

August 8, 2011

Dear Ms W____,

I hope you will not resent the unsolicited consult, but falling forward and breaking both wrists suggests to me that you have either osteoporosis or borderline osteopenia. About 18 years ago I presented a lecture at Robert Wood Johnson Medical School on “A Common Sense Approach to Osteoporosis”, which I have attached and need to update.

Basic building blocks of bone:

- 1) Calcium 1200-1500 mg day total dietary and supplement intake. Supplement best as calcium citrate, a weak acid that helps to ionize calcium.
- 2) Magnesium 400-800 mg/day. Either in combination with calcium or separately as Magnesium oxide (400 mg) or citrate.
- 3) Vitamin D3, 2,000 to 3,000 i.u./day. Usually 2,000 i.u. capsule and whatever is in a multi or from diet is enough to raise blood Vitamin D 25-OH into the 40's.
- 4) Estrogen and testosterone both have anabolic capacities, primarily by shifting the Balance between osteoblastic and osteoclastic activity. The use of these substances requires a more thorough discussion because of their perceived risk of hormonally mediated cancers.

The Common Sense Approach to Osteoporosis covers these basic building blocks and micronutrients that are rarely absent in a western diet. What has changed since 1993 is the relative importance of four other factors:

- a) Vitamin K1/K2
 - b) DHEA
 - c) Genistein
 - d) Strontium
- a) Vitamin K is usually thought of as having something to do with blood clotting- it actually works in the clotting and anticlotting cascade. The only relative contraindication is someone on coumadin, as coumadin “works” by blocking vitamin K. The more important function is to recycle osteocalcin to its active form, which plays a major role in mineralization of bone. A beneficial side effect is that as we age, the flux of calcium shifts from coming into the body and depositing in bone, to flowing out of the body and silting out in soft tissues like blood vessels and breasts, hence hardening of the arteries and breast microcalcifications that show up in mammograms. You can get a substantial amount of vitamin K from some dark green leafy vegetables (100 gm of kale supplies about 800 mcg of vitamin K) but who wants to eat kale every day. The best supplement is made by Life Extension (800) 544-4440 and is a combination of vitamin K1 and K2.
 - b) DHEA (dehydroepiandrosterone) is a pre-hormone made by the adrenal glands that has some anabolic building activity. Production in humans drops off smoothly as we age, and replacement doses of 10 to 25 mg / day have shown benefit in bone building. There is no creditable evidence that I have seen in 25 years that it increases the risk of ovarian, breast or prostate cancers.
 - c) Genistein is a phyto estrogenic extract most commonly from soy. A number of articles in the last five years have shown a beneficial impact on bone mineral density. If anything, genistein and soy extracts seem to have a suppressive effect on

hormonally mediated cancers.

- d) Strontium is a mineral in the same column as calcium, meaning it acts chemically similar to calcium, but is twice as heavy. In the last year a major review came out that not only confirmed that strontium increases bone mineral density, but that a number of clinical outcomes benefited as well.

If not useful to you, I hope you found some of it interesting.

Digging on,
John H. Juhl, D.O.