

CALCIUM AND OSTEOPOROSIS

FACTS

Bone is living tissue – it is constantly being formed, broken down, and remodeled.

Daily loss of calcium in sedentary adults is 200 mg per day – substantially more during strenuous activities. Median calcium intake in postmenopausal women (NA) is about 600 mg per day although many recommend calcium intake should be 1000 – 1500 mg/day. This amount refers to ELEMENTAL milligrams of calcium. Calcium is combined with various “carriers” – carbonates, citrates, lactates, etc. when it is manufactured. Some forms provide more calcium per amount than other forms although each form may be more or less absorbable than others.

The BIG print on the label may read - 1 tablet contains 1000 mg of calcium. When you read the label more carefully, it may list calcium carbonate. What this means is that perhaps 200 mgs of the total amount of 1000 mgs is in the form of elemental calcium and therefore 800 mgs is of carbonate, citrate, etc. You decide to take 1 tablet a day thinking that you are getting 1000 mgs of CALCIUM and instead are only getting 200 mgs of elemental calcium. In order to get 1000 mgs of calcium a day, you would need to take 5 tablets a day – not 1 tablet as the label suggests. Is there any wonder that there is such a deficiency of calcium in our bodies! All minerals (calcium is a mineral) are very difficult to absorb. Minerals need an acid medium (stomach) to enhance absorption; most of us do not have enough stomach acid to absorb minerals (calcium). Taking an “antacid” with calcium is a waste of time if you are using the antacid to increase your calcium intake.

Our body needs daily calcium intake to make new bone and to remodel existing bone as calcium is poorly absorbed (10% of intake) and weakly conserved in our body. 99% of the total body amount of calcium in a healthy adult weighs 1000-1400 GRAMS as found in our teeth and bones.

When our bodily needs for calcium exceed our intake, our body scavenges calcium from our bones and teeth leading to fractures and periodontal disease. Increasing elemental calcium intake to 1200-1500 mgs a day has been shown to reduce fractures by 45% – 55%. This occurs through changes in hormones in our blood as calcium functions as an antiresorptive agent (bisphosphonates) when absorbed in sufficient amounts to form bone and reduce bone resorption. Bone fragility and fracture risks begin to reduce within 24 hours of calcium/mineral/vitamin D intake. Two concepts regarding bone are: bone strength and bone remodeling. Adequate calcium and vitamin D intake is responsible for both of these! Changes in our culture (from hunter/gatherers to an agricultural seed based diet) increase the hormones that pull minerals out of our bones at an accelerated rate. Seed foods are low in calcium and potassium and high in sulfur-containing amino acids.

There is a wide gap between what is known about bone health and what is being done to include the behavior of the populace at large. We see, hear, and read ads daily about osteoporosis. The treatment advocated in the ad is not the only means to increase bone health and may not be the safest way yet thousands of people attempt these methods and suffer many negative side effects. In 1994, patients (43%) were given calcium along with

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bisphosphonates; however by 2003 only 23% were counseled about concurrent use of calcium and vitamin D! In addition, people (40%) on these prescriptions were not taking calcium on their own so nearly 75% of patients being treated for osteoporosis (a condition of insufficient calcium intake) who were taking bisphosphonates were not getting sufficient daily calcium intake! **WHAT IS WRONG WITH THIS PICTURE?** You need daily calcium intake in your diet to prevent a calcium deficiency that leads to weak bones (osteoporosis).

Are you confused by all the conflicting news reports that you hear about various studies regarding vitamins and drugs? Remember, the final conclusion that is reported may not really be what the research project found. The sponsor may choose only a portion of the study to focus on and unless you read the entire report you may not know what the findings truly discovered. Some things to consider: what is the sample size – 20 or 10,000 people? Did the control group get too little or too much of the item (calcium)? Too little (calcium) would guarantee failure and too much would find that the item (calcium) did not help because the threshold was not reached. What if both groups (control and treatment) got too little of the item – both groups would perform poorly. Did the group comply and take the medication? Calcium was found to prevent Preeclampsia incidence during pregnancy. A follow-up study found that calcium did not help because sufficient calcium (1135mg) was provided to the participants.

Our body is a complex organism – **calcium** by itself does not assure good bone quality – **weight-bearing exercise is** another important necessary component. Assuring that you are getting **enough protein** is another key requirement to good bone health. **Vitamin D** is necessary as it assists the calcium to be absorbed. Currently, there is a widespread unrecognized vitamin D deficiency in North America. Daily vitamin D intake should be 2,000-4,000 IU/day. **There are potential serious irreversible side effects from taking too much vitamin D. A blood test (25 hydroxyvitamin D) should be performed if more than the above amount is taken each day.** Vitamin D should be taken until the lab test levels reach 45-60 ng/ml. Current daily requirements are for vitamin D are only 400 IU/day.

Various racial groups require lower amounts of calcium each day (blacks need less calcium to build and maintain good bone than whites).

Obese women have a larger and heavier skeleton than do their normal-weight counterparts and they lose less bone at menopause.

Another study found that people were provided enough calcium/vitamin D daily, however they did not take the vitamins. The outcome was that there was no fracture reduction when calcium and vitamin D was provided in high amounts.

In addition to calcium, several other factors are needed for good bone health that includes: vitamin D, magnesium, protein, and weight-bearing exercise.

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Food alone may not be a good source of calcium for multiple reasons e.g., dairy allergy, poor absorption, and chemicals (oxalates/phytates) in food that compete or impair calcium absorption. The amount of calcium intake in postmenopausal women is substantially below the existing recommendations. Purchase good quality vitamins to assure quality, quantity, and tolerance.

Some medications interact with calcium: digoxin, fluoroquinolones, levothyroxine, tetracycline, tiludronate disodium, anticonvulsants, thiazide/diuretics, glucocorticoids, mineral oil/laxatives, and aluminum/magnesium containing antacids.

There is overwhelming evidence that the current intake of calcium (and other vitamins/minerals) is far below optimal values. Osteoporosis is rampant in our population and the answer is not found in prescription medicines. Since bone loss (osteoporosis) is a silent condition until a fracture occurs, get a DEXA bone scan to determine your T-score. Women are not the only ones susceptible to osteoporosis - men should also understand that they are at high risk for osteoporosis also and need to have a base line DEXA scan done as well!

For further information visit

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