

National Health Education Standard

STANDARD 3*

Students will demonstrate the ability to apply self-management skills to enhance personal, family, and community health.

Learning Objectives

After completing this lesson, students will be able to meet the following objectives:

- Read Nutrition Facts labels and assess whether the foods in their diets provide the recommended 1,300 milligrams (mg) of calcium daily.
- Recognize that % Daily Value (%DV) listings on food labels refer to adult needs and that tweens and teens need more calcium for their growing bones.
- Explain the relationship between positive health behaviors and the prevention of illness and disease.
- Analyze how behavior can impact health maintenance and disease prevention.

Activity Overview

This activity will provide the following learning opportunities:

- Create discussion and raise awareness about young people's calcium needs—namely that tweens (ages 9 to 12) and teens need more calcium than adults (1,300 mg per day for tweens and teens versus 1,000 mg per day for adults).
- Demonstrate (through practice) the understanding and utilization of information provided on Nutrition Facts labels.
- Use math computation and classroom brainstorming and discussion.

This activity has three parts:

- Classroom activity
- Take-home assignment
- Post-assignment classroom discussion

This activity is geared toward youth ages 14 to 15.

*Joint Commission on National Health Standards. (2007). *National Health Education Standards*, (2nd ed.). New York. McGraw-Hill.

Materials

- *The Great Calcium Challenge Information Sheet* (provided)
- *The Great Calcium Challenge Classroom Menu and Nutrition Facts Labels* (provided)
- *The Great Calcium Challenge Take-Home Calcium Chart* (provided)
- Optional: *Milk Matters Calcium Fact Sheet* and *Milk Matters Glossary of Terms* (found at <http://www.nichd.nih.gov/milk/teachers>)

Lesson Duration

- Task 1: 40 minutes
- Task 2: 5 minutes
- Task 3: 15–20 minutes

Teacher Preparation Time

- 20 minutes

Teacher Preparation Activities

- Make enough copies of the handouts for each student in your class.⁺
- Determine for what length of time you want students to track their calcium intake.

Task 1: Classroom Activity

Activity Steps (For Teachers):

1. Ask students if they know what calcium is and why it is important. Then ask if they know which age group—between the ages of 0 and 18—needs the most calcium each day. (Refer to the *Milk Matters Calcium Fact Sheet* if you need additional background information about calcium and bone health to prepare this lesson. This fact sheet is available at <http://www.nichd.nih.gov/milk/teachers>).
2. Listen to their responses. If necessary, guide them to the following responses:
 - Calcium is necessary for building strong bones.
 - Bones grow fastest during the tween and teen years.
 - Tweens and teens ages 9 to 18 need the most calcium—1,300 mg of calcium every day—of all age groups.
 - If you don't get enough calcium during these years, you can't make up for it later. Once teens finish their growth spurts around age 17, 90% of their adult bone mass is established.
3. Ask students to name foods that are high in calcium.

⁺Teachers should decide how many labels to use and which ones are appropriate for their classes based on available time and the number and age of students. If necessary, additional labels are available at http://teamnutrition.usda.gov/Resources/POC_repros.pdf, pages 29–57.

The Great Calcium Challenge

4. Listen to their responses. If necessary, guide them to the following responses:

- Many foods contain calcium. But low-fat or fat-free milk products—milk, yogurt, and cheese—are particularly excellent sources because they are high in calcium. Most milk is fortified with vitamin D, and some milk products, such as yogurt, also have vitamin D (which helps the body absorb calcium). Because some milk products are also high in fat, it's important to choose fat-free or low-fat versions of these products.
- Milk products aren't the only sources of calcium. Because some people have trouble digesting milk products, and others choose not to consume them, some food companies are adding calcium to foods that don't naturally have it. You can now buy calcium-fortified soy beverages, orange juice, and breakfast cereals. These products may serve as calcium sources for people who don't eat or can't digest milk products.
- Another way to get calcium is by eating non-dairy foods that naturally have smaller amounts of calcium than milk products. For example, dark green leafy vegetables (such as broccoli, bok choy, kale, turnip greens, and collard greens), cooked dried beans (such as white beans, soybeans, and garbanzo beans), almonds, figs, and canned salmon with bones contain calcium. Some vegetables that contain calcium, such as spinach, have lower bioavailability, which means the calcium in them is poorly absorbed by the body. So you would need to eat more of these foods to ensure that your body gets enough calcium.

5. Tell students that they're going to learn how to calculate how much calcium they're getting every day to see if they measure up to the 1,300 mg they need.

6. Explain that Nutrition Facts labels are a good way to determine calcium content in foods.

- The labels provide a "%DV"—or percent Daily Value—of calcium and other nutrients to indicate how much a food contains.
- The %DV is based on the nutrition needs of an adult.
- Because tweens and teens need more calcium than adults, students need to calculate the %DV of a food for their needs using the information in these labels.

7. Hand out *The Great Calcium Challenge Information Sheet*. Read the handout aloud to the class. Demonstrate how to calculate %DV for students using the formula in the handout.

8. Give each student a copy of *The Great Calcium Challenge Classroom Menu* and *Nutrition Facts Labels*.

9. Introduce students to Lucas, a 14-year-old who faces a daily challenge: He needs to get 1,300 mg of calcium every day.

- Explain that *The Great Calcium Challenge Classroom Menu* and *Nutrition Facts Labels* lists all of Lucas's meals, broken out by item, and the amount of calcium that is in each item. For each meal, one item is missing.

- Tell students to use the %DV to determine the number of mg of calcium in each item using the Nutrition Facts labels provided. Then they should formulate Lucas's daily total. Explain that students should then decide which foods Lucas should add to his daily menu in order to get the recommended amount of calcium (1,300 mg) for the day.
10. End the task when students have completed the menu and it totals at least 1,300 mg of calcium for a single day.

Task 2: Take-Home Assignment

Activity Steps (For Teachers):

1. Tell students, "Now that we've solved Lucas's calcium challenge, we are going to chart our own daily calcium intake."
2. Hand out *The Great Calcium Challenge Take-Home Calcium Chart*.
3. Explain that you want the students to keep track of their calcium intake by recording the foods they eat for a certain number of days using the chart provided.
4. Tell students to calculate the amount (mg) of calcium in each food by using the %DV on Nutrition Facts labels, and to add up their calcium intake over the course of each assigned day.
5. Tell students that they will also write a one-page summary about the activity. The summary should include answers to these questions:
 - Did keeping track of your calcium intake influence the foods and beverages you ate and drank?
 - After tracking your calcium intake, were you surprised that you were consuming more calcium than you thought you were? Or less?

Task 3: Discussion After Collecting the Take-Home Assignment

1. Use the following questions to lead a discussion with the students after they have completed their calcium-tracking activity:
 - Now that you've practiced putting together simple menus and completing your calcium chart for a week, do you think you will be more likely to put your knowledge into practice when choosing foods in the future? Why or why not?
 - Is your awareness of the importance of a diet that provides calcium and your ability to understand and use nutritional information on food labels enough to affect your eating habits? Why or why not? What other factors would influence your diet?

Optional Activity

Bring in some empty food packages from foods that provide calcium to use in the discussion, such as cartons from calcium-added orange juice, yogurt cartons, boxes from calcium-added cereals, cheese packages, and milk cartons.

Assessment

Here are some ideas for testing students' achievement of the learning objectives. More ideas are available at <http://www.nichd.nih.gov/milk/teachers>:

- Instruct students to create posters showing meals that have high calcium content or advertisements to their peers that "sell" snacks that provide calcium.
- Show students a set of Nutrition Facts labels and ask them to choose a combination of foods that provide the 1,300 mg of calcium they need daily.
- Consider a true/false or multiple-choice quiz to test students' knowledge about calcium and Nutrition Facts labels. Conduct the quiz orally and reward correct answers with snacks that provide calcium, such as low-fat or fat-free chocolate milk or low-fat or fat-free fruit yogurt.

Resources

More information about calcium and bone health is available from the following resources:

- *Milk Matters: For Strong Bones...For Lifelong Health* provides more in-depth information about calcium and bone health. You can read this booklet or order free copies at <http://www.nichd.nih.gov/publications/pubskey.cfm?from=milk> or by calling 1-800-370-2943.
- *Media-Smart Youth: Eat, Think, and Be Active* features lesson plans on nutrition, Nutrition Facts labels, and how media can affect nutrition and physical activity choices. The *Media-Smart Youth Curriculum* can be found at <http://www.nichd.nih.gov/msy/>.
- Nutrition.gov provides information on food labels, food safety, MyPyramid.gov, and Dietary Guidelines for consumers and teachers.

Information Sheet

- Nutrition Facts labels provide all the information needed to determine how much calcium different foods contribute to a diet that provides calcium. These labels provide a “%DV”—or percent Daily Value—for calcium and other nutrients.
- The %DV on Nutrition Facts labels is based on adult nutrition needs, but can serve as a guide for tweens and teens to calculate their own %DV. Adults need 1,000 mg per day of calcium, which is 100% DV listed on Nutrition Facts labels.
- Tweens and teens need 1,300 milligrams (mg) per day of calcium—more than what adults need. In terms of %DV, tweens and teens need 130% DV as listed on Nutrition Facts labels.
- Tweens and teens can use a simple formula to calculate their own %DV using the information on the Nutrition Facts label. Formula: %DV of calcium of all foods must add up to 130% or more.
- This formula applies to the %DV calcium listings on Nutrition Facts labels.
- You can also convert %DV into mg to calculate the actual amount of calcium in a food.
To convert %DV into mg, multiply the %DV by 10 or add a zero to %DV. For example, 8% DV equals 80 mg of calcium per serving:

$$8 \times 10 = 80$$

or: 8 and add a zero = 80

Here is an example of a Nutrition Facts label.
The label shows that this brand of orange juice with added calcium has 35% of the DV for calcium in each serving.

One way to figure out how much calcium is in this food is to add a zero to the end of the DV number (or multiply by 10). This will show you what the %DV equals in mg of calcium. For example, a serving of orange juice with added calcium that has a DV of 35% has 350 mg of calcium.

- Once converted into mg, you can figure out your calcium intake. The total mg of calcium should add up to 1,300 or more.

Orange Juice with Added Calcium

Nutrition Facts		
Serving Size 8 fl oz (249g)		
Servings Per Container 8		
Amount Per Serving		
Calories 110		
%Daily Value*		
Total Fat	0g	0 %
Saturated Fat	0g	0 %
Trans Fat	0g	
Cholesterol	0mg	0 %
Sodium	0mg	0 %
Total Carbohydrate	26g	9 %
Dietary Fiber	0g	0 %
Sugars	22g	
Protein	2g	
Vitamin A	0%	• Vitamin C 180%
Calcium	35%	• Iron 0%
* Percent Daily Values are based on a 2,000 calorie diet.		

Classroom Menu and Nutrition Facts Labels

Food	Milligrams of Calcium
Breakfast	
Beverage: 1 cup orange juice with added calcium	350
[Fill in food choice]	
Lunch	
Beverage: 1 cup fat-free chocolate milk	300
[Fill in food choice]	
2 chocolate chip cookies	6
Snack	
[Fill in food choice]	
Dinner	
Beverage: 1 cup fat-free milk	300
Chicken Breast Tenders, fat-free, baked, frozen (3 oz.)	0
[Fill in food choice]	
Frozen yogurt, 1/2 cup, soft-serve vanilla	103

Nutrition Facts labels are provided for the following foods:

Foods

Bowl of Corn Chex with fat-free milk

Plain bagel with low-fat cream cheese

Small pizza*

Hot dog*

Fruit yogurt, low-fat

Pretzels, tiny twists

Salad with low-fat shredded cheddar cheese

Rice, cooked

*These foods are high in fat and/or sodium and should be eaten less often.

Nutrition Facts Labels

Bowl of Corn Chex (1 Cup)
with Fat-Free Milk (1/2 Cup)

Nutrition Facts			
Serving Size 1 cup (31g)			
Servings Per Container about 14			
Amount Per Serving		Corn Chex	with 1/2 cup skim milk
Calories		120	160
Calories from Fat		5	10
%Daily Value*			
Total Fat	0.5g	1%	1%
Saturated Fat	0g	0%	0%
Trans Fat	0g	0%	0%
Total Carbohydrate	25g	9%	11%
Dietary Fiber	1g	5%	5%
Sugars	3g		
Protein	2g		
Vitamin A		10%	15%
Vitamin C		10%	10%
Calcium		10%	25%
Iron		50%	50%

* Percent Daily Values are based on a 2,000 calorie diet.

Plain Bagel

Nutrition Facts			
Serving Size 1 bagel (71g)			
Servings Per Container 5			
Amount Per Serving			
Calories	200	Calories from Fat	10
%Daily Value*			
Total Fat	1g		2%
Saturated Fat	0g		0%
Trans Fat	0g		
Cholesterol	0mg		0%
Sodium	380mg		16%
Total Carbohydrate	38g		13%
Dietary Fiber	2g		7%
Sugars	2g		
Protein	7g		
Vitamin A	0%	Vitamin C	0%
Calcium	6%	Iron	15%

* Percent Daily Values are based on a 2,000 calorie diet.

Low-Fat Cream Cheese
(2 Tablespoons)

Nutrition Facts			
Serving Size 2 Tablespoons (30g)			
Servings Per Container 8			
Amount Per Serving			
Calories	60	Calories from Fat	40
%Daily Value*			
Total Fat	4.5g		7%
Saturated Fat	3g		15%
Trans Fat	0g		
Cholesterol	15mg		5%
Sodium	140mg		6%
Total Carbohydrate	2g		1%
Dietary Fiber	0g		0%
Sugars	2g		
Protein	2g		
Vitamin A	8%	Vitamin C	0%
Calcium	2%	Iron	0%

* Percent Daily Values are based on a 2,000 calorie diet.

Cheese Pizza

Nutrition Facts			
Serving Size 1 small pizza (104g)			
Servings Per Container 1			
Amount Per Serving			
Calories	240	Calories from Fat	100
%Daily Value*			
Total Fat	11g		17%
Saturated Fat	3.5g		18%
Trans Fat	0g		
Cholesterol	15mg		5%
Sodium	540mg		23%
Total Carbohydrate	26g		9%
Dietary Fiber	1g		4%
Sugars	3g		
Protein	10g		
Vitamin A	0%	Vitamin C	0%
Calcium	20%	Iron	10%

* Percent Daily Values are based on a 2,000 calorie diet.

Hot Dog

Nutrition Facts			
Serving Size 1 hot dog (76g)			
Servings Per Container 1			
Amount Per Serving			
Calories	240	Calories from Fat	200
%Daily Value*			
Total Fat	22g		34%
Saturated Fat	9g		45%
Trans Fat	1g		
Cholesterol	45mg		15%
Sodium	690mg		29%
Total Carbohydrate	1g		0%
Dietary Fiber	0g		0%
Sugars	1g		
Protein	9g		
Vitamin A	0%	Vitamin C	0%
Calcium	0%	Iron	6%

* Percent Daily Values are based on a 2,000 calorie diet.

Nutrition Facts Labels

Fruit Yogurt, Low-Fat

Nutrition Facts		
Serving Size 1 cup (245g)		
Servings Per Container 1		
Amount Per Serving		
Calories 280	Calories from Fat 70	
%Daily Value*		
Total Fat 7g		11%
Saturated Fat 4.5g		24%
Trans Fat 0g		
Cholesterol 25mg		8%
Sodium 150mg		6%
Total Carbohydrate 44g		15%
Dietary Fiber 0g		0%
Sugars 38g		
Protein 9g		
Vitamin A 4%	•	Vitamin C 20%
Calcium 35%	•	Iron 0%
* Percent Daily Values are based on a 2,000 calorie diet.		

Pretzels, Tiny Twists

Nutrition Facts		
Serving Size 1 ounce (28g)		
Servings Per Container 1		
Amount Per Serving		
Calories 100		
%Daily Value*		
Total Fat 0g		0%
Saturated Fat 0g		0%
Trans Fat 0g		
Cholesterol 0mg		0%
Sodium 420mg		18%
Total Carbohydrate 23g		8%
Dietary Fiber 1g		4%
Sugars 1g		
Protein 3g		
Vitamin A 0%	•	Vitamin C 0%
Calcium 0%	•	Iron 6%
* Percent Daily Values are based on a 2,000 calorie diet.		

Salad Greens

Nutrition Facts		
Serving Size 1 1/2 cup (85g)		
Servings Per Container 6		
Amount Per Serving		
Calories 15		
%Daily Value*		
Total Fat 0g		0%
Saturated Fat 0g		0%
Trans Fat 0g		
Cholesterol 0mg		0%
Sodium 15mg		1%
Total Carbohydrate 3g		1%
Dietary Fiber 2g		8%
Sugars 1g		
Protein 1g		
Vitamin A 80%	•	Vitamin C 20%
Calcium 2%	•	Iron 4%
* Percent Daily Values are based on a 2,000 calorie diet.		

Shredded Cheddar Cheese, Reduced Fat

Nutrition Facts		
Serving Size 1/4 cup (28g)		
Servings Per Container 8		
Amount Per Serving		
Calories 80	Calories from Fat 50	
%Daily Value*		
Total Fat 6g		9%
Saturated Fat 4g		20%
Trans Fat 0g		
Cholesterol 20mg		6%
Sodium 180mg		7%
Total Carbohydrate 1g		0%
Dietary Fiber 0g		0%
Sugars 1g		
Protein 7g		
Vitamin A 8%	•	Vitamin C 0%
Calcium 20%	•	Iron 0%
* Percent Daily Values are based on a 2,000 calorie diet.		

White Rice, 1/2 Cup Cooked

Nutrition Facts		
Serving Size 1/2 cup (88g)		
Servings Per Container 8		
Amount Per Serving		
Calories 100		
%Daily Value*		
Total Fat 0g		0%
Saturated Fat 0g		0%
Trans Fat 0g		
Cholesterol 0mg		0%
Sodium 0mg		0%
Total Carbohydrate 22g		7%
Dietary Fiber 0g		0%
Sugars 0g		
Protein 2g		
Vitamin A 0%	•	Vitamin C 0%
Calcium 0%	•	Iron 6%
* Percent Daily Values are based on a 2,000 calorie diet.		

Take-Home Calcium Chart

Daily Dietary Calcium Content Chart							
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Breakfast							
Lunch							
Snack							
Dinner							

On a separate piece of paper, write a one-page summary about this activity. The summary should include answers to these questions:

- How many days did your calcium totals add up to at least 1,300 mg?
- Did keeping track of your calcium intake influence the foods and beverages you ate and drank?
- After tracking your calcium intake, were you surprised that you were consuming more calcium than you thought you were? Or less?