sedentary activity are also addressed in this revision. Television viewing represents the most important sedentary activity of Americans. For example, adult women aged 18 years and older spend almost 35 hours per week watching television (26). Television viewing has been linked to obesity in adults and children (27,28). Therefore, the guideline suggests not only an increase in moderate activity but also a decrease in sedentary activity as approaches to the maintenance of energy balance.

Issues related to weight loss in children and the elderly

The text emphasizes the need for children to eat healthful diets in order to promote normal growth and development at any body weight. To prevent overweight, the text emphasizes the importance of physical activity rather than food restriction. It notes that major efforts to change children's eating habits should be discussed with a physician or nutritionist.

The text points out that older adults should strive to maintain - neither gain nor lose - weight. Weight lost late in life is primarily muscle; physical activity helps to preserve fitness and should be encouraged.

Choose a Diet With Plenty of Grain Products, Vegetables, and Fruits

Guideline

The committee suggests that this guideline be more prominently displayed by following immediately after the weight guideline. A small change in wording, placing grain products first in the food list, makes the heading consistent with the Food Guide Pyramid.

Overview

In the 1990 DIETARY GUIDELINES the primary emphasis in this guideline was consumption of these foods as a source of dietary fiber and starch. The revised guideline emphasizes the contribution of these foods to total nutrient intake. These foods are highlighted as sources of vitamins C and B6, carotenoids and other antioxidant nutrients, folate, potassium, calcium, and magnesium and are noted typically to be low in fat.

The committee recommends the above-stated revision based on public awareness of epidemiological data that associate the intake of antioxidant nutrients with a lower risk for noncommunicable diseases. Most of the epidemiological data are based on dietary patterns that include intake of these nutrients from foods (29-31). The committee wants to emphasize to consumers that the advantage of consuming these nutrients from foods is that food contains a variety of nutrients as well as other compounds that may contribute to lower risk of chronic disease. Despite this evidence, most Americans consume less than the recommended number of servings of fruits, vegetables, and grains (32,33).

With the broader scope of this recommendation (that is, vitamins, minerals, antioxidant nutrients, lower fat content, as well as fiber and starch) and with the focus of the guideline on positive actions to modify dietary pattern, it seems more appropriate to have this guideline follow more directly after the advice to enjoy a variety of food and precede the more proscriptive recommendations on fat, saturated fat, cholesterol, sugar, salt, and alcohol.

Food versus nutrients

There is considerable information that strengthens our understanding of the relationship between the consumption of plant foods and lower risk of heart disease and cancer, including the understanding that many factors in these foods are likely to contribute to lower risk (34).

Epidemiological and clinical data have been used to associate the consumption of specific nutrients with lower risk of chronic disease. The committee strongly recommends that consumers be made aware of the importance of foods in providing these nutrients as well as other compounds that may be beneficial to health. Since the last DIETARY GUIDELINES were published, FDA has approved health claims for products containing grains, fruits, and vegetables that link them to a lower risk of heart disease and cancer (35,36).

Survey data reveal that most Americans consume less than the recommended number of servings of these foods (32,33). The guideline supports the HHS Five a Day for Better Health campaign, which is designed to increase the consumption of fruits and vegetables.

Inclusion of folate

Evidence developed since 1990 clearly supports a claim that points to the importance of folate adequacy in the first trimester of pregnancy in the prevention of neural-tube defects (NTD) in infants (37-40). Causality has been proved by administration of pure folic acid. The potential role of food-folate has not been explored, but guidance and information on the content of folate in plant foods is prudent, surely harmless, and possibly beneficial. The U.S. Public Health Service, in fact, has issued a recommendation encouraging all women of childbearing age who are capable of becoming pregnant to consume 0.4 mg of folic acid per day (not to exceed 1 mg total folate) for the purpose of reducing their risk of NTD (41).

Epidemiologic data point to an association of elevated homocysteine levels in the blood with cardiovascular disease and stroke in the elderly (42-45). Of the nutrients involved in the metabolic homocysteine pathway (folate and vitamins B12 and B6), folate appears to be the most important. Lack of intervention trials precluded inclusion of this information in the consumer bulletin. A future committee may want to consider the evidence when it becomes available. Still, the advice to foster consumption of folate-rich foods is prudent and is made in the bulletin.

Additional advice

Comments to the committee suggest that consumers have a poor understanding of the role of dry beans in the diet. Although beans are classified as a meat alternative because of their protein content, consumers can eat more of these products than the recommended 2-3 servings of meat or meat alternatives by counting them as servings of vegetables instead. The committee is clarifying this point.

Starchy foods such as breads, cereals, beans, potatoes, and rice are relatively low in fat. These foods, however, may be high in fat if spreads, shortenings, or oils are added during preparation or at the table. Advice is included so that consumers recognize that fat added during preparation is an important factor in determining whether these foods contribute to lowering total fat intake.

Recommendations to increase consumption of fruits and vegetables have often been interpreted to mean consumption of fresh produce. In many situations poor availability, high cost, or poor quality in selection of fresh produce may lead to insufficient consumption of these important foods. The committee wants consumers to be aware that processed products are a reasonable way to meet the recommendations in this guideline.

Choose a Diet Low in Fat, Saturated Fat, and Cholesterol

Guideline

The committee concurs with the 1990 wording but places this guideline in fourth position, after the guideline on grains, vegetables, and fruits - the foods that are the foundation of a healthful diet. Revisions of the text are for purposes of clarification and updating.

Overview

The introductory paragraph relates both the positive and negative aspects of dietary fat to the total diet. The importance of essential fatty acids and fat-soluble vitamins that are associated with dietary fat are indicated. The paragraph also points out that Americans are eating less total fat, saturated fat, and cholesterol than formerly. These positive statements are intended to place in context the need to continue to emphasize further reduction of the average consumption of fat, saturated fat, and cholesterol, given the continued high risk of atherosclerotic vascular disease and the increasing obesity of the population. This statement is in line with the recommendations of the National Cholesterol Education Program's Adult Treatment Panel that all Americans eat a diet containing 30 percent or less of energy from total fat, less than 300 mg of cholesterol per day, and 8-10 percent of energy from saturated fat (46). Data from the Third National Health and Nutrition Examination Survey indicate that the average population consumption levels are 34 percent of energy from total fat and 12 percent of energy from saturated fat (47).

Guideline

The introductory paragraph indicates that the risk of certain cancers is linked to high fat intake. Although this relationship is confounded by the association between total fat intake and dietary energy, this statement reflects the scientific consensus that reducing total fat consumption is likely to reduce the incidence of certain cancers as well as atherosclerotic vascular disease (48).

The introductory paragraph notes that dietary saturated fat and cholesterol consumption are positively correlated with blood cholesterol levels, which in turn are linked to heart disease risk. The guideline, however, does not include a statement that blood (plasma) cholesterol concentration of less than 200 mg/dL is desirable (46). The committee feels that including a specific level of cholesterol is not appropriate for this document in order not to leave any implication that individuals with a value of less than 200 mg/dL can ignore all or part of this guideline. The guideline is not intended to deal with individual heart disease risk, which includes many other factors. The document does not now deal with these factors (such as family history of premature cardiovascular disease, low HDL cholesterol, hypertension, tobacco use, and diabetes) because to do so would

diffuse the message about diet and tend to 'medicalize' the guideline.

The document does not indicate that individuals vary in their blood cholesterol response to dietary saturated fat and cholesterol because there is no practical way to identify individuals who may be hyper- or hyporesponsive (49,50). Therefore, the committee thinks that such a statement will not be useful here.

The guideline now indicates that eating foods which contain less fat makes it easier to meet the guidelines for variety and grains, fruits, and vegetables, thereby tying this guide to others.

Upper boundary for fat intake

The guideline for total fat is 'no more than 30 percent,' rather than '30 percent or less.' This change in wording is intended to downplay the implication 'the lower the fat intake the better.' The guideline also refers to Daily Values for total fat, saturated fat, and cholesterol. These numbers have been included for their educational value and also to facilitate application of the guideline.

Types and sources of fatty acids

The guideline now addresses the specific classes of fatty acids in fats: monounsaturated, polyunsaturated, omega-3 polyunsaturated, and trans. This explanatory material is important because many Americans are now aware of the relationship between types of fatty acid and blood cholesterol levels and health. The statement about trans fatty acids indicates that these components are less effective than (cis) monounsaturated or polyunsaturated fatty acids in reducing blood cholesterol, but it does not specifically compare trans fatty acids with saturated fatty acids because scientific data on this point are mixed (51). Mention of tropical oils has been deleted because these oils contribute little to total fat consumption (52).

Dietary cholesterol

The statement on dietary cholesterol has been expanded to indicate specific sources and includes a statement that reducing cholesterol, as well as saturated fat, consumption, reduces blood cholesterol concentrations. A comparison of the relative importance of dietary cholesterol and saturated fat has been omitted because quantitative comparisons are complex and difficult to justify. For example, some data indicate that the effect of saturated fat is determined in part by the amount of dietary cholesterol (53,54).

The committee also notes that national recommendations about cholesterol consumption recognize that dietary cholesterol may increase heart disease independent of its effect on plasma cholesterol concentrations (55). The guideline now refers to the

Daily Value for cholesterol as 300 mg, a value which is consistent with recommendations of authoritative bodies (46). Although the average cholesterol consumption of Americans is now close to 300 mg for women and children (and only moderately lower than the average consumption for men), the committee believes that it is important to indicate that individuals should continue to limit dietary cholesterol.

Recommendations for children

Application of the guideline to infants and children is now specifically addressed. In keeping with recommendations by other authorities (56), the guideline is stated to apply only to children ages 2 years or older. For logical and practical reasons, the committee recommends gradual adoption of the guideline from age 2 to age 5 years, so that by the time children are in school, they should be consuming diets that follow the DIETARY GUIDELINES. The committee considers this advice appropriate for health reasons and also to enable uniformity in directions for school lunch programs. The committee notes a recent study indicating no adverse effect among children of age 8-10 years of a diet that contained 28.5 percent of energy from total fat, 10 percent from saturated fat, and 90 mg cholesterol per 1,000 kcal (57).

Advice for today

In the 'Advice for today' section, the committee does not include a recommendation to have blood cholesterol checked because the guideline has been designed for individuals with low as well as elevated cholesterol concentrations. Existing Federal guidelines for measurement of blood cholesterol are available and these differ for children and adults (46,56). Greater emphasis is given than formerly to use of plant sources of protein-rich foods.

Choose a Diet Moderate in Sugars

Guideline

The committee recommends a change in the wording of this guideline. The revised wording continues the consistent evolution of the DIETARY GUIDELINES through their various revisions to encourage Americans to 'focus on total diet in a more positive way' (58). In the committee's judgment the vast majority of scientific studies fail to show either significant detriment from consumption of sugars in the amounts generally consumed by Americans or significant benefit from reducing sugars consumption per se. This conclusion is consistent with the FDA's 1986 report 'Evaluation of the Health Aspects of Sugars Contained in Carbohydrate Sweeteners' (59). Thus, the negative connotation of the word only in the 1990 title is considered inappropriate in the context of this guideline specifically and in the generally positive context of the recommended guidelines as a whole.

Sugars as a calorie source

The revised text omits the 1990 statement that sugars provide calories. This information now is included in the introduction under the heading 'Foods Also Contain Energy,' which reads in part, 'carbohydrate and protein provide 4 calories per gram.' Most Americans know that sugars are a source of calories, and the current 'sugars' text includes such statements as 'replace lost calories from fat with equal calories from carbohydrates' and 'foods containing sugar substitutes, however, may not always be lower in calories than similar products that contain sugar,' confirming that sugar-containing foods have calories.

Classification of carbohydrates

Sugars are carbohydrates by definition. The American Heritage Dictionary, 3rd edition, defines sugar as 'any of a class of water-soluble crystalline carbohydrates, including sucrose and lactose, having a characteristically sweet taste . . .' and the Random House Dictionary of the English Language, 2nd unabridged edition, defines sugar as a 'sweet, crystalline substance . . . a member of the same class of carbohydrates as lactose, glucose, or fructose.' The fact that dietary carbohydrates also include the complex carbohydrates starch and fiber is noted in the text to differentiate sugars from the other classes of carbohydrates, which are discussed elsewhere in the Guidelines.

The 1995 text explains that, contrary to what many consumers believe, the body cannot distinguish between naturally occurring and added sugars. During the process of digestion, dietary complex carbohydrates are broken down to their component monosaccharides prior to absorption into the portal circulation. There is no evidence that the gut can distinguish between sugars which result from intestinal breakdown of complex carbohydrates or disaccharides originating within the intrinsic food matrix and the chemically identical, exogenous sugars added to food during processing or afterward.

Carbohydrates and weight maintenance

The revised text provides continuity with other guidelines by pointing out that to maintain weight when intake of fat is reduced, there needs to be an isocaloric substitution, mainly of carbohydrates, and that this carbohydrate should come principally from foods in the lower half of the Food Guide Pyramid. Additional sugars are recommended only for very active, high-energy-requiring consumers, and sugars should be used sparingly by people with low calorie needs or those trying to lose weight.

Sugars do not cause diabetes

The genetic defects for several uncommon forms of diabetes have now been identified. The precise etiologies of the most common forms of diabetes, Type I (insulin dependent) and Type II (noninsulin dependent) diabetes are not yet defined with certainty. Nonetheless, Type I diabetes is now known to be mediated by an autoimmune mechanism, and Type II diabetes has been linked to several genetic loci. There is no evidence that

diabetes is caused by sugar intake. Nor is there evidence that the magnitude of sugar intake per se is related to the control of diabetic hyperglycemia. In its 'Nutritional Recommendations and Principles for People with Diabetes Mellitus,' the American Diabetes Association states that 'for most of this century, the most widely held belief about dietary treatment of diabetes has been that 'simple' sugars should be avoided. . . . There is, however, very little scientific evidence that supports this assumption' (60,61).

In relation to Type II diabetes, the 1995 text adds a statement that correcting overweight requires reducing the total amount of food you eat and increasing the level of physical activity. This statement reinforces the recommendations on body weight maintenance and augmented physical activity presented elsewhere in the 1995 guideline and is entirely consistent with the American Diabetes Association recommendations on weight loss and exercise in overweight Type II diabetics (60,61).

Sugars do not cause hyperactivity

The committee recognizes that many Americans believe that sugar intake causes hyperactive behavior. Nevertheless, the preponderance of scientific data do not support the etiologic association (62-67). The committee thinks that a definitive statement that dietary sugars do not cause hyperactivity is both scientifically accurate and necessary to prevent unsound consumer practices that are the consequence of misinformation on this subject.

The role of sugar substitutes

The Report of the Dietary Guidelines Advisory Committee on the DIETARY GUIDELINES FOR AMERICANS, 1990, includes a short statement on use of sugar substitutes that was deleted from the published version of the DIETARY GUIDELINES. The current committee agrees with the prior committee's recommendation that a statement on the role of sugar substitutes in weight control be incorporated into the guidelines because sugar substitutes are so commonly used by the population. The previous committee, however, 'found evidence for the value of noncaloric sweeteners in weight reduction to be inconsistent' (59). In the text of the 1995 DIETARY GUIDELINES, the present committee recognizes that foods containing sugar substitutes may not always be lower in calories than similar products that contain sugar and that the use of sugar substitutes without reducing the total calorie intake will not lead to weight loss. Because substitutes themselves do not provide significant calories, they may, however, be useful to people concerned about caloric intake. The committee believes that this cautious statement is now acceptable given the number of studies that support this contention (68-77).

Recommendation for fluoride

The revised text continues to support fluoride as an anticaries agent with the new statement that an adequate intake of fluoride will help prevent tooth decay. Further, the guideline retains

each of the recommendations about fluoridated toothpaste, dental consultation, and need for fluoride in the pediatric age group in the box accompanying the text. This is thought to be adequate given that the primary focus of the guideline is dietary sugar intake.

There are new data on the role of fluoride both in prevention of dental caries and in the etiology of dental fluorosis. Fluoride exerts its anticaries effect primarily through a local effect at the tooth surface and not via a systemic route as previously believed (78). This observation diminishes the importance of and has led the committee to delete the 1990 statement that fluoride is 'especially important for children whose unerupted teeth are forming and growing.' In addition, given the importance of local fluoride action at the tooth surface, the committee highlights fluoridated water in the text. This recommendation is seen as particularly important for individuals who do not regularly use fluoridated dentifrices, a circumstance that applies particularly to low-income families (78). However, since excess ingested fluoride appears to be the principal cause of fluorosis of primary and secondary teeth during their developmental stages between 3 months and 7 years of age (78), the committee limits the text to 'adequate' intake of fluoride and leaves in the accompanying box the recommendations for additional fluoride in dentifrice or other supplemental forms to a decision by the dental or medical caregiver.

Choose a Diet Moderate in Salt and Sodium

Guideline

The suggested wording of this guideline: 'Choose a diet moderate in salt and sodium,' replaces the former 'Use salt and sodium in moderation.' This change is recommended to make it clear that foods - processed, prepared, and preserved - are the source of most dietary sodium. Use conveys the idea of using salt, as from the shaker, which is misleading, since the proportion of sodium or salt added at the discretion of the consumer is small (79,80). This wording is also consistent with that of other guidelines to 'choose a diet.'

Overview

Several changes are recommended in the text to clarify and amplify this guideline and to link it to the Food Guide Pyramid. A key objective of this revision is to shift the tenor of this guideline toward dietary advice and away from primary focus on hypertension. The role of sodium in high blood pressure continues to be a major rationale for this guideline, but with added emphasis on sodium as an essential nutrient that is substantially overconsumed by the American public in general. The four principal messages associated with this guideline are presented below and supporting evidence is provided in a subsequent section:

- Sodium and salt are found in foods throughout the food groups.
  This message, and the accompanying information that most salt

consumed has been added to foods before they reach the consumer's table, are included in the 1990 Guidelines. The revised text notes that salt and sodium are added to foods not only to enhance taste but also because salt and sodium have many uses in food processing.

- Sodium is associated with high blood pressure.
  This has been a central point of the sodium guideline. In this revision a statement linking sodium to normal blood pressure physiology has been added to help make the point that blood pressure risk occurs along a continuum. The prevalence of hypertension is not stated to avoid the impression that this guideline applies only to the third or quarter of the population whose blood pressure is over a certain threshold. The term diverse populations is used to describe the breadth of evidence supporting the sodium-blood pressure link. The revised text acknowledges the complexity and continuing uncertainty regarding interactions between sodium and other factors, including dietary factors addressed by other guidelines.

- Other factors affect blood pressure.
  In contrast to the text for the 1990 guideline, which simply lists obesity as one in a list of other factors known to affect blood pressure, the revised text emphasizes the importance of weight control to reduce blood pressure risk in addition to moderation in sodium intake. The probable benefits of increased consumption of fruits and vegetables high in potassium, in conjunction with sodium reduction for high blood pressure risk reduction, are now mentioned in the text to acknowledge the large body of evidence linking a lower dietary sodium-potassium ratio to lower blood pressure. Based on the evidence reviewed, the committee considered it appropriate to express this advice in terms of fruits and vegetables, rather than potassium (a salt substitute, for example) as such. This advice reinforces the guideline to consume fruits and vegetables.

  An informational statement about the possible association of calcium nutriture and high blood pressure has been included, and consumers are advised that moderating sodium consumption may have the benefit of reducing sodium-induced calcium depletion.

- Most Americans consume more salt than is needed.
  The general overconsumption of sodium in the American population is noted here. The applicability of the recommendation to moderate sodium intake to the general population is also tied to the lack of probable harm associated with moderating sodium consumption for the healthy normal adult. To help with interpretation of the word moderate, this guideline refers to the level of 2,400 mg sodium (6 grams salt) listed as the Daily Value on the Nutrition Facts Label.

Advice for today

The 'Advice for today' in the 1990 guideline places first emphasis on having blood pressure checked. There is now ample consumer guidance to this effect promulgated by health agencies. Because these are DIETARY GUIDELINES, the revised text focuses on strategies for dietary sodium reduction, including the use of the Nutrition Facts Label. The availability of sodium content information and more uniform sodium-related health claims on food

has evolved since 1990. These developments provide important new support for implementation advice. The 'Advice for today' emphasizes the need to reduce the sodium obtained from frequently consumed foods throughout the Food Guide Pyramid (in contrast to focusing only on a few less frequently consumed high-salt foods). Accompanying boxed text gives specific behavioral strategies that have been identified as most effective in accomplishing dietary sodium reduction, touching upon several of the food groups and including strategies to stimulate increased availability of lower sodium food choices through retailers and restaurants. This behavioral approach is consistent with the Healthy People 2000 objectives.

Consistency with other recommendations

Reduction of sodium or salt or both in diets is recommended in both The Surgeon General's Report on Nutrition and Health and the National Research Council's (NRC) report Diet and Health (81,48). NRC suggests consuming less than 6 g salt per day; the Surgeon General's report presents no numeric goal. The Daily Value on the new food labels is 2,400 mg sodium per day, for both the 2,000 and 2,500 kcal intakes. This is equivalent to 6 g salt per day. The NRC's 10th edition of the Recommended Dietary Allowances gives 500 mg sodium per day as a safe minimum intake (82).

The Healthy People 2000 objectives quantify sodium reduction objectives in the form of targeted percentages of people who adhere to certain behaviors that are conducive to moderating sodium intake, preparing food without adding salt (target 65 percent), avoiding the use of salt at the table (target 80 percent), and regularly purchasing foods lower in sodium (target 40 percent) (83).

Supporting evidence

The committee received many comments on the sodium guideline and heard testimony from fully creditable health professionals who differed on the question of whether or not to retain this guideline. Detailed expert reports on the sodium and hypertension issue - the NRC Diet and Health report (48), The Surgeon General's Report (81), and the report of a National Institutes of Health November 1989 workshop (84) were available to the 1990 committee. Additional support for the recommendation to moderate sodium intake has been published in the interim in the form of careful reviews of the most pertinent correlational (ecological) studies, observational studies, and clinical trials (85-87). In addition, a report describing the importance of both sodium reduction and weight reduction to prevent the development of high blood pressure was released by the National High Blood Pressure Education Program (88). Among the key evidence cited in this report are results of the first phase of a large, multicenter primary prevention trial - the Trials of Hypertension Prevention (TOHP I). TOHP I results demonstrate that sodium reduction in individuals with initial blood pressures in the high normal range is feasible, is not associated with adverse effects, and is associated with statistically significant decreases in blood pressure over an 18-month period and of a sufficient magnitude to have important public health implications (89,90).

Weight reduction is also effective in lowering blood pressure in TOHP I, with effects larger than those for sodium. Thus, although debate continues among scientists on the association between salt intake or sodium intake or both and the risk of developing high blood pressure (as opposed to the benefits for treatment of high blood pressure), the weight of overall evidence to date (including that which has become available in the interim since the 1990 Guidelines) still favors making a strong recommendation to moderate sodium intake.

The fact that high blood pressure affects only a subset of the population has been cited as a reason not to recommend reduced sodium intake for the general population. However, the new classification of blood pressure in the fifth report of the National High Blood Pressure Education Program's Joint National Committee, issued in 1993, characterizes blood pressure risk as a continuum with several stages, extending from normal blood pressure to high normal blood pressure to high blood pressure in stages of severity (91). This perspective on blood-pressure-related risk as a graded phenomenon beginning within the normotensive range, together with the evidence from prevention trials focusing on persons with high normal blood pressure, supports the applicability of the guideline to moderate sodium and salt intake to the general population. Furthermore, the inability to identify in advance individuals who are sensitive to the blood-pressure-raising effects of a high salt intake makes limiting the recommendation to a salt-sensitive subset of the population infeasible.

Studies of the relationship of substances other than salt and sodium to high blood pressure were discussed by the committee in order to determine how best to position the possible benefits of sodium reduction vis-ˆ-vis other blood pressure risk reduction strategies involving diet and to identify appropriate cross references to the other guidelines. Weight reduction is given more prominence in the text of the sodium guideline because evidence linking weight reduction to the primary prevention of hypertension is considered to be very strong (84,89). Blood-pressure-lowering effects reported for weight are larger than those for sodium but are considered additional to, rather than substitutes for, sodium effects; the latter, as reported in the literature, are probably underestimated (92). Moreover, in spite of the difficulty of achieving reduced sodium intake in the general population, the ability to achieve and maintain reduced sodium intake in the general population may be greater than the ability to achieve permanent weight reduction (89,90), particularly as the availability of reduced sodium foods increases through the cooperation of the food industry.

There is considerable evidence supporting the possible role of increased potassium intake in offsetting the effects of sodium on blood pressure (88). However, the total picture with respect to potassium is less convincing than that for sodium or weight because the potassium effect has been difficult to confirm in population-based clinical trials (88,93). Difficulty in confirming the potassium effect may stem from differences in the initial potassium intake of those being compared, in the form of potassium used (potassium chloride versus other forms), or because the effect of dietary potassium is relative to the sodium content of the diet. The recommended wording on this point in

the 1995 guideline takes into account human studies suggesting that the form in which potassium occurs naturally in fruits and vegetables (salts of organic acids, ultimately, bicarbonate) does have a favorable effect on blood pressure (94).

Although it is clear that the calcium ion is involved in blood pressure regulation, available evidence for an independent role of dietary calcium intake in blood pressure control is less convincing than that for dietary sodium or potassium (95). To acknowledge the link between sodium, calcium, and blood pressure, the recommended wording draws attention to the possible role of calcium in this respect and to the effect of high sodium intake on calcium depletion (96).

Evidence of higher than recommended sodium intake among U.S. adults was updated by reference to dietary recall data reported from the 1988-91 National Health and Nutrition Examination Survey (NHANES III) for adults ages 20 years and older (97; unpublished data provided by the National Center for Health Statistics). Average sodium intake of adults ages 20 years and older is 3,400 mg per day overall in NHANES III: 4,063 mg for men and 2,769 mg for women. If the NHANES III estimate is increased by 15 percent to include discretionary salt, approximate sodium intakes for the total, male, and female adult populations are 3,900, 4,700, and 3,200 mg per day, respectively.

Information for assessing intakes

Information needed by the public to understand and use numerical goals for sodium or salt reduction is available for packaged foods that fall under the NLEA (98). However, such information is less available for catered and restaurant foods, which constitute a major portion of the food intake of most U.S. children and adults. The sodium content of foods is available to professionals in food composition tables, although the extent to which added salt is adequately or consistently estimated from these tables is uncertain.

Guidance for moderating salt and sodium in the diet has been included in the new food-labeling regulations and represents a major improvement in the possibility that consumers can identify the sodium content of the foods they purchase in supermarkets. Uniform definitions for serving sizes and for sodium content per serving have been implemented for sodium-content claims on food labels (for example, <140 mg per reference amount for a low-sodium food). In addition, foods making any of the health claims allowed by the NLEA are disqualified if they exceed certain specified limits. Including a reference to the 2,400 mg Daily Value for sodium intake stated on the Nutrition Facts Label provides a direct link between the DIETARY GUIDELINES and the food label, promoting consistency of dietary guidance from these two sources.

If You Drink Alcoholic Beverages, Do So in Moderation

Guideline

The committee recognizes that this guideline is unique among the

DIETARY GUIDELINES because the substance referred to is both a food - that is, a calorie-rich beverage - and a drug, and as the latter, is subject to abuse and can cause user dependency. The committee considered whether or not alcohol abuse and excess render this a public health issue that would be better approached somewhere other than in the DIETARY GUIDELINES. Yet, alcoholic beverages are a regular part of the diet as well and, when used in moderation, may be safe and pleasurable. Because the absence of the guideline after its presence in the three previous editions would send a confusing message to the public, the committee concluded that the guideline should be retained with the same heading as in the 1990 version. Modest changes in the text are suggested.

Overview

The introductory statements refer to the widespread use of alcoholic beverages to enhance meal satisfaction throughout human history, and the introduction also refers specifically to the physiologic or drug effects of alcohol, including the capacity to alter judgment. As before, the early statements emphasize that dependency and excess can cause serious health problems.

Moderation

The definition of moderation is retained from the 1990 edition, but the box defining moderation now appears earlier in the text. In this same box an additional statement is included that refers to the calories in alcoholic beverages (also referred to in the weight guidelines) and the possible contribution to weight gain.

Alcohol-disease risk relationships

The list of problems associated with heavy drinking has been expanded to include high blood pressure, stroke, heart disease, certain cancers, accidents, and violence. The concern in the 1990 edition that the beneficial effects of moderate intake on heart attack were offset by higher risk for hypertension and hemorrhagic stroke has not been supported by further studies in moderate drinkers where neutral or beneficial effects on risk of stroke or cerebrovascular disease have been recorded (99-104).

Those who should not drink

The list is similar to the 1990 edition but reordered to place children and adolescents at the top. The term adolescents is interpreted to include all people younger than the legal age of 21 years. Despite some studies showing no detrimental effects of low or moderate alcohol intake during pregnancy, the committee recommends continuation of the prudent advice that women who are pregnant or trying to conceive (that is, who might already be in the first few weeks after conception and before a determination as pregnant) should not drink, since an absolutely safe level of alcohol intake during early pregnancy has not been accepted. Like the 1990 committee, the current committee found insufficient evidence on which to base a recommendation on alcohol consumption

during lactation.

Advice for today

The text expands the statement in the 1990 guidelines to emphasize the food use of alcoholic beverages rather than the social drug use. The section recognizes that consumption of alcohol with meals slows consumption and absorption of alcohol and notes that alcohol should not be consumed in situations where others might be put at risk.

OTHER RECOMMENDATIONS

In addition to the recommendations for the content of the bulletin, the committee wishes to direct the attention of the Secretary of the Department of Agriculture and the Secretary of the Department of Health and Human Services to actions important to the use, implementation, and future development of the DIETARY GUIDELINES.

The committee believes that the advice in the 1995 GUIDELINES, if followed, will lead to the improved health status of Americans and reduced health-sector costs. The committee recommends vigorous promotion of the GUIDELINES and their wide distribution made free of charge for use by health professionals, educators, and the media.

Prior to convening the 1990 committee, USDA conducted focus groups to determine consumer understanding of the messages in the 1985 GUIDELINES. The results of these studies were valuable in revising the DIETARY GUIDELINES to convey a more meaningful message to consumers. To facilitate future revisions of the GUIDELINES, USDA and HHS are encouraged to continue to gather informafion similar to what is presently being collected through focus group testing.

There are significant barriers to consumer ability to implement the GUIDELINES, such as poverty, education, acculturation, and time. The committee recommends the development and publication of material giving practical advice on both family food management and congregant feeding. Particular attention should be given to the needs of the elderly.

Monitoring of food consumption and health indicators is essential to the development of the DIETARY GUIDELINES. For example, survey data available to this committee show that the public is acting on the advice to reduce fat intake. Data also indicate, however, that consumption of key foods falls short of levels recommended in the 1990 edition and that the lower-fat diets tend to be less adequate in nutrients than those with more fat. This information was important in the committee's consideration of the GUIDELINES' revision. The committee strongly recommends continued support of national nutrition and health surveys, including the assessment of food consumption of individuals and

families.

The 1990 and 1995 committees had the advantage of recently published documents such as the SURGEON GENERAL'S REPORT ON NUTRITION AND HEALTH, the National Academy of Sciences report on DIET AND HEALTH REPORT and the HEALTHY PEOPLE 2000 objectives to guide their deliberations (81,48,83). These documents provided insight about the major nutrition-related public health issues for the American public, as well as the current scientific base for dietary modifications appropriate to address these issues. Updating this knowledge is an essential part of the process to develop DIETARY GUIDELINES.

While the committee recognizes that sound nutritional practices are important to good health at all life stages, the biology of growth and development make young children particularly vulnerable to poor nutrition and, conversely, also potentially the greatest beneficiaries of good nutrition. Similarly, the social and economic dependency of young children puts them at risk of poor nutritional practices. Exclusion of very young children from the GUIDELINES is, therefore, inconsistent with both the important role of nutrition during that critical stage of growth and development and inconsistent with the pregrammatic roles played by local, state, and Federal governments in assuring the nutritional well-being of children.

The committee, therefore, strongly recommends the development of DIETARY GUIDELINES for children, including those less than 2 years of age. To make this possible, a working group should be charged to develop provisional guidelines for children and supporting peer-reviewed documentation that is essential for this process. The lack of consensus documents focused on the needs of children has hampered the work of the present and past advisory committees.

Based on the experience of the 1995 committee, the agencies should consider some revisions to the process of developing the GUIDELINES. Several comments to the committee highlighted the difficulty of having a single bulletin address the needs of consumers, as well as policy makers and health professionals. A process that utilizes a two-step approach is encouraged. The first step would focus on determining the important nutrition-related public health issues and the dietary strategies that are most important. The second step would focus on effective communication messages to educate the public and achieve behavior modification. Such an approach would require that expertise in nutrition education as well as nutritional sciences be included in the committee or that a second committee with nutrition education expertise be appointed.

During its deliberation, some members of the current committee felt that there was a need to change the format of the GUIDELINES to be more effective in communicating current scientific thought. However, the implications of public misunderstanding of a change in format or key statements made it difficult to consider these modifications. To address this concem, issues regarding format and effective communication need to be a specific function of the next committee process.

The DIETARY GUIDELINES form the basis of Federal policy related

to nutrition and diet. Given this central role, it is essential that we build the knowledge base for these recommendations through continued research investment. For example, the deliberations of the committee emphasize the need for research to establish the relationship between fat consumption during childhood and long-term health outcome, the function and bioavailability of compounds in plant foods that are important for health, the implications for long-term health of body weight loss or maintenance or both, the association of food pattems and health outcomes, electrolyte balance and risk of hypertension, a better understanding of the physiological basis for the relationship between consumption of alcoholic beverages and cardiovascular disease, and the best ways to convey information about the role of diet and health to the public.

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APPENDIX I: HISTORY OF DIETARY GUIDELINES FOR AMERICANS

The DIETARY GUIDELINES FOR AMERICANS, developed jointly by the Department of Health and Human Services and the Department of Agriculture, provide recommendations based on current scientific knowledge about how dietary intake can reduce risk for major chronic diseases. The GUIDELINES form the basis of Federal food, nutrition education, and information programs. First published in 1980 and revised in 1985 and 1990, Public Law 101-445, 3, now requires publication of the DIETARY GUIDELINES at least every 5 years beginning in 1995 (1). This legislation also requires review by the Secretaries of USDA and HHS of all Federal dietary-guidance-related publications for the general public (1). The fourth edition of the DIETARY GUIDELINES is scheduled for release in 1995.

DEVELOPMENT OF THE DIETARY GUIDELINES - A CHRONOLOGY

1977 DIETARY GOALS FOR THE UNITED STATES (the McGovern report) was issued by the U.S. Senate Select Committee on Nutrition and Human Needs (2). These goals were the focus of controversy among some nutritionists and others concerned with food, nutrition, and health.

1979 American Society for Clinical Nutrition formed a panel to study the relation between dietary practices and health outcomes (3). The findings, presented in 1979, were reflected in HEALTHY PEOPLE: THE SURGEON GENERAL'S REPORT ON HEALTH PROMOTION AND DISEASE PREVENTION (4).

1980 NUTRITION AND YOUR HEALTH: DIETARY GUIDELINES FOR

AMERICANS, 1st ed., was issued jointly by HHS and USDA in response to the public's desire for authoritative, consistent guidelines on diet and health (5). The GUIDELINES were based on the most up-to-date information available at the time and were directed to healthy Americans. These GUIDELINES generated considerable discussion by nutrition scientists, consumer groups, the food industry, and others.

1980 A U.S. Senate committee on appropriations report directed that a committee be established to review scientific evidence and recommend revisions to the DIETARY GUIDELINES (6).

1983-84
A Federal advisory committee of nine nutrition scientists selected from outside the Federal Government was convened to review and make recommendations to HHS and USDA about the first edition of the DIETARY GUIDELINES (7).

1985 HHS and USDA jointly issued a second edition of the DIETARY GUIDELINES (8). This revised edition was nearly identical to the first. Some changes were made for clarity, while others reflected advances in scientific knowledge of the associations between diet and a range of chronic diseases. The second edition received wide acceptance and was used as a framework for consumer education messages.

1987 Language in the conference report of the House Committee on Appropriations indicated that USDA, in conjunction with HHS, "shall reestablish a Dietary Guidelines Advisory Group on a periodic basis. This Advisory Group will review the scientific data relevant to nutritional guidance and make recommendations on appropriate changes to the Secretaries of the Departments of Agriculture and Health and Human Services" (9).

1989 USDA and HHS established a second advisory committee that considered whether revision to the 1985 DIETARY GUIDELINES was needed and then proceeded to make recommendations for revision in a report to the Secretaries. The 1988 SURGEON GENERAL'S REPORT ON NUTRITION AND HEALTH and 1989 National Research Council's report, DIET AND HEALTH: IMPLICATIONS FOR REDUCING CHRONIC DISEASE RISK, were key resources used by the committee (10,11).

1990 The 1990 National Nutrition Monitoring and Related Research Act was passed and requires publication of DIETARY GUIDELINES every 5 years (1). This legislation also requires review by the Secretaries of USDA and HHS of all Federal publications containing dietary advice for the general public.

1990 HHS and USDA jointly released the third edition of the DIETARY GUIDELINES (12). The basic tenets of the DIETARY GUIDELINES were reaffirmed, with additional refinements made to reflect increased understanding of the science of nutrition and how best to communicate the science to consumers. The language of the new GUIDELINES was more

positive, was oriented toward the total diet, and provided more specific information regarding food selection. For the first time, numerical recommendations were made for intakes of dietary fat and saturated fat.

1993 A charter established the 1995 Dietary Guidelines Advisory Committee.

1994 The 11-member Dietary Guidelines Advisory Committee was appointed by the Secretaries of HHS and USDA to review the third edition of the DIETARY GUIDELINES FOR AMERICANS to determine if changes were needed and, if so, to recommend suggestions for revision.

1995 A published report of the Dietary Guidelines Advisory Committee to the Secretaries of HHS and USDA will serve as the basis for the fourth edition of NUTRITION AND YOUR HEALTH: DIETARY GUIDELINES FOR AMERICANS.

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APPENDIX II: PUBLIC COMMENTS

Received During the 1990 Dietary Guidelines Review and Revision Process (N=284)

The following is a summary of comments received by the committee during its review and revision of the 1990 DIETARY GUIDELINES. The comments were received from individuals, interest groups, associations, and organizations between September 1994 and February 1995. Each set of comments received, whether from an individual or an organization, is counted here as 1. Note that various groups commented on multiple topics.

GENERAL

Many commented that the DIETARY GUIDELINES should be based on a sound scientific base. In addition, many pointed out that the GUIDELINES should be consistent with other public policy initiatives. Most people indicated that they support and, through work or personal initiative, communicate the recommendations espoused in the current (1990 edition) DIETARY GUIDELINES.

EAT A VARIETY OF FOODS (N=37)

Eight recommended that this guideline be population based, food centered, and based on a total diet, rather than specific foods. One comment supported advice to consume a variety of foods from among the five major food groups, based on results of a study that concluded variety within the major food groups has a negligible effect on nutritional adequacy over and above variety among the major food groups. Five comments supported changing the guideline to 'enjoy a variety of foods.' One recommended that the concepts of variety, moderation, and balance be discussed within the text. Two indicated the GUIDELINES should harmonize varying FDA and USDA serving sizes. One recommended a reverse in the current consumption ratio of animal to plant foods. Seventeen focused on the position of beans within the Food Guide Pyramid and recommended the consumption of beans and other legumes as high-protein meat alternatives and also as low-fat, high-fiber vegetable or cereal servings.

Two supported the use of dietary supplements in the total diet as a way to improve health outcomes for Americans. One requested removal of the statement that supplements are 'rarely needed if you eat a variety of foods.' One requested strengthening the statement about the association between folate and neural tube defects and calcium and osteoporosis. Three suggested including a calcium guideline or at least emphasizing calcium recommendations. One suggested recommending supplements when appropriate rather than a blanket condemnation of them. One recommended supplement intake by special populations like the elderly, pregnant women, and people on food assistance. One indicated little benefit should be expected from carotenoid supplementation of healthy individuals eating a typical American diet. Two suggested that the contributions of fortified/enriched foods must be acknowledged, particularly if the Recommended Dietary Allowance values shift upward to support goals of chronic disease prevention. One suggested that increased intakes of foods high in copper should be recommended by the DIETARY GUIDELINES because our diets are low in this nutrient, which affects blood cholesterol, blood pressure, promotes thrombosis, and impairs glucose tolerance. One indicated that nuts should be promoted because as plant foods, they lack cholesterol, are high in beneficial fats, and are a significant source of plant protein, vitamins, minerals, and fiber.

HEALTHY WEIGHT (N=10)

Two comments recommended continuing to use the word HEALTHY rather than DESIRABLE in the guideline, since DESIRABLE is ambiguous to the public. Seven recommended a more extensive discussion of physical activity benefits for weight loss and maintenance and overall health. One suggested that regular aerobic exercise at least 3-4 times a week for 20 minutes should be encouraged. One stated that a healthy weight guideline, with a physical activity focus, should be the key guideline in the document, followed by the importance of vegetable, fruit, and grains consumption and focusing on decreased saturated and trans fatty acid intakes. One suggested accounting for sex, body build, and age in the weight table. One cited studies that point to a relationship between Body Mass Index and risk of coronary heart disease and diabetes, and coronary heart disease and total mortality; the studies concluded that women and men will be healthiest if they begin adulthood with a BMI below 21 and do not increase their weight appreciably as they grow older.

One stated that waist-hip recommendations are not necessary because they are complicated and appear to add little to the prediction of risk beyond weight and weight gain. Two indicated the weight guideline should be used to target obesity prevention, since optimal weights may be unrealistic for people who are seriously overweight, and modest reductions should be encouraged for them. One comment supported weight gain with age, citing the Baltimore longitudinal study that indicates weight gained with age is characteristic of those with the greatest longevity. One comment suggested it is appropriate and realistic to allow for a small amount of weight gain with age for women, but not for men due to 'biological realities.' One recommended using a BMI of 25 as the cutoff for healthy weight range, after which a rise in total mortality is seen. One suggested that the focus of the guideline should be on defining healthy weight and how to

maintain it. One declared that weight loss is a clinical intervention and not within the purview of the DIETARY GUIDELINES.

VEGETABLES, FRUITS, AND GRAIN PRODUCTS (N=7)

Three suggested a stronger recommendation to increase grain consumption and more practical examples to help achieve this. One suggested outlining the role of COMPLEX CARBOHYDRATES in weight control and maintenance. One requested listing the term complex carbohydrates in a uniform manner for consistency and providing clear dietary guidance. One suggested including information on seasonal options, cooking tips, and health benefits. Two asked that fruit and vegetable juices be mentioned as contributing to intakes that meet this guideline, since they are available year around and are economical. One requested that a special recommendation be included on the importance of daily vegetable consumption.

Two believed the committee should recommend obtaining half of grain consumption from whole grain products, since there are many nonnutrient but physiologically active components in whole foods that may be beneficial. One recommended the word PHYTOCHEMICALS not be included in the guideline, since it will serve as a buzzword for the media and supplement industry. One believed antioxidant supplements should not be recommended. One suggested recommending that fiber intakes be obtained from whole foods rather than supplements. One suggested that fiber and antioxidant health claims be consistent with FDA regulations.

FAT, SATURATED FAT, AND CHOLESTEROL (N=15)

Three suggested focusing on total diet and not specifying foods for this guideline in particular. One recommended tying this guideline to the FOOD GUIDE PYRAMID and the Nutrition Facts Label. One requested that specific advice for children and older adults be included. Two recommended stressing the importance of lowering saturated and trans fatty acid intakes. One supported a recommendation to consume 10 percent or less of calories from saturated fat. Two recommended emphasizing the importance of lowering saturated fat in the diet, rather than cholesterol, because saturated fat is a greater contributor to blood cholesterol levels. One suggested that individual foods not be evaluated to determine fat content, since the 30- percent level is for the total diet.

Three requested that stearic acid not be grouped with other saturated fatty acids because it does not affectserum lipids. Two requested that trans fatty acids not be discussed, since data on the subject are inconclusive. One supported targeting advice to reduce dietary cholesterol intake to a subpopulation of 'at risk' individuals with high blood cholesterol and removing the word CHOLESTEROL from the title of the guideline. One did not support quantification of the cholesterol recommendation.

Two supported incorporating wording into the DIETARY GUIDELINES on the benefit (ability to lower blood cholesterol levels) of polyunsaturated fat (PUFA) as part of a lower fat diet. Both stated that low PUFA intake has been directly implicated as a risk factor in coronary heart disease and that there are no known

adverse effects of PUFA in the diet. One encouraged recommending consumption of soybean oil, which is high in PUFA and lowers blood cholesterol and may protect against certain types of cancer. One cautioned against low-fat diets, pointing to possible linoleic acid and vitamin E deficiency. One recommended advising consumption of nutrient-dense foods and decreased total fat and suggested presenting dietary guidance in a broader framework of physical activity and appropriate body weight. One suggested that recommended levels of fat intakes be listed in grams rather than percentage of calories, for simplicity.

SUGAR (N=11)

Three indicated that sugar's contributions to the diet be highlighted, that is, taste, function in food formulation, and as a fat replacer. One encouraged integrating issues related to dental health, diet and behavior, and nutrient density within a carbohydrate guideline. Four encouraged inclusion of a dental caries guideline focused on all fermentable carbohydrates rather than sugars per se. One pointed to the need for a better definition of moderation. Two suggested the DIETARY GUIDELINES should stress that sugar is of little food value and contributes to tooth decay. Three stated there is no evidence to suggest that added sugars have a different role in human metabolism than those which occur naturally. One suggested a separate guideline for fluoride since dental caries is not just related to sugar consumption. Three would like to eliminate the sugar guideline, while three recommended advising people to consume nutrient-dense foods, which will have the effect of reducing sugar intake.

Two encouraged the intake of artificial sweeteners because they believe consumers may better adhere to the first two guidelines (variety and healthy weight) if encouraged to reduce their caloric intake by using these sweeteners. One encouraged use of the term LOW-CALORIE SWEETENER to refer to acesulfame K, aspartame, and saccharin (rather than nutritive or nonnutritive) because the term is familiar to the public and used by industry. Two suggested changing this guideline to "Use sugars in moderation." Five suggested the guideline explain that there is no correlation between sugar and hyperactivity or any other behavioral disorders; three stated there is no connection between sugar intakes and diabetes. One suggested including a caveat if the Food Guide Pyramid is incorporated into the DIETARY GUIDELINES, that some sweets are good sources of some nutrients. Three requested that the sugar recommendation not be quantified. One discouraged use of the sugar guideline because it may discourage consumption of juices, which have to declare the natural sugars content.

SALT (N=18)

One wanted to see a better definition of moderation and an explanation of the risks and benefits of moderating sodium intakes relative to hypertension. One stated there are great dangers to salt overconsumption and cited a reference supporting a 200-mg level (enough to regulate vital functions); one recommended making this guideline a higher priority because food processors are now concentrating more on fat and less on sodium and sugars.

Five applauded the 1990 recommendation pointing to ample data on hypertension and cardiovascular and renal disease to form a basis for recommendations; these comments additionally suggest that recommendations be quantified at 2.4 grams of sodium or less, consistent with National Research Council, NHLBI recommendations. One emphasized that the recommendation does not imply a low-sodium diet but, rather, promotes lowering the average dietary sodium intake from the current 4,000 mg per day to the desirable population mean of 2,300 mg per day. One requested that guidance continue to stress the need to reduce the amount of salt added to foods, as well as encourage industry to add less salt to processed foods. One stated that even if only a certain fraction of the population is salt sensitive, we are not able to identify who these people are, and therefore the recommendations should be population wide.

One urged that the guideline not be eliminated. One indicated that while weight, potassium, and alcohol may influence high blood pressure, sodium alone is a "crucial part of the preventive approach by itself." Three believed there is no scientific basis for a dietary guideline urging normotensive Americans to consume a sodium-restricted diet. They stated that the relationship between sodium restriction and blood pressure in the normotensive population is weak; body weight and alcohol are more strongly related to blood pressure than is sodium; the relationship between diet and blood pressure is complex (multiple electrolytes factor in); the feasibility of achieving substantial reductions in sodium intake on a population basis is remote; and implementation of this guideline could adversely affect implementation of guidelines with greater public health significance. Four stated that the guideline should be omitted or assigned a distinctly low priority. One requested that a quantitative recommendation not be made. One indicated that the data do not support the conclusion that lowering population sodium intakes will prevent a rise in blood pressure with age.

One comment asked that snack foods not be singled out as having high salt content, the rationale being that they vary in content and provide less salt to the diet than many of the more recommended foods (like grains and meats). One indicated that meats, primarily processed meats and grain foods, are the greatest contributors of sodium to the American diet. However, it was pointed out that grain foods are large contributors because of the frequency of intake and that people should not be discouraged from eating grains, which are low-fat and high-complex-carbohydrate foods. One suggested that people should know that most salt in the diet comes from processed foods.

ALCOHOL (N=152)

Seventy-one comments supported the present guideline, which identifies high-risk drinkers and drinking, while acknowledging the acceptability of moderate consumption (wine was usually specified) as part of a well-balanced diet. One believed moderation relative to alcohol intake should be better explained. Twenty were not in favor of expanding the guideline to promote moderate drinking as potentially beneficial to health and believed that a dietary guideline which reports the health benefits of moderate alcohol consumption would be misrepresented

to promote increased drinking. The GUIDELINES, these 20 stated, should promote regular exercise, smoking cessation, dietary changes, and avoidance of stress to obtain the health benefits associated with moderate alcohol consumption.

Fourteen specifically supported the one drink for women and two drinks for men definition of moderation, without caveat. While 24 others supported the current language, they pointed to a Harvard study that suggests even one or two drinks may not constitute moderation. One encouraged expanding the categories of high-risk individuals to include, among others, people with genetic predisposition to alcohol abuse (or alcoholism) and those who are stressed. One recommended that the guideline discuss the caloric contribution of alcoholic beverages. Eighty-eight supported including a more positive statement about moderate wine consumption and health benefits. Most of these commenters suggested they feel there is documented support of the relationship between moderate wine consumption and a decrease in morbidity and mortality from coronary heart disease, and some indicated there may be mental health benefits as well.

Five pointed to a possible antioxidant role of phenolinic compounds in wine and possible psychological and social benefits of alcohol. One suggested a public health document such as the DIETARY GUIDELINES should not be seen as advocating alcohol consumption. One recommended retaining the guideline, because consumers often place alcohol into a 'noncaloric' category and do not factor it into considerations for a total diet. One pointed to the need to help consumers understand what is meant by moderation. Thirteen requested deleting the statement that alcohol consumption is not recommended and stated that this should be an individual choice. One suggested the statement on consumption should be retained. Six recommended that the statement "drinking has no net health benefit" be deleted.

Seven suggested recommending levels of drinking slightly higher than one per day for women and two per day for men, for potential health benefits. Ten were supportive of promoting wine consumption, preferably with meals. Fourteen supported retaining the 1990 recommendations in their entirety. Five indicated that size and weight need to be taken into account when deciding maximum recommended alcohol intakes. Three recommended making the distinction between use and abuse of alcoholic beverages. One indicated that the language on children is too strong; many are introduced to alcoholic beverages without resulting health and behavioral problems. One believed there is no conclusive evidence that an occasional drink during pregnancy is harmful and felt this should be reflected in the GUIDELINES.

INFANTS AND CHILDREN (N=13)

Two comments strongly encouraged incorporating information on infant feeding, including recommendations for breast-feeding through the first year of life. One stated that special dietary needs of infants and children should be addressed, especially with regard to dietary fat intake. One suggested fat should not be restricted until after growth in adolescence is complete; one stated that children should consume 30 percent of calories from fat but not less. One recommended an average of 30 percent calories from fat, including 10 percent from saturated fat.

Three recommended a transition from age 2 through the end of linear growth, from the high-fat diet of infancy to a diet that includes no more than 30 percent of calories from fat and 10 percent from saturated fat, consistent with the 1990 nutrition recommendations for Canadians. One believed children's diets should emphasize consumption of omega-3 and monounsaturated fatty acids.

One recommended that calcium sources for adolescent girls and for those who are lactose intolerant should be stressed. Four stressed that recommendations made for adults cannot be applied to all Americans ages 2 and older, while one recommended using the same guidelines for children and adults in order to establish eating patterns from age 2, that is, people should receive consistent messages throughout life. Two suggested avoiding negative language, especially in providing guidance for children. One encouraged greater emphasis on fluoride and fluoride supplements and obesity prevention with an emphasis on physical activity and a sensible diet. One encouraged maintaining 1990 language on alcohol, with added emphasis on potential harmful effects such as fetal alcohol syndrome, abuse by children, and the number of motor vehicle injuries to young adults.

OLDER AMERICANS (N=5)

Three stated that older Americans should not be treated as a homogeneous group, because doing this ignores special dietary needs of the old and the very old. Specifically, dietary needs of those 65-80 should be viewed separately from those of people 80 and over. Two recommended establishing separate recommendations for older people because they have higher protein needs and lower calorie needs. One stated that the potential benefits of cholesterol reduction have not been established in older populations.

FORMAT/COMMUNICATING (N=15)

One comment suggested reordering the guidelines, such that the "eat less . . ." guidelines should be listed first, followed by the "eat more . . ." guidelines. One requested that the positive tone of the guidelines be maintained. One suggested stating messages in a positive, action-oriented tone to provide practical guidance to consumers. Three favored a two-tiered approach, including the first four guidelines in the first tier, and the last three (salt, sugars, and alcohol) in the second tier, stating that the science base for some guidelines is stronger than for others and also implying that prioritization and ranking are important. Eight favored a two-tiered approach, claiming that no particular guideline ought to be emphasized; adherence to all of them is needed to stay healthy. Two stressed the need to translate the DIETARY GUIDELINES into the most "user-friendly terms" possible, with the inclusion of more practical advice.

One recommended providing information in both a graphic and text format with the fewest possible words to enhance consumer communication and improve decision making and comprehension. One suggested identifying consumer attitudes, concerns, and behaviors about food, nutrition, and health, translating guidance into practical dietary recommendations, and prioritizing this information for the consumer. Four cautioned that the DIETARY

GUIDELINES serve dual purposes -- (1) public policy and (2) nutrition education of the public - and recommended that two separate documents be written, possibly by two separate advisory groups. These four also commented that additional consumer-oriented research must take place to capture consumers' perceptions, values, and beliefs, as well as their understanding of the DIETARY GUIDELINES.

QUANTIFICATION OF RECOMMENDATIONS (N=39)

Thirty-one suggested quantifying sodium, cholesterol, fiber, and refined sugar recommendations as follows: less than 2,400 mg sodium and 300 mg cholesterol, at least 25-30 grams of fiber. One recommended changing the sugar and salt guidelines to read: "Use a minimum of sugars," and "Use salt in minimum amounts." One recommended quantification of trans fatty acids, omega-3 fatty acids, folic acid, and vitamin E levels. One requested qualitative rather than quantitative recommendations, because the guidelines are not meant to be standards.

RENAMING THE GUIDELINES (N=1)

One suggested changing the name of the guidelines to Nutrition and Fitness Guidelines for Americans and indicated that the word DIETARY has a negative connotation and that physical activity should be more heavily stressed.

[This concludes the REPORT OF THE DIETARY GUIDELINES ADVISORY COMMITTEE ON THE DIETARY GUIDELINES FOR AMERICANS, 1995]

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