GOOD NUTRITION FOR BONE – Calcium, Vitamin D and So Much More

QUESTION & ANSWER

Wednesday, March 23, 2011 (2:30 p.m. to 4:00 p.m. ET)

1. If I go a couple of days without my vitamin D and calcium requirements, can I make up for them?

Reply: Vitamin D can be “made up.” If you miss your vitamin D today, for example, you can take double the amount tomorrow. If you miss your vitamin D for a whole week, you can take all the vitamin D that you missed altogether at the end of the week. However, you shouldn’t do this for more than a week without consulting with your physician. This can only be done with vitamin D. It cannot be done with other medications or supplements.

What applies to vitamin D does not apply to calcium. Whenever possible, calcium should be taken from foods, rather than from supplements (unless your doctor specifically advises you to take calcium supplements) and the intake should be consistent each and every day because it is not absorbed in the same way as vitamin D. Calcium is best taken in small frequent quantities. In other words, try to ensure that you have a good serving of dairy product or other high calcium food at each meal if you are over the age of 50, or at least twice a day if you are younger.

2. What is the "shelf-life" of cooked, leftover vegetables?

Reply: The vitamin content of cooked vegetables declines with storage over a few days so the leftovers should not be stored for too long.

3. Is there a recommendation on magnesium intake to reduce the risk of/treat osteoporosis?

Reply: Magnesium is needed for good bone health but there is no specific recommendation beyond the nutrition recommendations from Health Canada, which are about 310-320 mg of magnesium per day for women and 400-420 mg for men. The best sources of magnesium are green leafy vegetables, whole grains, some legumes, nuts and seeds.
4. A research study discussed the use of "green protein" powder and the results suggest that this product may be useful in building bone. Can you discuss?

Reply: The product “green protein” provides a plant-based protein with a similar amino acid composition as human muscle. The same is true for quinoa, a food which is well known to vegans. It is very important to consume sufficient protein for bone health, so “green protein” powder could be used as a supplement for people who do not get enough dietary protein because they are vegetarians or for other reasons. However, the high protein foods mentioned here, are not a substitute for vitamin D or for calcium rich foods.

5. Can you clarify whether it is more effective to take Vitamin D as D₃ or D₂?

Reply: Vitamin D₃ is more effective than vitamin D₂. Vitamin D₂ does work, but not quite as well as vitamin D₃

6. If you take a multi-vitamin, how much vitamin D do you need?

Reply: The amount of vitamin D in multi-vitamins varies greatly (usually from 200 IU to 800 IU), but in general, most multi-vitamins provide 400 IU of vitamin D₃. Therefore, on its own, this may not satisfy the amount of vitamin D needed. Adults over 50 years of age need 800-2,000 IU of vitamin D daily. In order to get the amount you need, you might need to take a separate vitamin D supplement in addition to your multi-vitamin. Talk to your doctor about how much vitamin D is appropriate for you.

7. Is there a possibility that taking a heartburn medication like Prevacid®, a proton pump inhibitor, could affect bone quality? I have read on the Internet that Prevacid® has issued a warning that their medication could cause bone loss.

Reply: It is true that certain types of heartburn medications can affect calcium absorption. The group known as proton pump inhibitors, to which Prevacid® belongs, can change the acidity of the stomach and this seems to result in a decrease in the absorption of calcium. This makes it all the more important for those on proton pump inhibitors such as Prevacid® to ensure that they get lots of calcium in their daily diet.

8. Does Body Mass Index (BMI) have any effect (positive or negative) on a woman with osteoporosis?

Reply: A higher BMI is associated with higher bone mineral density. However, while it is true that women with low body weight (BMI < 20 or 60 kg/132 lbs) have more risk of osteoporosis, the effect of a large body weight (BMI> 25) might not be so advantageous, if the weight gain is due to fat rather than muscle. When overweight
women lose weight, they also lose bone mass if they do not exercise during their weight loss process. This is because exercise loads bones, which makes them stronger. Therefore, exercise should accompany diet for weight loss, as should optimal amounts of a vitamin D supplement and calcium rich foods.

9. Does spinal osteoporosis cause back pain and can calcium, vitamin D and protein help with the pain?

Reply: Osteoporosis does not typically cause back pain. Most back pain is due to stiff and sore muscles. Osteoarthritis (also known as Degenerative Disc Disease) is another very common cause of back pain and there are many more causes. These conditions are not related to osteoporosis.

Spinal (or vertebral) fractures from osteoporosis can be associated with back pain. This can result in sudden onset of quite severe pain in a very specific area of the back. However, two thirds of osteoporotic spine fractures do not cause any pain. They do cause height loss, which is why everyone over 50 should get their height measured annually by a health care professional. Height loss is sometimes the only clue that a spine fracture is present. If there is suspicion of a spine fracture, then an X-ray of the spine should be done to confirm whether or not a spine fracture has occurred.

For those who do have pain associated with spine fractures, calcium and vitamin D will not help their pain. Pain medications (known as analgesics) are often necessary. Calcitonin (Miacalcin®), one of the osteoporosis medications is sometimes helpful in decreasing pain related to vertebral fractures.

Anyone with a fracture of the spine, whether it is painful or not, is at high risk for another fracture and should be on prescription medication for osteoporosis as well as adequate amounts of a vitamin D supplement and adequate dietary calcium.

If you have any kind of new pain in your back, see your doctor. Before treating the pain, your doctor will first need to make an accurate diagnosis of the cause of the pain.

10. What is retinol and where is it found?

Reply: We use the term “retinol” to distinguish the form of vitamin A that is found in foods such as liver. This form of vitamin A is so well absorbed that consuming foods such as liver or cod/halibut liver oil may result in an excess of Vitamin A that can, over time, cause bone loss. Because cod and halibut liver oil have a high content of vitamin A, they are not recommended as an optimal source for vitamin D (which they also contain).
11. For the person who does not consume dairy products (e.g. someone with lactose intolerance), but has an otherwise balanced diet, how much calcium should they take?

Reply: All individuals consume at least 300 mg of elemental calcium per day in their usual diet, even if their diet is lacking the dairy foods. People under 50 years of age usually need 1000 mg of total elemental calcium daily and those over 50 generally need 1200 mg of total elemental calcium daily. Each standard sized serving of dairy or dairy-equivalent provides about 300 mg of elemental calcium. This means that for those over 50, three such servings per day are needed.

For the lactose intolerant individual, there are many calcium-rich dairy-free products on the market, such as fortified soy or almond milk, fortified orange juice, tofu, and canned salmon or canned sardines if one also eats the bones which have been softened by the canning process.

Currently, Osteoporosis Canada is recommending that whenever possible, calcium should come from dietary sources. Supplements can be used when sufficient calcium cannot be obtained through the diet but calcium supplements have been associated with some health concerns including digestive problems, kidney stones, heart attacks in women and prostate cancer in men. While more needs to be learned about the true risk of calcium supplements, it is recommended that those individuals who cannot get sufficient calcium from their diet should consult with their physician or other health care provider to discuss the need for supplementation.

12. Does soda water have the same negative impact as soft drinks?

Reply: Soda water contains only water and carbon dioxide gas and has no adverse effects on bone. Soft drinks that are colas, which contain caffeine and/or phosphoric acid, may have adverse effects on bone as well as other systems of the body. In addition, diet soft drinks that contain artificial sweeteners have been found to be associated with chronic kidney disease. Because of this, neither regular pop nor diet pop should be consumed on a daily basis.

13. There are mixed messages regarding the quality of various calcium supplements. For example, cheaper versions contain calcium carbonate ± D, while more expensive ones may contain calcium citrate, D3, zinc citrate, silicon, broccoli powder, anti-oxidants, turmeric, copper, ipriflavone, boron, etc. Is there justification for these more expensive supplements? Also please comment on MCHA as a source of calcium.

Reply: Osteoporosis Canada currently recommends that everyone try to get their calcium from their diet. If calcium supplements are required please see your doctor to determine your individual needs. In the preparations that you are naming, it is the calcium and the vitamin D in the preparation which are the most important from the
bone perspective. Different types of calcium (e.g. calcium citrate and calcium carbonate) are tolerated and absorbed differently by different individuals, but we can still rely on the amount of elemental calcium indicated by the manufacturer on the bottle, to know how much calcium that particular product is providing. As for the other ingredients you mentioned, such as copper and zinc, etc, there is currently no evidence that any of these help reduce the risk of osteoporosis or fractures.

14. Is it true that skim milk is not truly high in vitamin D in spite of fortification, because it does not contain enough fat to hold this fat soluble vitamin in solution?

**Reply:** No, this is not true. Even though there is less fat in skim milk than Homo milk, Vitamin D fortified skim milk contains all of the Vitamin D that was added to it. (Fortification means that the vitamin or nutrient was artificially added to the food.) In addition, a study published in 2003 in a top nutrition journal found that vitamin D in skim milk was well absorbed by humans.

Having said that, the amount of vitamin D found in milk is not sufficient to meet the needs of most Canadian adults, even if you drink lots of milk. This is why Osteoporosis Canada recommends that all Canadian adults take a vitamin D supplement (400-1000 IU a day if you are under 50 years of age and 800-2000 IU a day if you are 50 or over).

15. What is the best vitamin supplement for women?

**Reply:** Most individuals who are healthy and eat a balanced diet do not need general vitamin supplementation. When needed, different individuals may need different types of vitamins or supplements depending on their sex (male or female), their age, and their life experiences (ex. during pregnancy or convalescing from surgery etc.)

Younger women often need to take iron and folic acid. Older women, at menopause, do not usually need extra amounts of iron or folic acid because they are no longer menstruating. Both men, and women need vitamin D, but older men and women need more vitamin D compared to younger individuals.

Because sun exposure varies and is usually erratic and insufficient, especially in Canada, Osteoporosis Canada recommends routine supplementation of vitamin D year round for all Canadians, young and old.

16. Is Vitamin B12 necessary and if so, should one take B Complete (Compound or Complex) and in what quantity?

**Reply:** For everyone, but especially for seniors, Vitamin B12 is very important. High amounts of Vitamin B12 are found in red meat which is also high in protein, which is good for bone health. A well balanced diet may include 2-3 servings of red meat (beef)
per week. Getting vitamin B12 from a multi-vitamin, from a B Complex vitamin, or from just a plain B12 vitamin is just as effective as eating red meat (but remember that the vitamin does not give you the protein or the iron that the red meat will give you). Vitamin B12 is a water soluble vitamin which means that taking more than you need is not harmful, as the excess vitamin is excreted in the urine (making it a bright orangey colour).

However, even though some people may eat red meat regularly or take Vitamin B12 regularly, their digestive system may not be absorbing it into the blood stream. This can cause a condition known as pernicious anemia, which is a low level of B12 in the blood. Pernicious anemia can be caused by not consuming enough Vitamin B12 or by not absorbing what is being consumed, or both.

Low levels of vitamin B12 in the blood can affect the nervous system and the blood system, causing symptoms of anemia, fatigue, dizziness, poor balance (that leads to falls and fractures), forgetfulness, and so on. In people over 50 years of age, blood levels should be done annually to make sure that both intake and absorption of Vitamin B12 are adequate.

When an individual consumes plenty of Vitamin B12 either in the form of red meat, or as a vitamin, but is found to have low blood levels of Vitamin B12, then that individual should consult with their doctor about whether or not they need to get regular Vitamin B12 shots.