Chapter 2

Nutrition Tools – Standards and Guidelines
Eating well is easy in theory

- Just choose a selection of foods that supplies appropriate amounts of the essential nutrients, fiber, phytochemicals, and energy, without excess intakes of fat, sugar, and salt.
  
  - Be sure to get enough exercise to balance the foods you eat!!
In practice, eating well proves harder than it appears

- Many people are overweight, or undernourished, or suffer from nutrient excesses or deficiencies that impair their health
  - They are *malnourished*
The Dietary Reference Intakes are nutrient intake standards set for people living in the United States and Canada.

The Daily Values are U.S. standards used on food labels.
I know my diet needs improvement.

a. Agree
b. Disagree
c. I never think about it.
The DRI committee has set values for:

- Vitamins
- Minerals
- Carbohydrates
- Fiber
- Lipids
- Protein
- Water
- Energy
DRI Lists & Purposes

A. Recommended Nutrient Intakes

Both are nutrient goals

1. **Recommended Dietary Allowance (RDA)**
   - Numbers are taken from solid experimental evidence & reliable observations.
     - Expected to meet the needs of almost all healthy people
     - Ex: How many grams of thiamin does a 20 year old male need daily?

2. **Adequate Intake (AI)**
   - Numbers are taken from available scientific research & some educated guesswork.
     - Ex: How many liters of water does a 15 year old female need?
Whenever the DRI committee does not find enough evidence to generate RDA they establish an AI value.
B. Facilitating Nutrition Research and Policy

3. Estimated Average Requirements (EAR)

- Average nutrient requirements for given life stages & gender groups

- Policy makers & public health officials use this in their work.

- Basis of the RDA values.
C. Safety

4. Tolerable Upper Intake Levels (UL)

- To identify potentially hazardous levels of nutrient intakes
- People who take supplements
- People who consume food that has added vitamins and minerals
- Some nutrients do not have UL but it doesn't mean that you can consume as much as you want.
- There is not enough data to establish a value.
- Ex: What is the UL for niacin for a 5 year old?
DRI Lists & Purposes

Naïve view

Tolerable Upper Intake Level (UL)

DRI Recommended Intakes

Accurate view

Danger of toxicity

Marginal

Safety

Marginal

Danger of deficiency
D. Calorie Percentage Ranges

5. Acceptable Macronutrient Distribution Ranges (AMDR) for energy nutrients

- 45 to 65 percent of daily calories from carbohydrates
- 20 to 35 percent of daily calories from fat
- 10 to 35 percent of daily calories from protein

These percentages provide enough nutrients while minimizing chronic disease.
Separate recommendations for men, women, pregnant, lactating women, infants, and children

Specific age ranges
Understanding the DRI Intake Recommendations

The DRI in perspective

- The values are based on available scientific research and updated periodically in light of new knowledge.
- The values are based on the concepts of probability and risk.
- The values are recommendations for optimal intakes, not minimum requirements. Include a generous margin of safety.
- The values are set in reference to specific indicators of nutrient adequacy, rather than prevention of deficiency symptoms alone.
The DRI in perspective

- The values reflect daily intakes to be achieved, on average, over time. The values are set high enough to ensure that body stores will meet nutrient needs during periods of inadequate intakes.

- The recommendations apply to healthy persons only.
Why Are Daily Values Used on Labels?

- One set of values that applies to everyone found only on food labels.
- Reflect the needs of an “average” person – someone eating 2,000 to 2,500 calories a day.
- Enable consumers to compare the nutrient values among foods.
The *Dietary Guidelines* suggest that physical activity should be part of a healthy lifestyle.
**Table 2-1**

*Dietary Guidelines for Americans 2010—Key Recommendations*

1. **Balancing Calories to Manage Weight**
   - Prevent and/or reduce overweight and obesity through improved eating and physical activity behaviors.
   - Control total calorie intake to manage body weight. For people who are overweight or obese, this will mean consuming fewer calories from foods and beverages.
   - Increase physical activity and reduce time spent in sedentary behaviors.
   - Maintain appropriate calorie balance during each stage of life—childhood, adolescence, adulthood, pregnancy and breastfeeding, and older age.

2. **Foods and Food Components to Reduce**
   - Reduce daily sodium intake to less than 2,300 milligrams and further reduce intake to 1,500 milligrams among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease. The 1,500 milligrams recommendation applies to about half of the U.S. population, including children and the majority of adults.
   - Consume less than 10% of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids.
   - Consume less than 300 mg/day of dietary cholesterol.
   - Keep *trans* fatty acid consumption as low as possible by limiting foods that contain synthetic sources of *trans* fats, such as partially hydrogenated oils, and by limiting other solid fats.
   - Reduce the intake of calories from solid fats and added sugars.
   - Limit the consumption of foods that contain refined grains, especially refined grain foods that contain solid fats, added sugars, and sodium.
   - If alcohol is consumed it should be consumed in moderation—up to one drink per day for women and two drinks per day for men—and only by adults of legal drinking age.

3. **Foods and Nutrients to Increase**
   - Increase vegetable and fruit intake.
   - Eat a variety of vegetables, especially dark-green and red and orange vegetables, and beans and peas.
   - Consume at least half of all grains as whole grains. Increase whole-grain intake by replacing refined grains with whole grains.
   - Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages.
   - Choose a variety of protein foods, which include seafood, lean meat and poultry, eggs, beans and peas, soy products, and unsalted nuts and seeds.
   - Increase the amount and variety of seafood consumed by choosing seafood in place of some meat and poultry.
   - Replace protein foods that are higher in solid fats with choices that are lower in solid fats and calories and/or are sources of oils.
   - Use oils to replace solid fats where possible.
   - Choose foods that provide more potassium, dietary fiber, calcium, and vitamin D, which are nutrients of concern in American diets. These foods include vegetables, fruits, whole grains, and milk and milk products.

4. **Building Healthy Eating Patterns**
   - Select an eating pattern that meets nutrient needs over time at an appropriate calorie level.
   - Account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.
   - Follow food safety recommendations when preparing and eating foods to reduce the risk of foodborne illnesses.

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*Fatty acids are constituents of fats, as defined in Chapter 5.*

Figure 2-4 p39

Need more:
- Whole grains: 15%
- Vegetables: 59%
- Fruits: 42%
- Milk/milk products: 52%
- Seafood: 44%
- Oils: 61%
- Fiber: 40%
- Potassium: 56%
- Vitamin D: 28%
- Calcium: 75%

Goal

Need less:
- Solid fats/added sugars*: 280%
- Refined grains: 200%
- Sodium: 149%
- Saturated fat: 110%

Limit

*Measured in calories.


Diet Planning with the USDA

Food Patterns

- Food group plan
  - Help people achieve goals
  - Specifies portions
    - Foods are sorted by nutrient density
- Variety
  - Among the food groups and within each group
Diet Planning with the USDA Food Patterns

A major recommendation of the *Dietary Guidelines for Americans* is to choose a diet based on the *USDA Food Patterns*. 
**Fruits** contribute folate, vitamin A, vitamin C, potassium, and fiber.  

**Consume a variety of fruits, and choose whole or cut-up fruits more often than fruit juice.**

Apples, apricots, avocados, bananas, blueberries, cantaloupe, cherries, grapefruit, grapes, guava, honeydew, kiwi, mango, nectarines, oranges, papaya, peaches, pears, pineapple, plums, raspberries, strawberries, tangerines, watermelon; dried fruit (dates, figs, prunes, raisins); 100% fruit juices.

**Limit these fruits that contain solid fats and/or added sugars:**  
Canned or frozen fruit in syrup; juices, punches, ades, and fruit drinks with added sugars; fried plantains.

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**Vegetables** contribute folate, vitamin A, vitamin C, vitamin K, vitamin E, magnesium, potassium, and fiber.

**Consume a variety of vegetables each day, and choose from all five subgroups several times a week.**

**Vegetables subgroups:**
- Dark-green vegetables: Broccoli and leafy greens such as arugula, beet greens, bok choy, collard greens, kale, mustard greens, romaine lettuce, spinach, turnip greens, watercress
- Red and orange vegetables: Carrots, carrot juice, pumpkin, red bell peppers, sweet potatoes, tomatoes, tomato juice, vegetable juice, winter squash (acorn, butternut)
- Legumes: Black beans, black-eyed peas, garbanzo beans (chickpeas), kidney beans, lentils, navy beans, pinto beans, soybeans and soy products such as tofu, split peas, white beans
- Starchy vegetables: Cassava, corn, green peas, hominy, lima beans, potatoes
- Other vegetables: Artichokes, asparagus, bamboo shoots, bean sprouts, beets, brussels sprouts, cabbages, cactus, cauliflower, celery, cucumbers, eggplant, green beans, green bell peppers, iceberg lettuce, mushrooms, okra, onions, seaweed, snow peas, zucchini

**Limit these vegetables that contain solid fats and/or added sugars:**  
Baked beans, candied sweet potatoes, coleslaw, french fries, potato salad, refried beans, scalloped potatoes, tempura vegetables

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**Grains** contribute folate, niacin, riboflavin, thiamin, iron, magnesium, selenium, and fiber.

**Make most (at least half) of the grain selections whole grains.**

**Grains subgroups:**
- Whole grains: amaranth, barley, brown rice, buckwheat, bulgur, cornmeal, millet, oats, quinoa, rye, wheat, wild rice and whole-grain products such as breads, cereals, crackers, and pastas; popcorn
- Enriched refined products: bagels, breads, cereals, pastas (couscous, macaroni, spaghetti), pretzels, white rice, rolls, tortillas

**Limit these grains that contain solid fats and/or added sugars:**  
Biscuits, cakes, cookies, cornbread, crackers, croissants, doughnuts, fried rice, granola, muffins, pastries, pies, presweetened cereals, taco shells
**Protein foods** contribute protein, essential fatty acids, niacin, thiamin, vitamin B₆, vitamin B₁₂, iron, magnesium, potassium, and zinc.

Choose a variety of protein foods from the three subgroups, including seafood in place of meat or poultry twice a week.

**Protein foods subgroups:**
- **Seafood:** Fish (catfish, cod, flounder, haddock, halibut, herring, mackerel, pollock, salmon, sardines, sea bass, snapper, trout, tuna), shellfish (clams, crab, lobster, mussels, oysters, scallops, shrimp)
- **Meats, poultry, eggs:** Lean or low-fat meats (fat-trimmed beef, game, ham, lamb, pork, veal), poultry (no skin), eggs
- **Nuts, seeds, soy products:** Unsalted nuts (almonds, cashews, filberts, pecans, pistachios, walnuts), seeds (flaxseeds, pumpkin seeds, sesame seeds, sunflower seeds), legumes, soy products (textured vegetable protein, tofu, tempeh), peanut butter, peanuts

Limit these protein foods that contain solid fats and/or added sugars:
- Bacon, baked beans, fried meat, seafood, poultry, eggs, or tofu; reﬁned beans; ground beef; hot dogs; luncheon meats; marbled steaks; poultry with skin; sausages; spare ribs

**Milk and milk products** contribute protein, riboflavin, vitamin B₁₂, calcium, potassium, and, when fortified, vitamin A and vitamin D.

Make fat-free or low-fat choices. Choose other calcium-rich foods if you don’t consume milk.

Fat-free or 1% low-fat milk and fat-free or 1% low-fat milk products such as buttermilk, cheeses, cottage cheese, yogurt; fat-free fortified soy milk

Limit these milk products that contain solid fats and/or added sugars:
- 2% reduced-fat milk and whole milk; 2% reduced-fat and whole-milk products such as cheeses, cottage cheese, and yogurt; flavored milk with added sugars such as chocolate milk, custard, frozen yogurt, ice cream, milk shakes, pudding, sherbet; fortified soy milk

**Oils** are not a food group, but are featured here because they contribute vitamin E and essential fatty acids.

Use oils instead of solid fats, when possible.

Liquid vegetable oils such as canola, corn, flaxseed, nut, olive, peanut, safflower, sesame, soybean, sunﬂower oils; mayonnaise, oil-based salad dressing, soft trans-free margarine; unsaturated oils that occur naturally in foods such as avocados, fatty ﬁsh, nuts, olives, seeds (flaxseeds, sesame seeds), shellﬁsh

Limit these solid fats:
- Butter, animal fats, stick margarine, shortening
Nutrient dense foods provides vitamins, minerals, and other beneficial substances with few calories.
The Discretionary Calorie Allowance

- Energy (calorie) allowance required to maintain weight: 1,733 calories
- Discretionary calorie allowance: 267 calories
- Energy (calorie) intake required to meet nutrient needs
A person may choose to consume the following within the limits of the allowance:

1. Extra serving of the same nutrient-dense foods that comprise their diet
   1. Fats
   2. Added sugars
   3. Alcohol
   4. Omit the discretionary calories
How Solid Fats and Added Sugars Add Calories to Nutrient-Dense Foods

Regular ground beef patty (75% lean) cooked, 3 oz
- Extra lean ground beef patty (90% lean): 184 calories
- Beef fat: 52 calories
- Total: 236 calories

Breaded fried chicken strips, 3 oz
- Plain chicken breast: 138 calories
- Breading and frying fat: 108 calories
- Total: 246 calories

Frosted corn flakes cereal, 1 c
- Corn flakes: 90 calories
- Added sugars: 57 calories
- Total: 147 calories

Curly French fried potatoes, 1 c
- Plain potato: 117 calories
- Frying fat: 141 calories
- Total: 258 calories

Sweetened applesauce, 1 c
- Unsweetened applesauce: 105 calories
- Added sugars: 68 calories
- Total: 173 calories

Whole milk, 1 c
- Fat-free milk: 83 calories
- Milk fat: 66 calories
- Total: 149 calories

Diet Planning Application

- USDA Food Patterns
  - Amounts needed from each food group
  - Healthful diet for given number of calories
- Vegetable and protein food intakes
  - Week timeframe
# USDA Food Patterns

## Table 2–2

**USDA Food Patterns: Daily Amounts from Each Food Group**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>1,600</td>
<td>1,800</td>
<td>2,000</td>
<td>2,200</td>
<td>2,400</td>
<td>2,800</td>
<td>3,000</td>
</tr>
<tr>
<td>Fruits</td>
<td>1 1/2 c</td>
<td>1 1/2 c</td>
<td>2 c</td>
<td>2 c</td>
<td>2 c</td>
<td>2 1/2 c</td>
<td>2 1/2 c</td>
</tr>
<tr>
<td>Vegetables</td>
<td>2 c</td>
<td>2 1/2 c</td>
<td>2 1/2 c</td>
<td>3 c</td>
<td>3 c</td>
<td>3 1/2 c</td>
<td>4 c</td>
</tr>
<tr>
<td>Grains</td>
<td>5 oz</td>
<td>6 oz</td>
<td>6 oz</td>
<td>7 oz</td>
<td>8 oz</td>
<td>10 oz</td>
<td>10 oz</td>
</tr>
<tr>
<td>Protein Foods</td>
<td>5 oz</td>
<td>5 oz</td>
<td>5 1/2 oz</td>
<td>6 oz</td>
<td>6 1/2 oz</td>
<td>7 oz</td>
<td>7 oz</td>
</tr>
<tr>
<td>Milk</td>
<td>3 c</td>
<td>3 c</td>
<td>3 c</td>
<td>3 c</td>
<td>3 c</td>
<td>3 c</td>
<td>3 c</td>
</tr>
<tr>
<td>Oils</td>
<td>5 tsp</td>
<td>5 tsp</td>
<td>6 tsp</td>
<td>6 tsp</td>
<td>7 tsp</td>
<td>8 tsp</td>
<td>10 tsp</td>
</tr>
<tr>
<td>Solid fats/Added sugars</td>
<td>121 cal</td>
<td>161 cal</td>
<td>258 cal</td>
<td>266 cal</td>
<td>330 cal</td>
<td>395 cal</td>
<td>459 cal</td>
</tr>
</tbody>
</table>

Note: In addition to gender, age, and activity levels, energy needs vary with height and weight (see Chapter 9 and Appendix H).

*Selected calorie levels; see Appendix E for additional calorie and activity levels.

†Divide these amounts among the vegetable subgroups as specified in Table 2–3.

†This number defines the calorie limit.
## Weekly Amounts from Vegetable and Protein Food Subgroups

**Table 2–3**

*USDA Food Patterns: Weekly Amounts from Vegetable and Protein Foods Subgroups*

Table 2-2 specifies total intakes per day. This table shows those amounts dispersed among five vegetable and three protein subgroups per week.

<table>
<thead>
<tr>
<th>Vegetable Subgroups</th>
<th>1,600 cal</th>
<th>1,800 cal</th>
<th>2,000 cal</th>
<th>2,200 cal</th>
<th>2,400 cal</th>
<th>2,600 cal</th>
<th>2,800 cal</th>
<th>3,000 cal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark green</td>
<td>1½ c</td>
<td>1½ c</td>
<td>1½ c</td>
<td>2 c</td>
<td>2 c</td>
<td>2½ c</td>
<td>2½ c</td>
<td>2½ c</td>
</tr>
<tr>
<td>Red and orange</td>
<td>4 c</td>
<td>5½ c</td>
<td>5½ c</td>
<td>6 c</td>
<td>6 c</td>
<td>7 c</td>
<td>7 c</td>
<td>7½ c</td>
</tr>
<tr>
<td>Legumes</td>
<td>1 c</td>
<td>1½ c</td>
<td>1½ c</td>
<td>2 c</td>
<td>2 c</td>
<td>2½ c</td>
<td>2½ c</td>
<td>3 c</td>
</tr>
<tr>
<td>Starchy</td>
<td>4 c</td>
<td>5 c</td>
<td>5 c</td>
<td>6 c</td>
<td>6 c</td>
<td>7 c</td>
<td>7 c</td>
<td>8 c</td>
</tr>
<tr>
<td>Other</td>
<td>3½ c</td>
<td>4 c</td>
<td>4 c</td>
<td>5 c</td>
<td>5 c</td>
<td>5½ c</td>
<td>5½ c</td>
<td>7 c</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Protein Foods Subgroups</th>
<th>1,600 cal</th>
<th>1,800 cal</th>
<th>2,000 cal</th>
<th>2,200 cal</th>
<th>2,400 cal</th>
<th>2,600 cal</th>
<th>2,800 cal</th>
<th>3,000 cal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seafood</td>
<td>8 oz</td>
<td>8 oz</td>
<td>8 oz</td>
<td>9 oz</td>
<td>10 oz</td>
<td>10 oz</td>
<td>11 oz</td>
<td>11 oz</td>
</tr>
<tr>
<td>Meat, poultry, eggs</td>
<td>24 oz</td>
<td>24 oz</td>
<td>26 oz</td>
<td>29 oz</td>
<td>31 oz</td>
<td>31 oz</td>
<td>34 oz</td>
<td>34 oz</td>
</tr>
<tr>
<td>Nuts, seeds, soy products</td>
<td>4 oz</td>
<td>4 oz</td>
<td>4 oz</td>
<td>4 oz</td>
<td>5 oz</td>
<td>5 oz</td>
<td>5 oz</td>
<td>5 oz</td>
</tr>
</tbody>
</table>
A Sample Diet Plan

Table 2–4
A Sample Diet Plan

This diet plan is one of many possibilities for a day’s meals. It follows the amounts suggested for a 2,000-calorie diet (with an extra 1/2 cup of vegetables).

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Recommended Amounts</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Snack</th>
<th>Dinner</th>
<th>Snack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td>2 c</td>
<td>1/2 c</td>
<td>1/2 c</td>
<td>1 c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td>2 1/2 c</td>
<td>1 c</td>
<td></td>
<td>2 c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grains</td>
<td>6 oz</td>
<td>1 oz</td>
<td>2 oz</td>
<td>1/2 oz</td>
<td>2 oz</td>
<td>1/2 oz</td>
</tr>
<tr>
<td>Protein foods</td>
<td>5 1/2 oz</td>
<td>2 oz</td>
<td></td>
<td></td>
<td>3 1/2 oz</td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>3 c</td>
<td>1 c</td>
<td>1 c</td>
<td></td>
<td>1 c</td>
<td></td>
</tr>
<tr>
<td>Oils</td>
<td>5 1/2 tsp</td>
<td>1 1/2 tsp</td>
<td></td>
<td></td>
<td>4 tsp</td>
<td></td>
</tr>
<tr>
<td>Solid fats/ Added sugars</td>
<td>258 cal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A Sample Menu

This sample menu provides about 1,850 calories of the 2,000-calorie plan. About 150 calories remain available to spend on more nutrient-dense foods or luxuries such as added sugars and solid fats.

<table>
<thead>
<tr>
<th>Amounts</th>
<th>Sample Menu</th>
<th>Energy (Cal)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BREAKFAST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 oz whole grains</td>
<td>1 c whole-grain cereal</td>
<td>108</td>
</tr>
<tr>
<td>1 c milk</td>
<td>1 c fat-free milk</td>
<td>100</td>
</tr>
<tr>
<td>½ c fruit</td>
<td>1 medium banana (sliced)</td>
<td>105</td>
</tr>
<tr>
<td><strong>LUNCH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 oz meats, 2 oz whole grains</td>
<td>1 turkey sandwich on whole-wheat roll</td>
<td>272</td>
</tr>
<tr>
<td>1½ tsp oils</td>
<td>1½ tsp low-fat mayonnaise</td>
<td>71</td>
</tr>
<tr>
<td>1 c vegetables</td>
<td>1 c vegetable juice</td>
<td>50</td>
</tr>
<tr>
<td><strong>SNACK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½ oz whole grains</td>
<td>4 whole-wheat reduced-fat crackers</td>
<td>86</td>
</tr>
<tr>
<td>1 c milk</td>
<td>1½ oz low-fat cheddar cheese</td>
<td>74</td>
</tr>
<tr>
<td>½ c fruit</td>
<td>1 medium apple</td>
<td>72</td>
</tr>
<tr>
<td><strong>DINNER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½ c vegetables</td>
<td>1 c raw spinach leaves</td>
<td>8</td>
</tr>
<tr>
<td>¼ c vegetables</td>
<td>¼ c shredded carrots</td>
<td>11</td>
</tr>
<tr>
<td>1 oz meats</td>
<td>¼ c garbanzo beans</td>
<td>71</td>
</tr>
<tr>
<td>2 tsp oils</td>
<td>2 tbs oil-based salad dressing and olives</td>
<td>76</td>
</tr>
<tr>
<td>½ c vegetables, 2½ oz meat, 2 oz enriched grains</td>
<td>Spaghetti with meat and tomato sauce</td>
<td>425</td>
</tr>
<tr>
<td>½ c vegetables</td>
<td>½ c green beans</td>
<td>22</td>
</tr>
<tr>
<td>2 tsp oils</td>
<td>2 tsp soft margarine</td>
<td>67</td>
</tr>
<tr>
<td>1 c fruit</td>
<td>1 c strawberries</td>
<td>49</td>
</tr>
<tr>
<td><strong>SNACK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½ oz whole grains</td>
<td>3 graham crackers</td>
<td>90</td>
</tr>
<tr>
<td>1 c milk</td>
<td>1 c fat-free milk</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: This plan meets the recommendations to provide 45–65% of calories from carbohydrate, 20–35% from fat, and 10–35% from protein.
MyPlate Educational Tool

- Online educational tool
  - www.choosemyplate.gov
- Guides users through diet planning
- Flexibility of the USDA Food Patterns
  - Mixed dishes
  - National and cultural foods
  - Vegetarians
Flexibility of the USDA Food Patterns

- Allows for substitutions according to
  - personal preferences
  - national and cultural food choices
## Ethnic Food Choices

<table>
<thead>
<tr>
<th>Meals</th>
<th>Grains</th>
<th>Vegetables</th>
<th>Fruits</th>
<th>Protein Foods</th>
<th>Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>Rice, white or rice noodles, millet, wheat or rice wrappers and crepes</td>
<td>Amaranth, baby corn, bamboo shoots, chayote, bok choy, mung bean sprouts, snow peas, mushrooms, water chestnuts, kelp</td>
<td>Carambola, guava, kumquat, lychee, persimmon, melons, mandarin orange</td>
<td>Soybeans and soy products such as miso and tofu, squid, duck eggs, pork, poultry, fish and other seafood, peanuts, cashews</td>
<td>Soy milk</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>Pita pocket bread, pastas, rice, couscous, polenta, bulgur, focaccia, Italian bread</td>
<td>Eggplant, tomatoes, peppers, cucumbers, grape leaves</td>
<td>Olives, grapes, figs</td>
<td>Fish and other seafood, gyros, lamb, chicken, beef, pork, sausage, lentils, fava beans</td>
<td>Ricotta, provolone, parmesan, feta, mozzarella, and goat cheeses; yogurt</td>
</tr>
<tr>
<td>Mexican</td>
<td>Tortillas (corn or flour), taco shells, rice</td>
<td>Chayote, corn, jicama, tomato salsa, cactus, cassava, tomatoes, yams, chilies</td>
<td>Guava, mango, papaya, avocado, plantain, bananas, oranges</td>
<td>Refried beans, fish, chicken, chorizo, beef, eggs</td>
<td>Cheese, custard</td>
</tr>
</tbody>
</table>
Controlling Portion Sizes at Home and Away

- Portion sizes may be difficult to judge
- U.S. trend
  - Larger portion sizes
  - More fat and sugar
- Tips on weights and measures
- Dining out trends

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*aAll foods eaten away from home, including at schools, sports stadiums, restaurants, and other establishments.*

*bIncludes food from restaurants with counter or drive-through service and cafeterias.*

People wishing to avoid over consuming calories must pay attention to portion sizes

<table>
<thead>
<tr>
<th>Food</th>
<th>Typical 1970s</th>
<th>Today's colossal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola</td>
<td>10 oz bottle, 120 cal</td>
<td>40–60 oz fountain, 580 cal</td>
</tr>
<tr>
<td>French fries</td>
<td>about 30, 475 cal</td>
<td>about 50, 790 cal</td>
</tr>
<tr>
<td>Hamburger</td>
<td>3–4 oz meat, 330 cal</td>
<td>6–12 oz meat, 1,000 cal</td>
</tr>
<tr>
<td>Bagel</td>
<td>2–3 oz, 230 cal</td>
<td>5–7 oz, 550 cal</td>
</tr>
<tr>
<td>Steak</td>
<td>8–12 oz, 690 cal</td>
<td>16–22 oz, 1,260 cal</td>
</tr>
<tr>
<td>Pasta</td>
<td>1 c, 200 cal</td>
<td>2–3 c, 600 cal</td>
</tr>
<tr>
<td>Baked potato</td>
<td>5–7 oz, 180 cal</td>
<td>1 lb, 420 cal</td>
</tr>
<tr>
<td>Candy bar</td>
<td>1½ oz, 220 cal</td>
<td>3–4 oz, 580 cal</td>
</tr>
<tr>
<td>Popcorn</td>
<td>1½ c, 80 cal</td>
<td>8–16 c tub, 880 cal</td>
</tr>
</tbody>
</table>

NOTE: Calories are rounded values for the largest portions in a given range.
Checking Out Food Labels

- Requirements for food labels
  - Common or usual name
  - Manufacturer, packer, or distributor contact information
  - Net contents
  - Nutrient contents (Nutrition Facts panel)
  - Ingredients
    - Descending order by weight
  - Essential warnings
Serving size
  - Common measures allow for comparison
Servings per container
Calories/calories from fat
Nutrient amounts and percentages of DVs
  - Total fat, cholesterol, sodium, total carbohydrate, protein
Vitamins and minerals
  - Vitamin A, vitamin C, calcium, and iron
What’s on a Food Label?

- The name and address of the manufacturer, packer, or distributor
- The common or usual product name
- Approved nutrient claims if the product meets specified criteria
- The net contents in weight, measure, or count
- Approved health claims stated in terms of the total diet

**Nutrition Facts**

- Serving size: 3/4 cup (28 g)
- Servings per container: 14

<table>
<thead>
<tr>
<th>Amount per serving</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories 110</td>
<td>Calories from fat 9</td>
</tr>
<tr>
<td>Total Fat 1 g</td>
<td>2%</td>
</tr>
<tr>
<td>Saturated Fat 0 g</td>
<td>0%</td>
</tr>
<tr>
<td>Trans Fat 0 g</td>
<td></td>
</tr>
<tr>
<td>Cholesterol 0 mg</td>
<td>0%</td>
</tr>
<tr>
<td>Sodium 250 mg</td>
<td>10%</td>
</tr>
<tr>
<td>Total Carbohydrate 23 g</td>
<td>8%</td>
</tr>
<tr>
<td>Dietary fiber 1.5 g</td>
<td>6%</td>
</tr>
<tr>
<td>Sugars 10 g</td>
<td></td>
</tr>
<tr>
<td>Protein 3 g</td>
<td></td>
</tr>
</tbody>
</table>

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

<table>
<thead>
<tr>
<th>Calories/gram</th>
<th>2000</th>
<th>2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td>Less than 65 g</td>
<td>80 g</td>
</tr>
<tr>
<td>Sat Fat</td>
<td>Less than 20 g</td>
<td>25 g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than 300 mg</td>
<td>300 mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>Less than 2400 mg</td>
<td>2400 mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>300 g</td>
<td>375 g</td>
</tr>
<tr>
<td>Fiber</td>
<td>25 g</td>
<td>30 g</td>
</tr>
</tbody>
</table>

**INGREDIENTS**, listed in descending order of predominance:
- Corn, Sugar, Salt, Malt Flavoring, Freshness preserved by BHA, BHT.
- VITAMINS AND MINERALS: Vitamin C (Sodium ascorbate), Niacinamide, Iron, Vitamin B6 (Pyridoxine hydrochloride), Vitamin B12 (Hydroxocobalamin), Vitamin D, Vitamin E (Natural Tocopherols), Folic Acid and Vitamin D.

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More About Percentages of Daily Values

- ‘% Daily Value’ is based on 2,000 calorie diet
- Daily Values greatest use
  - Comparing foods
What Food Labels May Include

- Nutrient claims
  - Food must meet specified criteria
  - Examples
    - “Good source” of a nutrient
    - “High” in a nutrient

- Health claims
  - Standards
  - Qualified claims
Reliable Health Claims on Labels

These claims of potential health benefits are well-supported by research, but other similar-sounding claims may not be.

- Calcium and reduced risk of osteoporosis
- Sodium and reduced risk of hypertension
- Dietary saturated fat and cholesterol and reduced risk of coronary heart disease
- Dietary fat and reduced risk of cancer
- Fiber-containing grain products, fruits, and vegetables and reduced risk of cancer
- Fruits, vegetables, and grain products that contain fiber, particularly soluble fiber, and reduced risk of coronary heart disease
- Fruits and vegetables and reduced risk of cancer
- Folate and reduced risk of neural tube defects
- Sugar alcohols and reduced risk of tooth decay
- Soluble fiber from whole oats and from psyllium seed husk and reduced risk of coronary heart disease
- Soy protein and reduced risk of coronary heart disease
- Whole grains and reduced risk of coronary heart disease and certain cancers
- Plant sterol and plant stanol esters and reduced risk of coronary heart disease
- Potassium and reduced risk of hypertension and stroke
What Food Labels May Include

- Structure/function claims
  - Requires no prior approval
  - Notification of FDA is sufficient
  - Required label disclaimer
  - Examples
**Label Claims**

**Nutrient claims** characterize the level of a nutrient in the food—for example, “fat free” or “less sodium.”

**Health claims** characterize the relationship of a food or food component to a disease or health-related condition—for example, “soluble fiber from oatmeal daily in a diet low in saturated fat and cholesterol may reduce the risk of heart disease” or “a diet low in total fat may reduce the risk of some cancers.”

**Structure/function claims** describe the effect that a substance has on the structure or function of the body and do not make reference to a disease—for example, “supports immunity and digestive health” or “calcium builds strong bones.”
Are Some Foods Superfoods for Health?

Controversy 2
Phytochemicals

- Nonnutrient components of plants
- Emerging as potential regulators of health
  - Antioxidants
  - Regulate protein synthesis
  - Mimic hormones
  - Alter blood chemistry
Phytochemicals

- Blueberries
  - Flavonoids
- Chocolate
  - Flavonoids and antioxidants
- Flaxseed
  - Lignans and phytoestrogens
- Garlic
  - Antioxidant organosulfur compounds
Phytochemicals

- Soybeans and soy products
  - Chronic diseases
  - Downsides
- Tomatoes
  - Antioxidant lycopene
- Tea
- Grapes and wine
- Yogurt
- Supplements