

National Health Education Standard

STANDARD 1*

Students will comprehend concepts that enhance personal, family, and community health.

Learning Objectives

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

- **Recognize** the symptoms of lactose intolerance.
- **Understand** that tweens and teens need 1,300 milligrams of calcium per day and that people with lactose intolerance can use strategies to help them obtain the calcium they need.
- **Identify** good sources of calcium for people with lactose intolerance.
- **Propose** ways to reduce symptoms of lactose intolerance.
- **Explain** the relationship between positive healthy eating and the prevention of illness and disease.

Activity Overview

This activity will provide the following learning opportunities:

- Raise awareness and create discussion about lactose intolerance and good sources of calcium for people who are lactose intolerant.
- Reinforce the fact that tweens (ages 9 to 12) and teens need 1,300 milligrams of calcium per day.
- Help students understand the connection between what they eat and how they feel.
- Encourage discussion and peer learning through question and answer review.

This activity has two parts:

- Classroom activity
- Classroom discussion

This activity is geared toward youth ages 14 to 15.

Planning Considerations

This discussion is not intended as a stand-alone lesson, but rather as a supplement to other nutrition lessons. You can pose the discussion questions to the class as a whole or break the class into groups.

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

Materials

- *What If Milk Causes Digestive Problems?* (provided)
- Chalkboard, chalk
- Paper and pens
- Optional: *Milk Matters Calcium Fact Sheet* (found at <http://www.nichd.nih.gov/milk/teachers>)

Lesson Duration

This discussion should take about 25 minutes, but you can lengthen it to about 45 minutes by including optional step four.

- Steps 1 and 2 combined: 5 minutes
- Step 3: 15 minutes
- Step 4 (optional): 20 minutes
- Step 5: 5 minutes

Teacher Preparation Time

- 10 minutes

Teacher Preparation Activities

Make enough copies of the handouts for each student in your class.

Activity Steps

1. **Explain** the importance of calcium for bone health and that tweens and teens need 1,300 milligrams per day of calcium, or 130% of the Daily Value as listed on the Nutrition Facts labels (Refer to the *Milk Matters Calcium Fact Sheet* if you need additional background information about calcium and bone health. This fact sheet is available at <http://www.nichd.nih.gov/milk/teachers>.)
2. **Hand out** *What If Milk Causes Digestive Problems?*
3. **Ask** students the questions below. (Determine which questions and how many are appropriate for each class based on the available time and the number and age of students.) **Tell** each student to consider each question and record his or her answers.
 - Can all people get the calcium they need from milk and other milk products? Why or why not?
 - How can people with lactose intolerance get the proper amount of calcium in their diets?
 - What are some calcium-rich foods for people who do not have trouble digesting lactose?
 - What are some calcium-rich foods for someone who has lactose intolerance?
 - How would you know if you had trouble digesting lactose?
 - Why might it be important to seek the advice of a health care provider if you think you have lactose intolerance?

- Might it be possible to mistake lactose intolerance for another health concern? What are the symptoms of lactose intolerance?
 - How would you feel if you had lactose intolerance? What would that be like? Painful? Embarrassing? Inconvenient? Easy to deal with? Easy to manage?
 - What types of foods are hard to digest when you have lactose intolerance?
 - Do you see a connection between what you eat and how you feel? What is that connection?
 - Does it make sense to understand how your body works and what foods are best for you? Why or why not?
 - Does it make sense to understand your own nutritional needs? Why or why not? How would this understanding improve your life?
4. **Optional: Divide** students into groups of four or six to discuss and amend their answers. **Gather** the whole class together, after students have worked in groups for a predetermined amount of time. **Tell** each group to share its answers.
5. **Compile** the answers on the board, and **review and discuss** them.

Assessment

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

- Consider a true/false or multiple-choice quiz to test students' knowledge about lactose intolerance.
- Conduct the quiz orally and reward correct answers with calcium-fortified soy beverages or other non-dairy snacks that provide calcium.
- Using the *Take-Home Calcium Chart* in *The Great Calcium Challenge* classroom activity, ask students to plan a day's or week's worth of meals for someone with lactose intolerance.

Resources

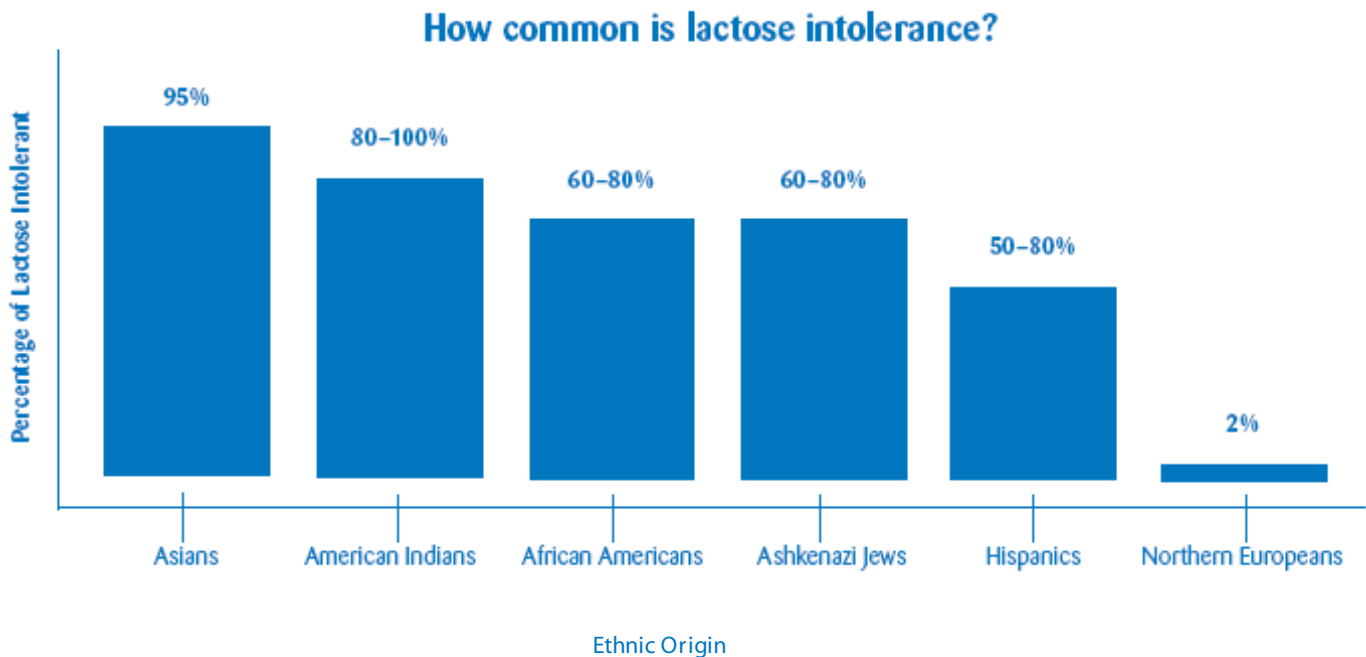
More information about calcium and bone health can be found in *Milk Matters: For Strong Bones... For Lifelong Health*. You can read this booklet or order free copies at <http://www.nichd.nih.gov/publications/pubskey.cfm?from=milk> or by calling 1-800-370-2943.

What If Milk Causes Digestive Problems?

Lactose Intolerance

Digestive problems happen in some children (and adults) who have lactose intolerance. These people may have trouble digesting lactose, the natural sugar found in milk and milk products. Even though people vary in their degree of lactose intolerance, most can usually consume 8 ounces (1 cup) of milk without experiencing symptoms.

An estimated 30 million to 50 million American adults are lactose intolerant. Lactose intolerance appears to be hereditary, passed down from your parents through genes. Specific populations show high levels of lactose intolerance, while others do not. The chart below shows the approximate rates of lactose intolerance in various populations.



Swagerty, D.L., Walling, A.D., and Klein, R.M. (2002). Lactose Intolerance. *American Family Physicians*, 65 (9), 1845-1850.

Symptoms

Symptoms of lactose intolerance include the following:

- Stomach pain
- Diarrhea
- Bloating
- Gas

Some other illnesses can cause these same problems. A health care provider can determine through simple tests if these problems are caused by lactose intolerance or by another illness. Lactose intolerance is not life threatening and can often be controlled through the diet.

Getting Enough Calcium

Calcium is important to a healthy diet. Teenagers who are lactose intolerant still need 1,300 milligrams of calcium per day. The best way for these people to get the calcium they need is to choose lactose-free milk and milk products. There are also a variety of pills and drops that are available without a prescription and that help the body digest lactose.

In addition, most people who have problems digesting lactose can usually eat or drink the following:

- 8 fluid ounces (1 cup) of low-fat or fat-free milk **taken with meals**
- Low-fat or fat-free yogurt or cheese
- Low-fat or fat-free milk poured on hot or cold cereal

Getting Calcium from Non-Dairy Foods

People who have problems digesting lactose can also get some of their needed calcium from dark green vegetables, such as spinach, broccoli, and bok choy. Foods with calcium added are also an option. Be sure to check the list of ingredients for calcium on foods like the following:

- Tofu with added calcium sulfate
- Orange juice with added calcium
- Soy beverages with added calcium
- Calcium-fortified breakfast cereals

If a person is unable to get enough calcium from lactose-free foods and non-dairy foods that provide calcium, a calcium supplement may be useful. But remember that a supplement cannot take the place of food in a healthful diet.

If you have any questions about lactose intolerance, talk to your health care provider, parent, or school nurse.