



Nutrition and Bone Health
Lesson 4: Calcium and Vitamin D Supplements

Getting Started

1. Review lesson plan before each session.
2. Practice activities.
3. Copy handouts and post-test questions:
 - a. Step by Step Supplement Shopping
 - b. Cost Comparisons of Calcium-and Vitamin D-Rich Foods and Supplements
 - c. The Price is Right (recommended as an overhead transparency or a poster)
 - d. What to Avoid When Choosing Supplements
 - e. Lesson 4: Calcium and Vitamin D Supplements Post-Test
 - f. Lesson on Exercise (must download separately as an individual lesson from NOAHnet Osteoporosis lesson plans)
4. Gather supplies needed for lesson and activities.
5. Check local prices for calcium/calcium+D supplements and prices of foods listed on The Price is Right handout and edit if necessary.

Supplies Needed

1. Antacid (1 tablet)
2. Vinegar and clear glass/cup.
3. Containers of supplements (can be empty), such as these brands: Caltrate®, Citracal®, Tums®, Oscal®, Viactiv®, Nature Made® or others.

Beginning the Lesson

1. Introduce yourself by name and the organization you represent.
2. Summarize the lesson by stating the objectives.
3. Let the group know the lesson will be informal and they can ask questions anytime.

Objectives – The participants will:

1. Understand the value and importance of taking a calcium and vitamin D supplement.
2. Gain a better insight on the role of supplements in their diet.
3. Be given a handout that helps them choose a supplement when needed.



Activity (to start before class begins or even before you arrive at site if necessary)

Place a Tums® tablet in a glass of vinegar. Stir it occasionally and start timing how long it sits in the glass. When 30 minutes have passed you will explain how this experiment teaches the concept of solubility and absorption. You will talk about absorption later in the lesson.

Script

Introduction

Before we begin today's lesson let's review some highlights for proper bone health. We've discussed how important calcium and vitamin D are for building strong bones early in life and for slowing the rate of bone loss later in life. We have also learned more about the "silent disease," osteoporosis. Does anyone remember why it is called the "silent disease"? (*Because bone loss occurs without symptoms*). We have also talked about four things to remember to do to help protect our bones. Does anyone remember them? They are:

1. Talk to your doctor. Have any of you talked to your doctor about your medications, family history of osteoporosis, having a bone mineral density test, exercise, smoking or alcohol?
2. Take calcium and vitamin D. Today we are going to talk about these two important nutrients - calcium and Vitamin D – as supplements.
3. Take action. This reminds us to stay active. We can stay active by doing exercises such as walking, dancing, gardening and lifting weights. We'll practice some exercises today, too.
4. Take care. This means preventing falls, and avoiding tripping or slipping. We will talk more about this in another session.

Today we are going to talk about calcium and vitamin D supplements. Can someone tell me what a calcium or vitamin D supplement is? (*Tablets, capsules or liquid containing the mineral calcium or vitamin D from a non-food source*). It's important to remember the *best* way to get the nutrients you need is from the foods you eat. Can someone tell me how much calcium adults age 51 and over need everyday? (*1,200 mg*). Supplements are helpful for people unable to get this amount of calcium from their food everyday. So, supplements are never meant to replace food but can be *used to help* you if you can't get all the calcium and vitamin D you need everyday from foods. If this is your situation you should consider taking calcium and vitamin D supplements to keep you on track for healthy, strong bones. Let's begin talking about choosing calcium and vitamin D supplements.



How to Buy a Calcium Supplement

Have you ever walked down the grocery store or pharmacy store aisles and been overwhelmed by all the supplement choices? It sure does help to know what you're looking for. Let's look at the handout called "Step by Step Supplement Shopping" to make it easier to buy supplements with calcium and vitamin D.

1. What to avoid when choosing supplements

(First, refer participants to the handout labeled "What to Avoid When Choosing a Supplement".) First, we begin by knowing what to avoid. Calcium supplements made from *bone meal, dolomite, unrefined oyster shells* or *coral calcium*, all often advertised as **natural**, may contain lead or other toxic metals and can be poisonous. Do not buy these products without first looking to see if they have a **USP** (United States Pharmacopeia) on the label or have the word "purified" written on the container. If the product has **USP** on the label, then it has met the purity standards established by the USP (United States Pharmacopeia) and should not be harmful. *(Show participants an example of the USP symbol on the side a vitamin bottle.)* Now that you know what to avoid, let's answer some other questions.

2. Which kind of supplement should I buy?

A calcium carbonate or calcium citrate supplement is the form of calcium supplement recommended. Different brand names use different kinds of calcium *(Have the participants repeat the words "calcium carbonate" and "calcium citrate")*. We are going to do a test to see how well an antacid tablet, made of calcium carbonate, will dissolve and be absorbed inside the body. We want to know how quickly this tablet breaks down because if it doesn't dissolve within 30 minutes it will probably not dissolve well in the stomach. *(Hold the glass up for the participants to see how well dissolved the tablet is at this point. Tell them how many minutes have gone by since you put the tablet in the vinegar. Don't forget to come back and check on it if it has not been 30 minutes.)* Remember to look for a supplement that is made of calcium carbonate or calcium citrate because they dissolve very well and are absorbed very well. All of the supplements on your handouts are made from either calcium carbonate or calcium citrate.

3. What name brands of supplements are reliable and easy to find in the store?

The name brands on your handout are reliable supplements and are found easily in many stores. There are generic versions of calcium supplements, but the brands listed on the handout are good choices at good prices. Each tablet, pill or chew will cost between 11 and 15 cents. The best value is a supplement that contains both calcium and vitamin D. *(If possible, have each of these products with you for the participants to look at and practice reading the labels. Check local prices to see if they vary from these listed and edit if necessary).*



Supplement name	Calcium (mg), vitamin D (IU) per tablet	Cost per container without tax (quantity)	Cost per tablet
Caltrate® + D	600 mg, 200 IU	\$8.49 (60 tablets)	\$0.15
Viactiv® + D	500 mg, 100 IU	\$7.99 (60 chews)	\$0.14
Oscal® + D	500 mg, 200 IU	\$7.99 (75 tablets)	\$0.11

Some calcium supplements also contain vitamin K because it may play a small role in bone health. Viactiv® is one brand. There are others. Check the supplement facts label to see if your brand contains vitamin K. If you are on a blood thinner, such as Coumadin® or warfarin, your doctor may not want you to take the extra vitamin K.

4. **How much calcium and vitamin D do I need in my supplement?**

In one of our earlier lessons, you completed a worksheet titled, “Am I Getting Enough Calcium and Vitamin D?” Refer to this worksheet to help you calculate how much you need in a supplement. In our last lesson we talked about how much total calcium your body needs everyday. Can someone tell me this amount? (1,200 mg). If you consume less than one serving of milk, other dairy foods, or calcium-fortified foods such as calcium-fortified orange juice each day, then you may need about 800 mg to 1,000 mg of calcium from supplements and up to 1000 IU of vitamin D from supplements. To get this much calcium and vitamin D, you will probably need to take supplements at least twice a day, such as one in the morning and one at night.

If you consume about 2 or 3 servings of milk, other dairy foods and calcium-fortified foods, then you will probably only need about 400 mg to 600 mg of calcium and 700 to 800 IU of vitamin D from your supplements. You can probably get these amounts by taking a supplement that contains calcium and vitamin D, as well as a multivitamin each day.

Once you decide which brand of calcium supplement or calcium + vitamin D supplement to take, be sure to follow the directions on the label to make sure you take it properly. The directions should tell you if you need to take 1 or 2 tablets at a time and if you should take it with or without food.

5. **Does my supplement need to have Vitamin D added?**

Does anyone remember from our last lessons why we need vitamin D in our diet or from supplements? (Because it helps our body use calcium. As we age we can't make it in our skin as well as younger people, and sunscreen blocks vitamin D production in the skin.) The easiest way to get enough vitamin D as we age is to take a multivitamin with 400 IU of vitamin D and a supplement with both calcium and vitamin D. It is recommended that you take a calcium supplement that provides 200 to 400 IU of vitamin D. In addition to the multivitamin, you could



also take a separate calcium supplement and a separate vitamin D supplement. Supplements with vitamin D only are now available with 400 IU or 1000 IU per tablet. If you use a vitamin D only supplement, then carefully read the labels and make sure your total vitamin D from all supplements adds up to 1000 IU or less. The recommendation for vitamin D is 1000 IU daily, but do not exceed 2,000 IU daily. (*Show participants an example of a label where it has the amount of vitamin D written on it*).

6. Does it matter *when* I take my supplement?

First, it is *most* important for you to *remember* to take your calcium and vitamin D supplements. Timing is not the most important part. Your supplement label will tell you if you need to take it with food or not. You might remember to take your calcium/vitamin D supplement daily if you place your tablets in the middle of your kitchen table so you can remember to take one after you eat your meal.

7. Can I afford supplements?

Look at the handout labeled “Cost Comparisons of Calcium- and Vitamin D-Rich Foods and Supplements.” A bottle of calcium and vitamin D supplements can cost anywhere from \$8 to more than \$12. While this might seem expensive, you can get the extra calcium and vitamin D you need for anywhere between 11 cents and 15 cents each day. Single supplements of calcium only and vitamin D only are available and are also shown in the handout titled “Cost Comparisons of Calcium- and Vitamin D-Rich Foods and Supplements”. This is great insurance against osteoporosis, which causes fractures of the hip, spine, and other bones. A recent study of people aged 72 and older found that the average health care cost of a fall injury was \$19,440 (including hospital, nursing home, emergency room, and home health care, but not physician services).

Let’s look at one more way to compare the daily cost of some calcium rich foods to the cost of a daily supplement. Pick up the handout that is labeled “The Price is Right.” (*Read through this handout with the participants.*) Of course, always remember even though we have talked about how affordable supplements are they are never meant to replace food. You should get as much of the calcium and vitamin D that you can from foods you eat.

Let’s take action by practicing balance exercises. (*Refer to the handout “Lesson on Exercise”*)



References

A Tool Kit to Prevent Senior Falls: The Costs of Fall Injuries Among Older Adults. CDC: National Center for Injury Prevention and Control, <http://www.cdc.gov/ncipc/factsheets/fallcost.htm>. Accessed online October 31, 2005.

Calcium Supplements. National Osteoporosis Foundation, http://www.nof.org/prevention/calcium_supplements.htm. Accessed online October 20, 2005.

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Oscal, <http://www.os-cal.com/>.

Osteoporosis Prevention, Diagnosis, and Therapy. NIH Consensus Statement Online 2000 March 27-29; [accessed 2005, October, 24]; 17(1): 1-36.

Rodríguez-Martínez, M.A.; García-Cohen, E.C. "Role of calcium and vitamin D in the prevention and treatment of osteoporosis." *Pharmacology & Therapeutics* Jan 2002; 93: 37-49.

Viactiv, <http://www.viactiv.com>.

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The Food Stamp Program provides nutrition assistance to people with low income. It can help buy nutritious foods for a better diet. To find out more, contact your local food stamp office, food bank, or senior center.

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Step-by-Step Supplement Shopping

1. **Avoid** any supplement made from **bone meal**, **dolomite**, **unrefined oyster shells** or **coral calcium**, unless it has USP on the label or the word purified written on the container.



2. Look for a supplement made of **calcium carbonate** or **calcium citrate**.
3. Prices of reliable **name brands from Wal-Mart**:



Caltrate® + Vitamin D
Viactiv® + Vitamin D
Oscal® + Vitamin D

Cost per tablet

Cost per container

15 cents

\$8.49 (60 tablets)

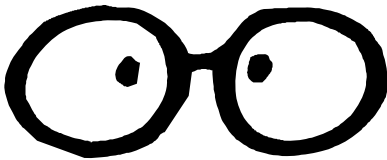
14 cents

\$7.99 (60 chews)

11 cents

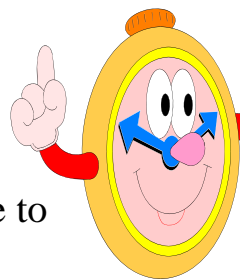
\$7.99 (75 tablets)

4. First, **look** on the back of the container to see how many tablets equal one serving. Second, see how many milligrams of calcium that serving will give you. You may need two tablets to reach your goal of 800 to 1000 mg of extra calcium daily!



5. It is fine to take a calcium supplement with **added vitamin D** and a daily multivitamin. Be sure you do not take more than 800 IU vitamin D daily from supplements and no more than 2,000 IU vitamin D from diet plus supplements.

6. **The perfect time** to take your calcium supplement is when you remember! A good way to remind yourself to take them regularly would be to put them on your kitchen table and take as directed by the label.





Cost Comparisons of Calcium- and Vitamin D-Rich Foods and Supplements

**** Means contains BOTH calcium and vitamin D**

Foods		
	Cost per unit	Cost for calcium in a serving
** Milk	\$2.99 per 1 gallon	19 cents for 300 mg in 1 cup
Yogurt, flavored	40 to 65 cents per 6 oz (3/4 cup)	40 to 65 cents for 250 mg in 6 ounces (3/4 cup)
Cheese	\$3.00 to \$4.00 per pound	19 to 25 cents for 200 mg in 1 ounce
Calcium-fortified orange juice	\$2.40 per 1/2 gallon	30 cents for 350 mg in 1 cup
Supplements - Recommend Supplements with both Calcium and Vitamin D <i>Read labels carefully because the amounts can change.</i>		
	Cost per bottle	Cost for each tablet or chew
**Oscal [®] Calcium + Vitamin D	\$7.99 for 75 tablets	11 cents for 500 mg of calcium plus 200 IU of vitamin D
**Caltrate [®] Calcium + Vitamin D	\$8.49 for 60 tablets	15 cents for 600 mg of calcium plus 200 IU of vitamin D
**Viactiv [®] Calcium + Vitamin D	\$7.99 for 60 chews	14 cents for 500 mg of calcium plus 100 IU of vitamin D
Calcium only, 600 mg	\$4.99 for 100 tablets	5 cents for 600 mg of calcium
Vitamin D only, 400 IU	\$3.99 for 100 tablets	4 cents for 400 IU of vitamin D

Do not exceed 2,500 mg calcium daily or 2,000 IU vitamin D daily from foods plus supplements.



\$\$\$\$ The Price Is Right \$\$\$\$

Do you think supplements are too expensive? Let's compare the daily cost of some calcium rich foods with some supplements.

- 2 slices of 2% Singles® cheese cost 25 cents vs. 15 cents for one Caltrate® tablet



- 2 cups of milk cost 38 cents vs. 14 cents for one Viactiv®



- 1 cup of Tropicana® Orange Juice with Calcium cost 30 cents vs. 11 cents for one Oscal® tablet



- 1 ounce of Parmesan cheese costs 38 cents vs. 15 cents for one Caltrate® tablet



Supplements are never meant to replace food. Supplements can **HELP** you get the calcium and other vitamins you need!



What to Avoid When Choosing Supplements

- Bone meal
- Dolomite
- Unrefined oyster shells
- “Natural” oyster shells
- Coral calcium

Avoid these products if they do **not** have **USP** (United States Pharmacopeia) on the label or have the word **purified** written on the label. They could be harmful.





Lesson 4: Calcium and Vitamin D Supplements Post-test

Date:	Name:
County:	Age:

Please answer these questions with a check, \surd .

1. I learned something new from this lesson.

- No
 Yes

2. Check the lines below that best describe your interest in taking calcium and vitamin D supplements.

a. I already take supplements with:

- Calcium and vitamin D
 Calcium only
 Vitamin D only

b. This month I will start taking supplements with:

- Calcium and vitamin D
 Calcium only
 Vitamin D only

c. I don't plan to take any.