

OSTEOPOROSIS (OP):

Information on osteoporosis and medications for osteoporosis continues to change. Bone health is a careful balance of making bone and breaking down old bone. There are many nutrients and life style factors such as exercise that affect this balance. Good information on osteoporosis is difficult to find. News reports have focused on risks of treatment and downplay risks associated with osteoporosis.

Definition: Osteoporosis is when someone has brittle bones with an increased risk for breaking bones easily called a fragility fracture (breaking a bone with minimal trauma). Bone density tests are used to diagnose osteoporosis. As the bone becomes more brittle, it breaks more easily and doesn't heal as well.

WHO IS AT RISK: 40% of American women are expected to have an osteoporosis related fracture in their lifetime (hip, spine, wrist, rib). Most women do not think they are at risk. Osteoporosis has no symptoms until the pain of breaking a bone. Once a woman has a hip fracture, the chance of returning to pre-fracture activity level is about 40% and there is a higher risk for dying.

When do we start seeing a decrease in bone density? Bone mass peaks in your early 30's, rapid loss starts in the 2 years before menopause. Typical loss around menopause is 1/2-1% of total bone mass per year, some women lose 3-5% of their bone mass per year, that's a lot! Based on studies, women are experiencing a lower peak bone mass in their 30's meaning the risk of osteoporosis and fragility fractures will continue to increase.

RISK FACTORS for OP:

- Personal history of broken bone as an adult due to mild trauma.*
- Increasing age, especially age > 65. *
- Family history (mother, father, or sibling) of osteoporosis, greatest risk is if your mother had a hip fracture.
- Low peak bone mass: you didn't make enough bone as a child, risk factors: anorexia, significant exercise as a child causing no or occasional periods, being sedentary as a child, starting your period late, low intake of calcium and vitamin D and high intake of soda and processed foods (low peak bone mass is increasing in the USA therefore help your children make the same changes, no matter their age).
- Lifestyle or environmental factors:
 - Smoking.
 - Frequent use of alcohol (>2 drinks/day)
 - Getting little or no weight-bearing exercise.
 - Thin body, weight < 127.
 - Sedentary lifestyle (low activity, desk job)
 - A diet low in nutritious foods containing calcium, phosphorus, and vitamin D
 - Diet high in processed foods
- Early menopause
- Health conditions that increase the risk of osteoporosis: hyperthyroidism, diabetes, Cushing's, gluten insensitivity, Crohn's disease, Ulcerative Colitis, Depression, Chronic liver and kidney disease
- Medications can increase the risk of osteoporosis: thiazide diuretics, some diabetes meds, steroids, aromatase inhibitors (femara), gonadotropin-releasing hormone agonists, too much thyroid replacement, medications for seizures, PPI's (Prilosec, Prevacid), SSRIs (Prozac).
- European or Asian ancestry.

***Most important risk factors**

Prevention: Why prevent when there are medications to treat osteoporosis? All medications have risks and they don't result in normal bone strength, they mostly stabilize loss and if you are on them too long, actually increase risk of breaking bones.

BEST PREVENTION: Lifetime nutritious diet focused on Whole Foods with Calcium, Vitamin D and avoiding processed foods and sugar!!! Exercise - combination of weight bearing, strength and exercises for balance. Remember our children, the best prevention is building bones.

- Children need to maximize bone building: calcium, vitamin D, and exercise, avoid soft drinks!!! Treat eating disorders such as anorexia and bulimia. Exercise but not so much that they stop having periods.
- Weight bearing exercises (fast walking, run, stairs, elliptical), muscle building exercises (2-3 times/week), balance, posture and core exercises: www.nof.org for examples of exercises (search exercises on the website), **stronger muscles and better balance will reduce falling and breaking bones**
- decrease alcohol (less than 2 drinks/day) and tobacco
- avoid falls (correcting vision and hearing, review meds that may affect balance, remove safety hazards in the house (good lighting, handrails, remove obstructions, avoid tripping on carpets)
- **Calcium:** 1200 mg/day. This is a total recommendation based on dietary intake and supplements. Typical diet is inadequate. There is now a recommendation to stay below 2000/day in supplements because of increased risk of heart disease and kidney stones. If you take calcium - calcium citrate is better absorbed, you can only absorb 500 mg of calcium at a time, if you take a medication for heartburn or reflux, it will keep you from absorbing calcium. Calcium carbonate is cheaper but it doesn't absorb as well and may cause constipation. Since bone health depends on a very complex process, **Calcium by itself or only with vitamin D will not decrease the risk of breaking a bone.** Taking magnesium with calcium can minimize constipation and help with bone health (2:1 ratio, ex Ca 1200 +magnesium 600).

Estimate your daily calcium intake (focus on sources other than dairy):

Dairy Foods	Portion	mg	Meats, Fish, and Poultry	Portion	mg
Milk, with added calcium	1 cup	420	Sardines, canned	3 ½ oz	370
Milk, whole, 2%, 1% skim	1 cup	300	Salmon, canned with bones	3 oz	180
Yogurt, low fat, plain	1 cup	450	Oysters, canned	½ cup	60
Cheese, processed slices	2 slices	265	Shrimp, canned	½ cup	40
Yogurt, fruit bottom	¾ cup	250	Fruit	Portion	mg
Processed cheese spread	3Tbsp	250	Orange	1 med	55
Cheese, hard	1 oz	240	Non Dairy Drinks	Portion	mg
Cottage cheese	¾ cup	120	Calcium enriched orange juice	1 cup	300
Frozen yogurt, soft serve	½ cup	100	Fortified rice beverage	1 cup	300
Ice cream	½ cup	85	Fortified soy beverage	1 cup	300
Beans and Bean Products	Portion	mg	Regular soy beverage	1 cup	20
Soy cheese substitutes	1 oz	0-200	Grains	Portion	mg
Tofu, firm, made with calcium	3 ½ oz	125	Whole wheat flour	1 cup	40
White beans	½ cup	100	Other	Portion	mg
Navy beans	½ cup	60	Brown sugar	1 cup	180
Black turtle beans	½ cup	50	Blackstrap molasses	1Tbsp	170
Pinto beans, chickpeas	½ cup	40	Regular molasses	1Tbsp	40
Nuts and Seeds	Portion	mg	Vegetables (cooked)	Portion	mg
Almonds, dry roast	¼ cup	95	Turnip greens	½ cup	95
Whole sesame seeds	1Tbsp	90	Okra, frozen	½ cup	75
Tahini(sesame seed butter)	1Tbsp	63	Chinese cabbage/bok choy	½ cup	75
Brazil, hazelnuts	¼ cup	55	Kale	½ cup	50
Almond butter	1Tbsp	43	Spinach	½ cup	122

Rutabaga	½ cup	40
Broccoli	½ cup	35

- Vitamin D3:** 1000 IU/day. Vitamin D helps your body absorb calcium. There are only a few food sources of vit D. Fish, liver, and egg yolk are the only foods that naturally contain vitamin D. Most women need to take a vitamin D supplement, your vitamin D level can be checked to see if you need more than 1000/d. Most multiple vitamins contain vitamin D. Your body will make the vitamin D you need if you are in the sun for 20-30 minutes during the day without suntan lotion (don't get sunburned!). Do not take more than 4000 IU/day without a doctor's recommendation. There may be an increased risk for heart disease and pancreatic cancer in people that take significantly more than the above recommendation. **Vitamin D by itself DOES NOT prevent breaking bones. Combine with vitamin K1 and K2.**

Food	Serving	Vitamin D
Milk	1 cup	100 IU
Fortified rice or soy beverage	1 cup	100 IU
Fortified margarine	2 tsp	53 IU
Salmon, canned, pink	3 oz	530 IU
Tuna, canned, light	3 oz	200 IU

Who should be screened with bone density scans (BDS)? The United States Preventive Services Task Force recommends: all women age 65 and older have a BDS to screen for osteoporosis. If you are at increased risk, screening with a BDS before age 65 but after menopause is also recommended. Frequency of repeating BDS depends on how abnormal it is. Typically no more frequent than every 2 years. If you have a normal BDS, the risk of progressing to osteoporosis in 15 years is as low as 10-15%.

How can we estimate risk of breaking a bone to decide who needs treatment?

- The BDS only predicts 40% of the total risk for breaking a bone. If you have low bone mass (osteopenia), the best way to estimate your risk of fracture is using **FRAX**. This equation was created by the World Health Organization, it estimates your risk based on several factors:
 - o bone density scan
 - o age, weight, height
 - o parent history of hip fracture
 - o personal history of adult fracture
 - o personal history of rheumatoid arthritis
 - o smoking
 - o steroids
 - o >3 alcoholic drinks/day
 - o Secondary osteoporosis (inflammatory bowel disease, malabsorption, early menopause, chronic liver disease).

This score gives a total risk of major osteoporotic fracture in 10 years and risk of hip fracture in 10 years. This estimate helps guide treatment. Treat if total risk of fracture >20%. Treat if risk of hip fracture >3% in 10 years.

The focus on prevention of osteoporosis should be: Healthy diet, vitamin supplements and lifestyle changes. When recommended, <20% of women will actually make changes in diet, exercise and supplements and if changes are made, most women won't maintain the preventive changes. The benefit of these changes is lost within 6 months of stopping. The bisphosphonates are in the news a lot. There are 2 risks that are concerning: atypical fractures and osteonecrosis of the jaw. There is one atypical hip fracture for every 300-500 fractures prevented, atypical fractures occur in patients taking bisphosphonates >5 yrs (a drug holiday is typically recommended after 4-5 years). Symptoms: pain or weakness in thigh, hip or groin of affected leg before fracture. Osteonecrosis of the jaw is uncommon but difficult to treat.

COMPLICATIONS of fractures:

Spine: pain, decreased lung function which can increase risk of lung function, hump back, loss in height

Hip: 20% die in the first year related to complications of hip fracture, 60% have decrease in quality of life after fracture