Calcium and Vitamin D

In order to maintain your bone strength and mass, you must get enough calcium and vitamin D. It was initially thought that it was near impossible to increase your bone density (amount of mineral/(area)^2) once a person was an adult – past time of peak bone mass (about age 25-35). We now know that if you give your body extra calcium and extra vitamin D you can increase the extent of your mineralization of your bones and help decrease your risk of fractures. Vitamin D helps decrease the rate of fractures not only because it helps your body to absorb calcium and put calcium into your bones, but also helps with muscle strength and tone, which in turn helps prevent falls – which of course helps prevents fractures too.

You **can** get vitamin D from the sun, but we are now so much more careful about wearing sunscreen and hats (and for good reason given the increasing rates in skin cancer and thinning of the ozone), that most people simply do not get enough vitamin D through sun exposure. Compared to 50 years ago the average time spent outside has plummeted, and therefore average vitamin D levels have decreased. In recent studies it was shown that even in sunny southern California, 54% of individuals older than age 50 were low in vitamin D, and in Minnesota (July-December) **more than 90% were low on vitamin D.** In another large study involving postmenopausal women who were on medication for osteoporosis, 44% of individuals that were taking $\geq$ 400 IU of vitamin D **still had clinically low levels of vitamin D.** Therefore, if you have osteopenia or osteoporosis it is now recommended that you increase your vitamin D to 1000 units a day, and that total daily calcium intake (diet plus supplements) should be 1500 mg a day.

Is one kind of calcium and vitamin D better than another?

The biggest determinant of how you get your calcium should be what you can tolerate. Dietary sources are great but it may be hard to get enough calcium from diet alone for many individuals. Ideally it is best to spread your calcium intake out throughout the day as it is hard to absorb a whole day's worth of calcium at once, but if you aim for 500 mg at least from diet, and don't think you will remember to take calcium twice a day, then it's ok to take the rest all at once.

▪ ***Calcium carbonate*** can be constipating in some individuals but it is available in many forms (gel caps, pills, and chews like Viactive). On the other hand, for individuals who do not have a gallbladder or tend to have diarrhea-prone irritable bowel this can be a good thing.

▪ ***Calcium citrate*** has the advantage of being less constipating. If you tend to be very constipation-prone, Citrical (calcium citrate) with magnesium and vitamin D is generally a good choice as magnesium further decreases the tendency for calcium to "slow things down."

Calcium is generally best absorbed in the presence of acid (i.e. with meals) if you can remember to take it with meals. If you are not able to take your calcium with meals or if you take acid blockers (such as Zantac, Pepcid, Prilosec, Nexium, Aciphex, Prevacid, etc), then you may want to use calcium citrate as this form of calcium is more naturally acidic and may be better absorbed.

Caution: Read labels carefully! One calcium label may read calcium 1000 mg, but then serving size may be three capsules, meaning that each pill has 333 mg. Also look for calcium with vitamin D_3 (not D_2; it is not as well-absorbed) so you can get to your 1000 units a day. Know that most multi-vitamins (even cheaper generics and children's chewables) have 400 IU vitamin D to help you get to that 1000 units, and milk has an average of 300 IU calcium per 8 oz glass.