DEPARTMENT OF HEALTH AND HUMAN SERVICES Public Health Service

National Institutes of Health
National Institute of Child Health
and Human Development
Bethesda, Maryland 20892

Dear Parent/Guardian,

As Director of the National Institute of Child Health and Human Development of the National Institutes of Health, I am writing to provide you with information from our *Milk Matters* campaign about the importance of calcium for young people's bone health.

Milk Matters is a public health campaign which aims to increase awareness about the importance of calcium in the diets of tweens and teens, and to promote calcium consumption. It is especially important to educate 11-to-15-year-olds, since these are the prime years of bone growth. Studies show that most tweens and teens are not getting enough calcium in their diets. In fact, fewer than one in 10 girls ages 9 to 13 and only one in four boys in this age group are at or above their adequate intake of calcium.

Milk Matters recently developed teacher lesson resources to help teachers educate their students on the importance of calcium for bone health. Your child's teacher is using these materials in his or her classroom and wants to share them with you. Enclosed are materials based on these teacher resources that you can read and use in your home to reinforce the concepts your child is learning in school. These materials include:

- *Facts About Calcium:* This fact sheet explains the importance of calcium and physical activity for building strong bones and lists a wide variety of foods that provide calcium.
- *Facts About Lactose Intolerance:* This handout addresses lactose intolerance and how to minimize its symptoms while still getting enough calcium.
- *Easy Smoothie Recipes:* These recipes make calcium-rich smoothies that are healthy snack alternatives.

We hope these materials provide useful and easy ways to help ensure that your child gets enough calcium during the critical years of bone development. If you would like more information on calcium, please visit the *Milk Matters* Web site: http://www.nichd.nih.gov/milk.

Sincerely yours,

Duane Alexander, M.D.
Director, National Institute of Child Health & Human Development

Milk Matters
www.nichd.nih.gov/milk

Facts About Calcium

Calcium is a mineral that is essential for building strong bones. Unfortunately, most tweens (ages 9 to 12) and teens do not get enough calcium. In fact, fewer than one in 10 girls and only one in four boys ages 9 to 13 is at or above his or her adequate intake of calcium.

Tweens and teens need 1,300 milligrams (mg) of calcium a day to build strong bones for life. (Adults up to age 50 need about 1,000 mg a day.) Milk and milk products are excellent sources of calcium and other nutrients. Tweens and teens can get most of their daily calcium from 3 cups of low-fat or fat-free milk (approximately 900 mg), but they also need additional servings of foods that provide calcium to meet their calcium needs. Most milk is fortified with vitamin D, an important nutrient that helps the body absorb more calcium.

Calcium intake between the ages of 9 and 18 is critical for bone development because most **bone mass** (bone strength and density) accumulates during this time. Bones stop increasing in density after about age 30. But by getting the calcium they need now, tweens and teens will accomplish the following:

- *Strengthen bones now.* Our bodies continually remove and replace small amounts of calcium from our bones. If more calcium is removed than is replaced, bones will become weaker and have a greater chance of breaking. Some researchers suspect that the rise in forearm fractures in children is due to decreased bone mass because children are drinking less milk and more soda, and are getting less exercise.
- *Help prevent osteoporosis later in life.* Osteoporosis is a condition that makes bones weak so they break more easily. Bones rely on the calcium they store during the tween and teen years to stay strong throughout life. Although the effects of osteoporosis might not show up until adulthood, tweens and teens can help reduce the risk of osteoporosis by building strong bones when they are young.
- *Improve lifelong dental health.* The calcium in milk products also helps make teeth, gums, and jawbones healthy and strong. Calcium may also help protect teeth against decay.

Weight-Bearing Physical Activity

Bones are living tissue. Weight-bearing physical activity causes new bone tissue to form, which makes bones stronger. Weight-bearing activities are those that keep you active and on your feet so that your legs carry your body weight.

Activities such as walking, running, dancing, climbing stairs, and playing team sports such as basketball, soccer, and volleyball help make bones stronger. Older teenagers can build even more bone strength through weight training, but they should check with a health care provider before starting weight training.

Some activities, such as swimming, do not provide weight-bearing benefits. But they are good for cardiovascular fitness and overall good health.

*"Facts About Calcium," "Facts About Lactose Intolerance," and "Easy Smoothie Recipes" are adapted from the teacher classroom materials posted on http://www.nichd.gov/milk/teachers/index.cfm.

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Facts About Calcium

Foods That Provide Calcium

There are many foods to choose from that provide calcium.

Milk and milk products—such as low-fat or fat-free cheese and yogurt—are excellent sources because they are high in calcium. Most types of milk have approximately 300 milligrams of calcium per 8 fluid ounces (1 cup), or about 25 percent of the calcium that tweens and teens need every day.

The best choices are low-fat or fat-free milk and milk products. Because these items contain little or no fat, it's easy to get enough calcium without adding extra fat to the diet.

Flavored milk has just as much calcium as plain milk, but is higher in sugar and calories than plain milk. Young people may choose to drink chocolate or other flavored milk if they prefer the taste, but they should remember to factor in the additional calories into their overall daily needs. Whether plain or flavored, remember to choose low-fat or fat-free milk and milk products.

Here are some foods that can help tweens and teens get more calcium:

Food	Milligrams of Calcium
Yogurt, fat-free plain (1 cup)	**452**
Soy beverage with added calcium (1 cup)	**368**
Orange juice with added calcium (1 cup)	**351**
Fruit yogurt, low-fat (1 cup)	**345**
Cheese (e.g., low-fat or fat-free American, 2 oz., about 3 slices)	**323**
Milk, fat-free (1 cup)	**306**
Milk, 1% low-fat (1 cup)	**290**
Tofu, firm, with added calcium sulfate (1/2 cup)	**253**
Cheese pizza (1 slice)*	**182**
Bok choy, boiled (1 cup)	**158**
Spinach, cooked from frozen (1 cup)**	**146**
Soybeans, cooked (1 cup)	**130**
Frozen yogurt, soft-serve vanilla (1/2 cup)	**103**
Macaroni and cheese (1 cup)*	**92**
Almonds (1 oz.)	**70**
Broccoli, cooked (1 cup, chopped)	**62**
Tortillas, flour (7")	**58**
Broccoli, raw (1 cup, chopped)	**43**
Tortillas, corn (6")	**42**

*These foods are high in fat and/or sodium and should be eaten less often. **Calcium from this food may not be as well absorbed as from some other greens.

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Facts About Calcium

Lactose Intolerance

Someone with lactose intolerance has trouble digesting lactose, the natural sugar found in milk or milk products. Symptoms of lactose intolerance include stomach pain, diarrhea, bloating, and gas.

The best way for someone with lactose intolerance to get the health benefits of milk is to choose lactose-free milk and milk products.

Some food companies have added calcium to foods that don't normally contain high levels of calcium, such as soy beverages, juices, and breakfast cereals. These calcium-fortified foods offer alternatives to those who can't digest milk or milk products.

Resources

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

Information about maintaining a healthy weight can be found here: the National Institute of Diabetes and Digestive and Kidney Diseases fact sheet titled, *Weight-loss and Nutrition Myths*, at win.niddk.nih.gov/publications/PDFs/Myths.pdf. Or, visit the National Heart, Lung and Blood Institute's Aim for a Healthy Weight Web site at http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/index.htm.

More information on non-dairy food sources of calcium for tweens and teens can be found in the *Dietary Guidelines for Americans,* 2005, Appendix B-4, Non-Dairy Food Sources of Calcium, http://www.health.gov/dietaryguidelines/dga2005/document/html/appendixB.htm.

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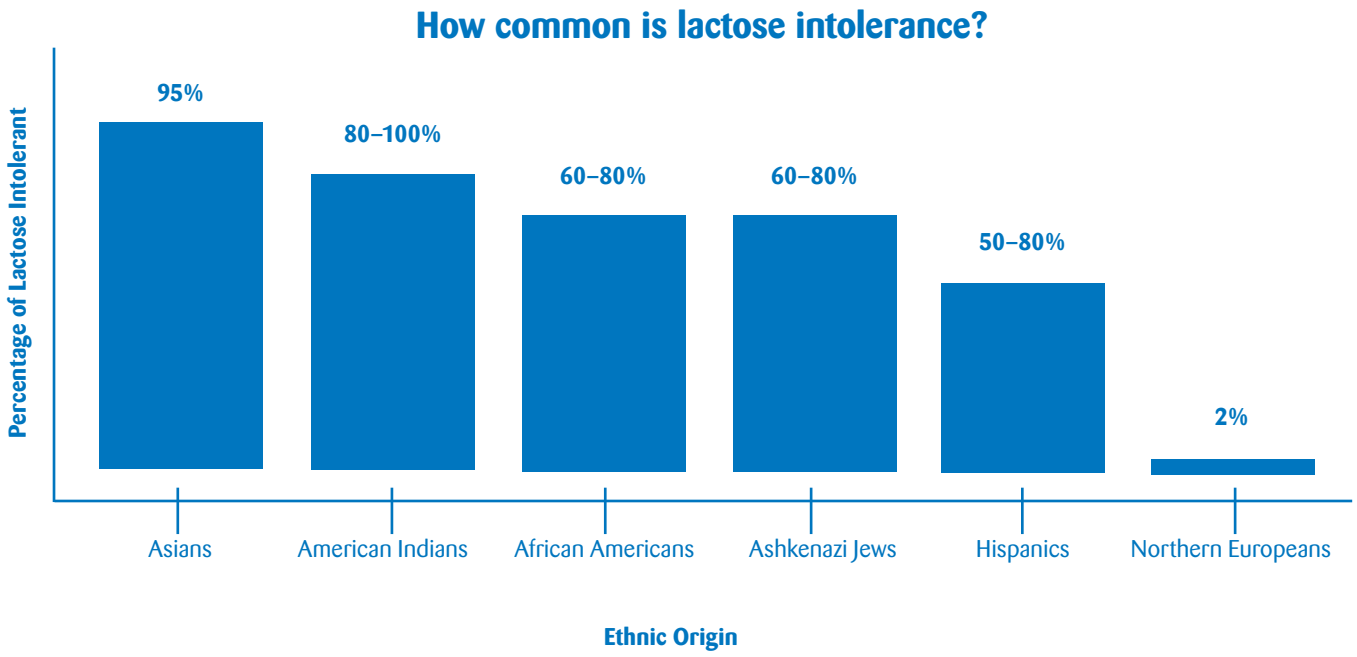
Facts About Lactose Intolerance

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

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Facts About Lactose Intolerance

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 child's health care provider or your own.

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Easy Smoothie Recipes

Smoothie Recipes

Tutti-Frutti Smoothie

1 cup fat-free milk
1 cup low-fat fruit yogurt
1 banana
1/2 cup strawberries
Ice as needed to thin*

Directions: Combine the fat-free milk, low-fat fruit yogurt, banana, and strawberries in a blender and blend. Slowly add ice until your Tutti-Frutti Smoothie is the consistency you like.

Berry Berry Good Smoothie

1 cup low-fat strawberry yogurt
1/2 cup orange juice with added calcium
1/3 cup frozen strawberries
1/3 cup frozen blueberries
1/3 cup frozen raspberries

Directions: Combine the low-fat yogurt and the orange juice in a blender and blend. Slowly add the frozen berries while blending. If your smoothie is too thick, add more orange juice until your Berry Berry Good Smoothie is the consistency you like.

Creamsicle Smoothie

1 cup orange juice with added calcium
1 cup fat-free vanilla frozen yogurt
1 orange peeled and sectioned (remove seeds)
Ice as needed to thin*

Directions: Combine the orange juice, vanilla frozen yogurt, and orange in a blender and blend. Slowly add ice until your Creamsicle Smoothie is the consistency you like.

Tropical Smoothie

1/2 cup low-fat vanilla or banana yogurt
1/2 cup orange juice with added calcium
1 banana**
1/2 cup frozen pineapple
1/2 cup frozen tropical fruit

Directions: Combine the low-fat yogurt and the orange juice in a blender and blend. Slowly add the banana, frozen pineapple, and frozen tropical fruit. If your smoothie is too thick, add more orange juice until your Tropical Smoothie is the consistency you like.

* Freeze fruit juice (pineapple, orange, apple, white grape) in ice cube trays beforehand and then save them in a resealable bag. Substitute the frozen fruit juice for plain ice for an extra flavorful smoothie.

** Try peeling, slicing, and freezing the banana in a resealable bag for an extra cold and creamy Tropical Smoothie.

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