Lesson 16

Hunting for Hidden Fat

Background

Fat is an important part of our diets. Fat helps in the absorption and transport of fat-soluble vitamins such as vitamins A, D, E, and K. Fat is the primary way energy is stored in the body, and it also makes foods taste good. In addition, some fats (which come from plant sources) are essential for healthy skin and hair.

The problem is that most Americans consume too much of the wrong type of fat. This is thought to be the reason that so many people die or are disabled by heart attacks. Every year over half a million people die in this country from heart disease; heart disease is the leading cause of early death and disability in the United States. Many studies have shown a strong relationship between heart disease and high intake of saturated and *trans* fats. The good news is that if we decrease the dietary fat, we can reduce our risk of heart disease.

Saturated fat

Saturated fat (for example, butter or lard) tends to be a solid at room temperature and comes primarily from animal sources (meat and dairy); high intake of saturated fats increases the risk for heart disease. Foods high in saturated fat tend to raise blood cholesterol.

Unsaturated fat

Unsaturated fat (fat that is usually liquid at room temperature), such as vegetable oil or olive oil, decreases the risk for heart disease. Unsaturated or liquid fat can be converted to *trans* fat or more solid forms through a process called hydrogenation. Margarine, for example, is made by hydrogenating a liquid oil, such as soybean oil, until it becomes more saturated and remains solid at room temperature. There is growing evidence that hydrogenated fat (a major source of *trans* fat) found in high amounts in stick margarine may also increase the risk of heart disease.

Cholesterol

The body makes the cholesterol it requires. Cholesterol also 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 milk products. Many of these foods are also high in saturated fats. Choosing foods with less cholesterol and with less *trans* and saturated fats 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 eating more

grain products, vegetables, and fruits, and by limiting intake of foods that contain cholesterol.

Trans fat

Trans fat is produced during the hydrogenation of vegetable oils. Hydrogenation hardens oils to make them spreadable (e.g., margarine) and improves shelf life. However, *trans* fat raises the body's LDL level (commonly known as the "bad" cholesterol) and lowers the HDL levels (the "good" cholesterol). In a typical American diet, *trans* fat is found mostly in foods that contain hydrogenated or partially hydrogenated vegetable oils, particularly in baked goods such as cookies and crackers. If hydrogenated or partially hydrogenated oil is used, it will be listed in the ingredient list on the food package. *Trans* fat is also found in animal fat.

The Food Guide Pyramid is designed to limit daily fat intake to no more than 30 percent of total calories from fat. A diet low in saturated and *trans* fat may reduce your risk for heart disease and could also help you maintain a healthy body weight. This is the reason some of the foods in the three food groups near the top of the pyramid should be consumed in smaller quantities. These foods—dairy foods, animal meats, and processed or fried foods—tend to contain a lot more saturated and *trans* fats than other foods in the pyramid.

However, within each of these food groups, there are lower-fat options from which to choose. Low-fat or nonfat milk, yogurt, and cheeses are now available in supermarkets; while fish, poultry without skin, and dried beans provide protein without a lot of saturated fat. Foods in the "fats, sweets, and oils" food group at the very top of the pyramid are meant to be consumed in small quantities and relatively infrequently. A lot of foods we call "junk" foods fit into this food group. They tend to be very high in salt and in fat (especially saturated and *trans* fats) and low in the nutrients that help decrease the risk of infection or disease.

Teacher Information: How is % Daily Value for Fat Calculated?

Although all food labels provide %DV for nutrients, the following describes how the % Daily Value for one specific nutrient (fat) is calculated.

For a particular food, divide the number of grams of fat per serving by 65. Sixty-five (65) is used because it is recommended that a person eating a 2,000-calorie daily diet consume no more than 65 grams of fat each day.

For example: A serving of tuna salad has 14 grams of fat; 14 ÷ 65 = 22%. Therefore a serving of tuna salad contains 22% DV for fat for a person who eats 2,000 calories a day.

Reading food labels is an effective way to compare the fat and nutrient content of various snack foods. The place to find out whether a food is relatively high or low in a nutrient is the % Daily Value column on the Nutrition Facts label on food packages. The % Daily Value for total fat and saturated fat are important. If, for individual foods, the % Daily Value is 5 or less for total fat or saturated fat, the food is considered low-fat (low in total fat or saturated fat). The more foods chosen that have a % Daily Value of 5 or less for total fat and saturated fat, the easier it is to eat a healthier daily diet. The overall daily goal should be to select foods that together do not exceed 100% of the Daily Value for total fat and saturated fat.

The % Daily Value is based on a diet of 2,000 calories per day.

Estimated Teaching Time and Related Subject Areas

Estimated teaching time: 1 hour, 15 minutes

Related subject areas: math, science, art

Objectives

1. Students will explain why fat is an important part of one's diet.
2. Students will discriminate between solid and liquid fat.
3. Students will be able to examine food labels to identify those that contain fats.

Materials

1. Chalkboard
2. Food wrappers (including nutrition labels) of canned fruits and vegetables, soups, candy bar, desserts, baked goods
3. Small container
4. A piece of cotton or a feather
5. Food labels from a variety of foods (ask students to bring from home)
6. Transparency #1, "The Food Guide Pyramid"
7. Transparency #2, "Reading the Food Label"
8. Handout #1, "Food Labels" (Select a sample to copy to round out the collection of labels brought in by students.)
9. Handout #2, "Reading the Food Label"
10. Worksheet #1, "Can You Find It?"

Procedure

Part I

1. Prior to class, place a piece of cotton, paper, or a feather in a small, covered, opaque container.
2. Ask students to guess the contents (provide a few clues). Have them give reasons for their answers.
3. After several guesses have been given, say to students, "Some of the foods we eat are like this container. They contain hidden ingredients that cannot be seen. Today, we're going to go on a 'hunt' for foods that contain fat."

Part II

1. Display transparency #1, "Food Guide Pyramid," and review the recommended number of servings for each food group and identify the group for fats, oils, and sweets with students.
2. Discuss with students the reasons fat is an important part of their diets (see background material).
3. Tell students that they will investigate all of the food groups in the Food Guide Pyramid that can contain fats.
4. Stress the fact that there are different types of fats, and that a person should pay attention to the types (saturated, *trans*, or unsaturated) of fats eaten as well as the total amount of fat eaten. (In 1991, Americans got, on average, about 34% of their calories from fat, while the Dietary Guidelines for Americans recommend no more than 30%.)

Part III

1. Distribute handout #1, "Reading the Food Label," and food labels and/or copies of food labels to students. If possible, be sure there is a wide variety of labels, including canned/frozen fruits and vegetables, desserts, and frozen dinners.
2. Explain to students that food labels contain information that can help a person make smart decisions about whether a particular food fits into the healthful and balanced diet he/she is trying to eat.
3. Display transparency #2 and distribute handout #2 (both are entitled "Reading the Food Label") to students. Explain that one specific thing food labels address is the amount and type (saturated or unsaturated) of fat and cholesterol contained in a food. Food labels also present other information, such as the number of calories a food provides, certain vitamins and minerals a food contains, and a list of ingredients in the food (with the most abundant ingredient listed first).
4. Name one of the foods for which there is a label, and before examining the label, have students decide if they think the food choice contains fat and saturated fat. Record students' answers on the board before investigations begin.
5. Have students identify the following from each of the food labels and ingredients list:

   Food name _____

   Serving size_____

   Total fat per serving_____

   Saturated fat per serving _____

   % Daily Value (%DV) of saturated fat_____

   % Daily Value (%DV) of total fat_____

   Explain that the "% Daily Value of fat" (% DV) number can help them figure out how servings of food contribute to their daily maximum allowance of fat. If they add together the percentages of daily value of fat and saturated fat of all the foods they eat in a day, it should total no more than 100%. Ask for volunteers to stand and state the % Daily Value of total fat found on their food labels. As each student stands, add the percentages until the total reaches 100%. Try different combinations of foods.

6. Write on the board the following words: bacon, steak, chicken, fish, fries. Discuss foods that contain "visible" fats (which can be seen before, during, and after preparation). Examples: bacon, steak, fries, etc. Point out that some foods may not appear to have fats in them, but actually do have fats hidden inside. Identify that the following foods contain hidden fat: chicken with skin, lunch meats, candy bars, hot dogs, pies, cheese, cakes, doughnuts, Twinkies, puddings, ice creams, cookies.
7. Ask students the following question: "What are some foods that you know are prepared with fats/oils?"

   Sample responses: French fries, doughnuts, pies, meats, cakes, fried fish, fried chicken, etc.
8. Have students describe the preparation process. As each type of fat (butter, oil, lard, margarine, etc.) is mentioned, list it on the board.

   Sample:

What?	**How prepared?**	**Using what?**
French fries	Deep fried	Vegetable oil, lard, margarine
Cake	Baked	Butter, oil
Fish	Fried	Vegetable oil, lard
Chicken	Fried	Vegetable oil, lard

9. Have students distinguish between fats that are solid at room temperature and fats that are liquid at room temperature. (Butter, lard, Crisco shortening, and partially hydrogenated vegetable oil are solid at room temperature; most vegetable oils—including olive oil—and squeeze margarine are liquid at room temperature.)
10. Have students tell what happens to solid fat when it is heated. (It becomes liquid.)
11. Explain to students that most of the time they should choose fats that are liquid at room temperature over fats that are solid at room temperature. Liquid fats are better for the body.
12. Distribute worksheet #1, "Can You Find It?" Have students (in pairs or small groups) examine various food labels and ingredient lists (provided) and record the amount of fat and saturated fat in each food selection on the "Can You Find It?" worksheet. Have students make bar graphs to compare the amount of fat in various foods.

Part IV

1. Have students identify the low-saturated fat foods that they should probably eat more of in order to reduce the amount of saturated fat in their diet. Use the activity found on worksheet #1, "Can You Find It?" as a basis for this discussion.
2. Stress that it's OK to eat no more than one small serving each day of high-fat foods (also known as "sometimes" foods). Moderation is the message.

Part V

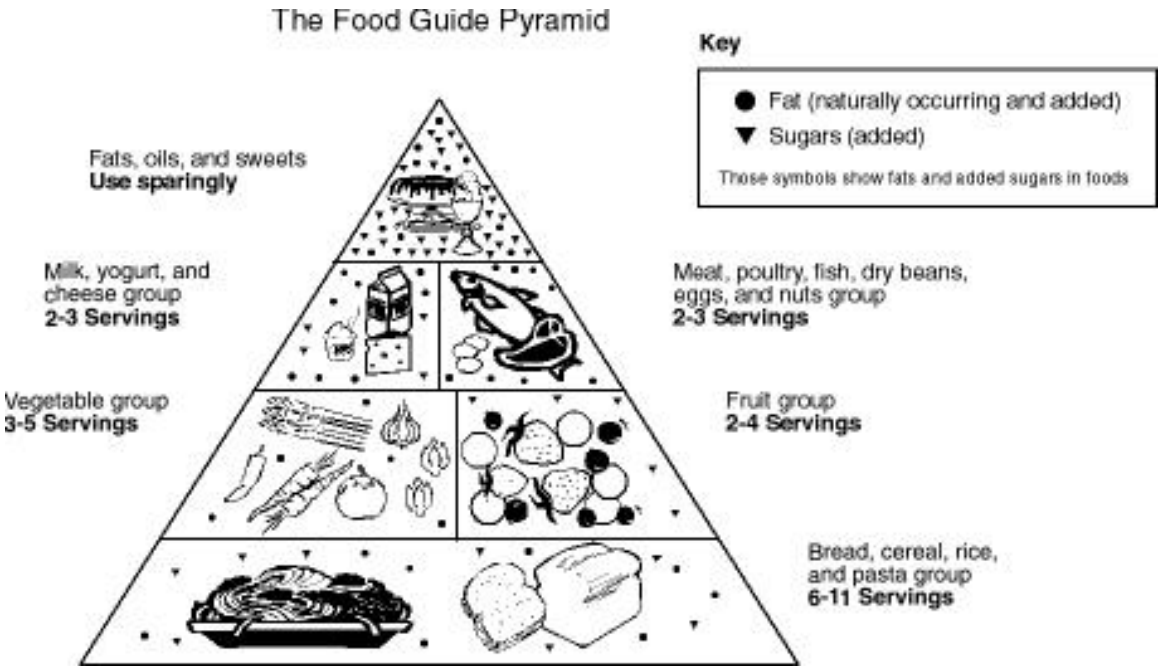
1. Have students look in their refrigerators and pantries at home and make a list of

foods they find that contain less than 5% Daily Value for saturated fat per serving. A food with less than 5% Daily Value for saturated fat per serving is considered a "low-saturated fat" item by the FDA.

2. Have students collect and make a collage of labels from foods with less than 5% Daily Value for saturated fat. Encourage them to be creative in designing their collage and to add a message about nutrition and low-saturated fat foods appropriate for other students in their class or school. Display the collages for others to view.

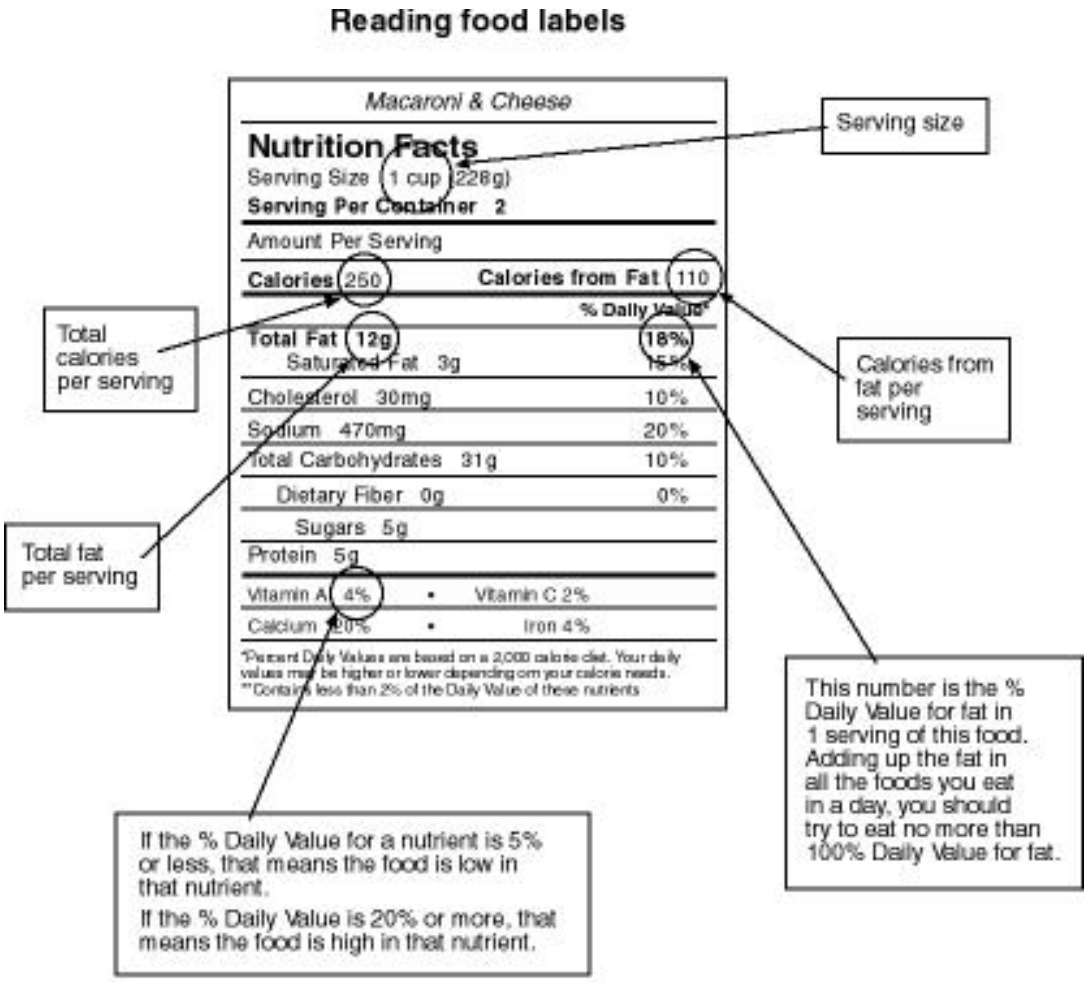
Transparency 1

The Food Guide Pyramid



Transparency 2

Reading the Food Label



Handout 1

Plums

Nutrition Facts
Serving Size 2 medium

Amount Per Serving	
Calories 80	Calories from Fat 10
	% Daily Value*
Total Fat 1g	**1%**
Saturated Fat 0g	**0%**
Cholesterol 0mg	**0%**
Sodium 0mg	**0%**
Potassium 220mg	**6%**
Total Carbohydrate 19g	**6%**
Dietary Fiber 2g	**8%**
Sugars 21g	
Protein 1g	
Vitamin A 6% •	Vitamin C 20%
Calcium 0% •	Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
**Contains less than 2% of the Daily Value of these nutrients.

Sweet Potatoes

Nutrition Facts
Serving Size 1 medium

Amount Per Serving	
Calories 130	Calories from Fat 0
	% Daily Value*
Total Fat 0g	**0%**
Saturated Fat 0g	**0%**
Cholesterol 0mg	**0%**
Sodium 45mg	**2%**
Potassium 350mg	**10%**
Total Carbohydrate 33g	**11%**
Dietary Fiber 4g	**16%**
Sugars 7g	
Protein 2g	
Vitamin A 440% •	Vitamin C 30%
Calcium 2% •	Iron 2%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
**Contains less than 2% of the Daily Value of these nutrients.

Skim Milk

Nutrition Facts
Serving Size 1/2 pint (236 ml)
Servings Per Container 1

Amount Per Serving	
Calories 90	Calories from Fat 0
	% Daily Value*
Total Fat 0g	**0%**
Saturated Fat 0g	**0%**
Cholesterol <5mg	**1%**
Sodium 130mg	**5%**
Total Carbohydrate 13g	**4%**
Dietary Fiber 0g	**0%**
Sugars 12g	
Protein 9g	
Vitamin A 10% •	Vitamin C 2%
Calcium 30% •	Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
**Contains less than 2% of the Daily Value of these nutrients.

Chicken

Nutrition Facts
Serving Size 1 roasted drumstick (61 g/about 2 oz.)
Servings Per Container 6

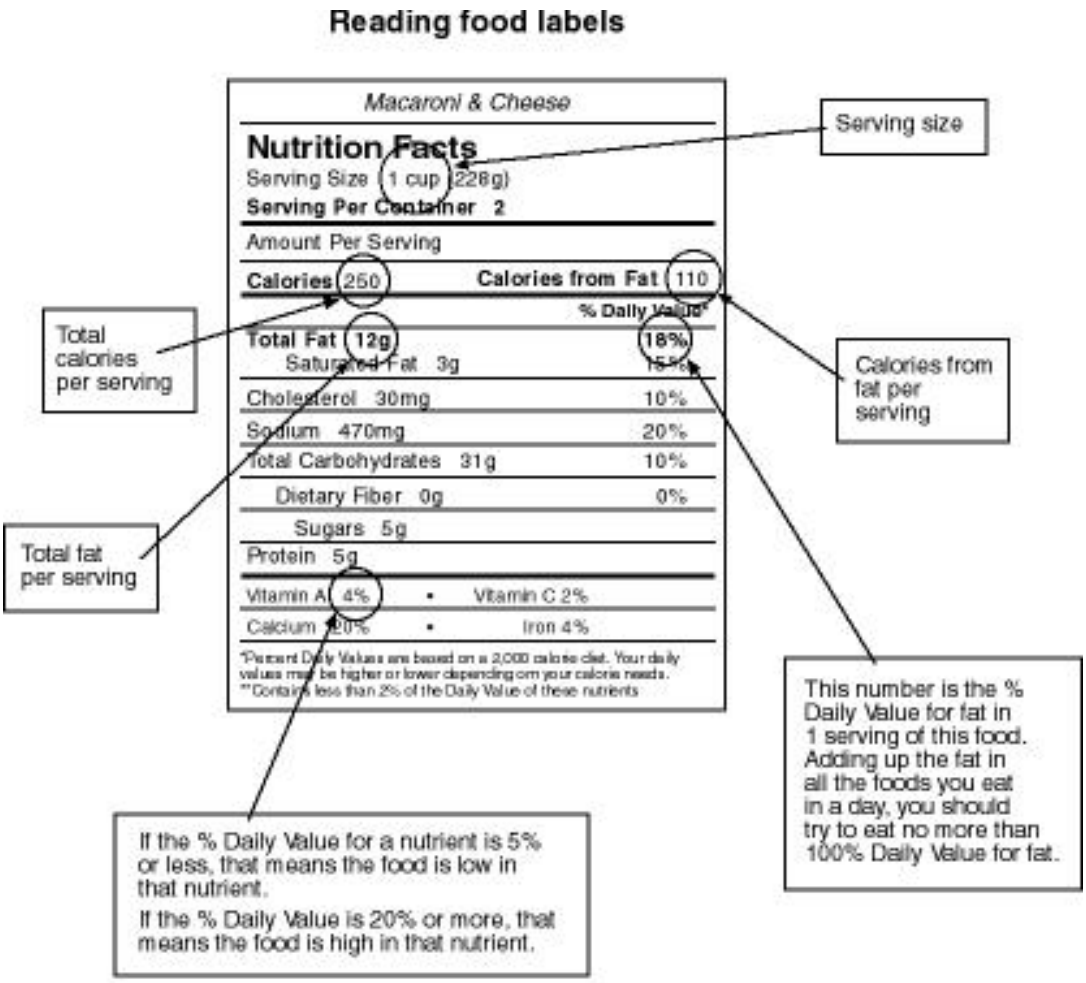
Amount Per Serving	
Calories 110	Calories from Fat 50
	% Daily Value*
Total Fat 6g	**9%**
Saturated Fat 1.5g	**8%**
Cholesterol 85mg	**28%**
Sodium 50mg	**2%**
Total Carbohydrate 0g	**0%**
Protein 14g	**28%**
Iron	**4%**

Not a significant source of dietary Fiber, Sugars, Vitamin A, Vitamin C, or Calcium

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
**Contains less than 2% of the Daily Value of these nutrients.

Handout 2

Reading the Food Label



Worksheet 1

Can You Find It?

Name ______________________________ Date ________________

Nutrition Facts

Name of product ______________________

Serving size __________________________

Total fat per serving ____________________

% Daily Value of fat ____________________

% Daily Value of saturated fat ____________

Nutrition Facts

Name of product ______________________

Serving size __________________________

Total fat per serving ____________________

% Daily Value of fat ____________________

% Daily Value of saturated fat ____________

Nutrition Facts

Name of product ______________________

Serving size __________________________

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Total fat per serving ____________________

% Daily Value of fat ____________________

% Daily Value of saturated fat ____________

Nutrition Facts

Name of product ______________________

Serving size __________________________

Total fat per serving ____________________

% Daily Value of fat ____________________

% Daily Value of saturated fat ____________