

# PERSONAL RESPONSIBILITY—HEALTH AND COMMUNITY

## Bone Bank Deposits and Withdrawals

### LEADER'S GUIDE

**Y**ou may have learned about high blood pressure, sometimes called the “silent killer” because most people who have it do not feel sick. This is usually true for osteoporosis as well. Unless the spinal vertebra compress and pinch nerves or the person suffers a fracture, osteoporosis is a silent disease and can go undetected for many years. Yet, such bone disease can cause considerable pain and expense, curtail quality of life, and result in loss of independence.

#### Lesson Goal:

Program participants will learn how diet, exercise and other measures can prevent and treat this chronic, crippling disease—osteoporosis.

### LESSON OBJECTIVES

At the conclusion of the lesson, participants will be able to:

- Recognize reasons why so many older adults have osteoporosis and break bones.
- Tell a friend at least three important ways a person can protect bones from osteoporosis.
- Name three nutrients needed to build strong bones.
- Name at least two food components that encourage bone loss.
- Increase calcium and vitamin D intake to recommended levels.

### PLANNING THE LESSON



There are more ideas here than can be presented in 20 to 30 minutes. Think about your group, their interests and their abilities to protect bone banks from excessive withdrawals so they don't end up breaking bones.

Review the fact sheet MF-2347 *Bone Bank Deposits and Withdrawals*. Note main titles and subtitles such as “Bone Robbers” and “What You Can Do.”

Think through how you are going to present the information, involve the participants in learning, and enable them to fulfill the lesson objectives.

Plan a community service activity.

The remainder of this guide has suggestions for activities. Sources of additional materials are at the end, followed by a brief evaluation tool. The following quiz can be used as your lesson outline.

#### Activity #1 Boning Up on What You Know

Have participants respond to the questions below by marking them true or false. Hand out copies of the questions, or read them aloud and ask participants to write down their answers. Give everyone who answers all correctly a calcium supplement, such as 1 cup of nonfat dry milk in a small bag to make 3 cups of milk, or Tums antacid. (This amount of milk is nearly enough to meet the calcium RDA for adults younger than 50 years old.) *This activity can help fulfill the first two objectives.* Discuss each answer, and note that the three most important ways a person can prevent or treat osteoporosis are diet, exercise and drugs. See fact sheet. *All answers are true except 1, 6, and 9.*

True or false:

- \_\_\_ 1. Nutrients, such as calcium, are deposited in bones while a person is young and stay there until they are gradually released during old age.
- \_\_\_ 2. Both men and women can suffer osteoporosis.
- \_\_\_ 3. Some people are more at risk for developing osteoporosis than others because of their inherited genes.
- \_\_\_ 4. A key hormone for protecting bones from osteoporosis is estrogen, but testosterone also helps protect men.
- \_\_\_ 5. Young women can develop osteoporosis because of excessive dieting.
- \_\_\_ 6. Good exercises for protecting bones are swimming and bicycling.
- \_\_\_ 7. Cigarette smoking increases bone loss.
- \_\_\_ 8. Calcium needs vitamin D to be absorbed and used in the body.
- \_\_\_ 9. Most young adults get enough calcium in their diets.
- \_\_\_ 10. Women should have their first bone scan about age 50.

#### Activity #2 Nutrients and Your Bone Bank: Deposits and Withdrawals

This activity will inform participants that what they eat throughout their lives has a direct bearing on bone strength and their risk for osteoporosis. Study the section of the fact sheet that discusses the different kinds of nutrients needed to build strong bones. In your body, other dietary components, the Bone-Building Inhibitors, can inhibit or partly prevent calcium

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absorption or increase calcium loss. The inhibitors are mainly excessive amounts of sodium and salt and protein. Weaker inhibitors are alcohol, caffeine and phytate or oxalate, if present in high amounts. See fact sheet.

Bring a sample of 20 or so foods, and ask participants to try to group them into two categories. Examples of Bone-Builders: milk with vitamin D, cheese, yogurt, tofu, kale or Swiss chard, canned sardines, calcium-fortified orange juice; 100% whole-grain bread.

Examples of Bone-Inhibitors (sodium, protein, oxalate and phytate): cured meat; canned soup; 8 ounces or larger serving of meat, fish or poultry; many frozen entrees; wheat bran; canned spinach; three or more servings of alcoholic beverages.

Some foods—such as spinach and cooked, dry beans—can belong in both groups because they contain both Builders and Inhibitors. Moderation is the key. In a meal with plenty of variety, the amount of an inhibitor is minimized. If you are uncertain about the composition of a food, ask your FACS agent to help you decide if a food is high in sodium or salt, protein or calcium. Note that almost no foods besides milk and fortified cereals have vitamin D added.

## Activity #3 Calcium Comparisons

Prepare a display of the amount of calcium in different common servings of foods. Purchase a bag of miniature marshmallows. Using a chart that provides the

number of milligrams (mg) of calcium in a serving of food, place one marshmallow for each 10 mg of calcium in a transparent plastic bag. For example, the 300 mg calcium in a cup of milk equals 30 marshmallows. Have participants match the number of marshmallows with the names of the dozen or so foods.

## Activity #4 Bone Withdrawals

Using white flour, illustrate how much calcium can be lost from bones over time. Measure out the suggested number of cups of flour and seal in a plastic bag.

Label bag #1: Young adult woman's (35 years) calcium in skeleton. Medium to small well-nourished frame (8 cups of flour = 1000 g calcium)

Label bag #2: Woman, 10 years after menopause (6 1/2 cups of flour; 20% loss = 1 1/2 c)

Label bag #3: Woman, 85 years with osteoporosis (4 3/4 cups of flour; 40% loss = 3 1/4 c)

## Activity #5 Tasting Calcium-rich Recipes

Prepare some recipes for taste-testing that contain at least 150 to 200 mg calcium in each serving. Your FACS agent has some recipes you can try, or you can use your own. Be adventuresome. Try a recipe, such as spaghetti sauce, made with calcium-coagulated tofu or an "orange julius" drink containing dry milk.

## SOURCES OF ADDITIONAL INFORMATION

Your county extension FACS agent. She may be able to borrow osteoporosis resources produced by Texas Agricultural Extension Service, The Texas A&M University System, College Station, TX.

Midland Dairy Council, 10901 Lowell, Suite 135, Overland Park, KS 66210. Phone: 913-345-2225 or FAX 913-345-0790. Check to see if you are in their service area. If you are not, ask your county FACS agent for assistance in securing sample copies from your state nutrition specialist for gerontology.

National Osteoporosis Foundation is at 1150 17<sup>th</sup> Street, NW, #500, Washington, DC 20036-4603.

## EVALUATION

- At the end of the meeting, pass out the post-test, the same questions as in Activity 1. Have participants mark their answers, then compare them with their first answers. Give prizes to all who increased their scores.
- Ask each participant to write down one way in which they plan to increase their calcium and vitamin D intakes. Ask for a report at the next meeting.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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