

Along with meeting your calcium and vitamin D needs . . .

- **Use Canada's Food Guide.** Follow recommended servings and portions for the 4 food groups including lots of variety.
- **Avoid excessive caffeine to minimize calcium loss through urine.** If you drink **caffeine containing beverages**, aim for less than 450mg caffeine per day. Caffeine content for 8 ounce (250 ml) portions are as follows: Brewed Coffee -135mg, Instant Coffee - 95mg, Medium Brew Tea - 50mg Green Tea - 30mg. Cola contains 45-65mg per 355ml can.
- **Maintain a healthy weight and avoid dieting.** If you would like to lose weight, discuss this with your doctor or dietitian. Weight loss is linked with bone loss, and it appears that your bones fare better if you are 'a little over' than underweight.
- **Choose foods high in fibre.** You may have heard that fibre "binds" calcium to make it "unavailable" to your body, but the small amount of calcium that may be lost is not as important as the benefits of a high fibre diet.
- **Choose a variety of leafy green vegetables, fresh fruits and whole grain foods.** Calcium found in foods containing high levels of oxalates (spinach, rhubarb, beet greens, Swiss chard) or phytates (in unleavened grain products) is not well absorbed, however these foods are packed full of other healthy vitamins and minerals. The oxalates and phytates found in these foods will not significantly lower the calcium in other calcium rich foods.
- **If you drink alcoholic beverages, do so in moderation.** Excessive alcohol intake has a negative impact on bone health.
- **Trim the fat and use low fat dairy products.** Following a diet low in saturated fats reduces risk of diabetes, cardiovascular disease, stroke, hypertension and other disorders. Contact Dial-A-Dietitian for cholesterol lowering tips and more information on including low fat dairy products.

Nutrition for Healthy Bones

TOTAL DAILY RECOMMENDATIONS

	Elemental Calcium Milligrams	Vitamin D IU
INFANT		
Birth - 6 months	210	400
6 months - 1 year	270	400
CHILDREN		
1 - 3 years	500	200
4 - 8 years	800	200
9 - 13 years	1,300	200
TEENS		
14 - 18 years	1,300	200
ADULT		
19 - 30 years	1,000	200
31 - 50 years	1,000	200
51 - 70 years	1,200	400
70+	1,200	600
PREGNANCY/LACTATION		
< 19 years	1,300	200
19 - 50 years	1,000	200
OSTEOPOROSIS/OSTEOPENIA		
< 50 years	1,000	400
50 and over	1,500	800
DO NOT EXCEED	2,500* (from diet & supplements)	2,000*

† Note: Increasing calcium to 2000 mg/day may be useful to decrease bone loss for persons with rapid bone loss. * These values apply to individuals over 1 year of age.

NUTRIENTS FOR BONE

Do I need a vitamin D supplement?

Vitamin D is produced in the skin with exposure to ultraviolet B light (UVB) from the sun. However, from October through March in most of Canada, UVB exposure is inadequate for vitamin D production. In the warmer months, production will not occur if sunscreen is worn. Finally, production in the skin decreases with aging.

Accordingly, needs should be met through diet and supplements. As shown below, vitamin D is in a very limited number of foods. Rarely do osteopenia/osteoporosis patients meet the 400 or 800 IU recommended through diet alone. Find your Vitamin D recommendation (see front cover) and make sure you achieve this daily. Supplemental sources include: 400 IU and 1000 IU vitamin D tablets, 400 IU in most one a day multivitamins and varying levels in some calcium supplements.

FOOD SOURCES OF VITAMIN D

Food	Serving	Vitamin D(IU)
Fortified milk	1 cup	90
Fortified non-dairy (soy / rice) beverage	1 cup	90
Fortified Margarine	1 Tbsp	90
Liver, beef raw	3.5 oz	16
Egg yolk	1 large	25
Fish and shellfish		
Halibut (Atlantic /Pacific), raw	100g	150
Mackerel (Atlantic), raw	100g	80
Oysters (battered or breaded, fried)	100g	220
Salmon (Chinook Spring/Wild Coho/ Sockeye Red)	100g	650-705
Salmon (Wild Atlantic/Farmed Atlantic)	100g	240-255
Salmon (Sockeye Red canned with bones)	1/3 can (123g)	960
Sardines (canned/drained)	1 can (92g)	85
Tuna (light canned in water/drained)	1/2 can (83g)	40

Do I need a calcium supplement?

Use the Calcium Calculator (www.bcdairyfoundation.ca, 604 294-3775 or 1-800-242-6455) to assess the amount of calcium in your diet. If you're vegetarian also consult Dial a Dietitian's Calcium Content of Foods list (www.dialadietitian.org, 604 732-9191 or 1-800-667-3438) outside lower mainland). Subtract the amount of calcium you get daily in food from the amount recommended for your age (see front cover). This is the amount by which you will need to increase your daily intake through food and or supplement.

How can I improve absorption of my calcium supplement?

Calcium carbonate should be taken with food. Calcium citrate and other forms can be taken anytime. All supplements will be better tolerated and absorbed if taken in small amounts throughout the day. Vitamin D and calcium do not have to be taken at the same time. Avoid taking medications with your supplements. There is not a significant difference in the absorption of the various forms of calcium.

What are some side effects of taking large amounts of calcium supplements?

Constipation and bloating are the most common side effects. Drink plenty of fluids, eat a diet rich in fibre and include physical activity every day to help counter these effects.

What should I check for when buying a calcium supplement?

1. Read labels carefully for the amount (mg) of **calcium, elemental calcium**, or calcium with the source in parentheses such as **calcium (carbonate)** a product contains.
If for example, *calcium carbonate* appears on the label without parentheses (), then the amount (mg) refers to the whole compound, not just the mineral calcium.
2. Look for a **DIN**, or **NPN** number on the label. This means the supplement has met government production, safety and labeling requirements.
3. Check price, size of tablets, flavour, amount of calcium and other ingredients in the recommended dose to find a product to meet your specific needs.

How do I know how much calcium a packaged food is providing?

FOOD LABELS may list the actual amount of calcium in milligrams (mg) or give it as a percentage of the Daily Value (DV) or Recommended Daily Intake (RDI).

Nutrition Facts		A DV or RDI of 1100mg calcium is used on labels, so to calculate the amount of calcium the product contains, multiply the RDI /DV by 30% Eg: 1100 mg x 30% = 330 mg
Per 250ml (1 cup) serving		
Amount	%Daily Value (DV) or %Recommended Daily Intake (RDI)	
Calcium	30 %	

Are other vitamins and minerals useful in the treatment of osteoporosis?

Many nutrients including vitamins A, C and K and the minerals magnesium, boron, and silica are involved in bone building. Generally, except in intestinal disorders where there is malabsorption, research does not support intakes above those recommended for healthy individuals. Two nutrients which warrant discussion are Vitamin A and magnesium.

Vitamin A: Avoid more than 2,500 IU per day through supplements since research suggests that high intakes lead to bone loss.

Magnesium: Dietary surveys indicate that many individuals are not achieving recommended intakes. To ensure an adequate intake, include magnesium-rich foods such as fruits and vegetables especially leafy greens, whole grains, nuts and seeds, and legumes e.g. dried beans and lentils. As a back up it is reasonable to take a supplement of 100-200mg magnesium per day. Be cautious, as supplements over 350mg per day may cause diarrhea.

Do phytoestrogens help to reduce bone loss?

Phytoestrogens are naturally occurring plant compounds with 'estrogen-like' activity. Soybeans and whole soy products are good sources of phytoestrogens called isoflavones. Populations with high isoflavone intakes have lower rates of hip fracture than North Americans. However, controlled studies providing direct evidence of phytoestrogen's beneficial effect on bone are sparse. There are more studies on ipriflavone, a synthetic phytoestrogen. However, many of these studies are of poor quality and lack long-term data on the effects of ipriflavone on estrogen-sensitive tissues such as breast and uterus.

- Ipriflavone (200mg, 3 times daily) is felt to be helpful in maintaining bone in the spine of postmenopausal women. Because long-term safety is not established it should only be taken under the guidance of a physician.
- Ipriflavone has *not* been found effective in preventing fractures in postmenopausal women with osteoporosis.
- Ipriflavone has not been evaluated in premenopausal women or men.

Free Nutrition Information:

Dial – A – Dietitian (Residents of BC only)
BC Dairy Foundation
Dietitian, Women's Health Centre

(604) 732-9191 or 1-800-667-3438
(604) 294-3775 or 1-800-242-6455
(604) 875-2267

References:

Scientific Evaluation of Dietary Reference Intakes (DRI's), National Academy of Sciences, 1997.

The Osteoporosis Society of Canada

Canadian Nutrient File

USDA: Nutrient Database for Standard references, Release 13, Nov 1999.

McCance and Widdowson, The Composition of Foods. 5th Ed. 1991. WHC-022 Aug,2006 File: v:/desktop/Nutrition for Healthy Bones3