

Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture. For women, the incidence of osteoporosis is greater than that of heart attack, stroke and breast cancer combined but still there is lack of awareness. The prevalence increases as we age and 22% of women aged 60-69 years, 39% women aged 70-79 years, and 70% of women aged 80 years or greater have osteoporosis. **One in two women and up to one in four men will break a bone in their lifetime due to osteoporosis.** After a fracture only 1/3 women over 67 are treated for osteoporosis. 50% with one osteoporotic fracture will have another one. Treatment causes upto 70% reduction in risk of fracture

3 ways to diagnose Osteoporosis

1. Fragility fracture - h/o fracture with minimal trauma
2. DEXA shows Osteoporosis
3. DEXA shows Osteopenia but Frax score is high (> 3% for hip and 20% for MOF)

Non Pharmacologic Treatment:

1. Diet - Calcium and Vit D is essential for bone health. 1000-1200 mg of calcium and 1000 units of Vit D in diet + supplement (not just supplement- calculate how much you get in diet) if you are not deficient. If you are low you need higher doses accordingly. Too much calcium is not good again since hypercalcemia can cause side effects such as nausea, abdominal pain, constipation, kidney stones etc. Milk, yogurt and cheese are good sources of Calcium. Vit D rich food
2. Exercise : 2 types of exercises that are important for building and maintaining bone density: weight-bearing and muscle-strengthening exercises
3. Lifestyle choices also impact bone health negatively such as smoking, excessive alcohol use.

Complication from not treating Osteoporosis - increased morbidity from pain and mortality.

1. Chronic Low back pain from a compression fracture.
2. Hip fracture - 33% patients end up in a nursing home at the end of 1 year, 33% require use of assistive devices and 25 % with other comorbid conditions die at the end of 1 year.

Osteoporosis Medications

- Anabolic Agents : BUILD BONE -Improve foundation first and then prevent loss with antiresorptives.
 - **PTH Analog (Teriparatide/Forteo & Abalaparotide/Tymlos)**- daily injection x 18-24 months, cost may be high. **Not given** in hypercalcemia, elevated alkaline phosphatase, hyperparathyroidism, Paget's,osteosarcoma, bone cancer, mets or radiation therapy.
Side effects: hypercalcemia, joint pains, headache, dizziness, hypotension, nausea, leg cramps, abdominal pain, confusion, depression, fatigue, palpitations
 - **Sclerostin Inhibitor (Romosozumab/Evenity)**- Monthly injection x 12 months. FDA warning of increased risk of heart attack, stroke, or death
- Antiresorptive Agents- PREVENT BONE LOSS - Inhibit Osteoclasts (bone eating cells) Side effects: Hypocalcemia, Osteonecrosis of the Jaw (5 in 10000) , Atypical femur fractures (1 in 10000)
 - Bisphosphonates - Oral or IV- Decreases the rate of bone resorption inhibiting osteoclasts , leading to an indirect increase in bone mineral density. **Side effects** : Heartburn (25%)
 - RANK Ligand Inhibitor - Denosumab/ Prolia- Binds to RANKL, and prevents osteoclast formation, leading to decreased bone resorption. Common side effects: Bone/joint/muscle pain.

Good Websites to get more information on Osteoporosis

<https://www.nof.org/> & <https://americanbonehealth.org/>

<http://imunews.imu.edu.my/health/osteoporosis-risk-broken-bones/>