

OSTEOPOROSIS (OP) TREATMENT:

The **goal of treatment** is to prevent breaking bones, especially hip and spine. Hopefully working through this will help you address your risk factors and make lifestyle, diet, and supplement changes to reduce the risk. The last part of this handout is a discussion of meds.

What happens if you don't address osteoporosis: further bone loss, higher risk for breaking bones, increase in dying in the year following hip fracture, after hip fracture only 40% will regain pre-fracture level of independence, 20% will need nursing home care after hip fracture, spine fracture: life long pain, decreased lung function that can lead to more lung infections, hump back – limits mobility.

IMPORTANT: no intervention (lifestyle or medication) will return you to normal bone density so the longer you wait to make changes, the lower the overall benefit. In studies, the % of women that maintain lifestyle interventions over a period of 2 years is <10%. If you stop the lifestyle changes, you will lose the benefit in 6 months.

Assess benefit of interventions: Repeat DEXA in 2 years, a change of 3% or less is considered remaining stable (no loss or gain), unfortunately interventions and medications don't result in normal bones so remaining stable is a positive result. Other tests may be ordered depending on other health issues.

Your lowest T score from DEXA:

Risk of fracture based on your age (see chart at end):

Your risk of breaking a bone in the next 10 years based on FRAX:

Major fracture: Hip fracture:

Recommendations for treatment: osteoporosis (T score < -2.5), FRAX: 20% or higher risk of major bone fracture or 3% or higher risk of hip fracture in 10 years OR fragility fracture.

ASSESS YOUR RISK:

Assess Risk	Recommendations/Plan:
Diet: > 6 servings/d of fruits and vegetables, healthy protein source at each meal, healthy fat: olive oil, avocado Avoid sodas and processed food Eat slowly, chew Add fiber (goal ~30 gm/d)	
Vitamin/supplement intake (recommended amounts may vary): Calcium 1200 mg/d (avoid getting in Tums due to aluminum) Vitamin D3 1000-2000 IU/d Vitamin K 1mg/d (not recommended if on blood thinner) Magnesium 400-600mg/d Potassium bicarbonate 600 mg/d Boron 1mg/d Turmeric (curcumin) 400 mg/d Fish oil 2-3 gm/d Probiotics	
Exercise: Weight bearing exercises: run, walk, elliptical Strength training: 2-3x/week Balance and core exercises: 2-3x/wk Recommended: 30-45 min 3-5x/wk	

<p>Examples of Signs/Symptoms of Issues related to OP: White spots on nails: low Zinc Cracks side of mouth: low Zinc or iron, can be associated with gluten intolerance, low vit B's Bloating, diarrhea, constipation: absorption issues Brittle hair: low protein, biotin Muscle aches Teeth/gum disease</p>	
<p>Labs: (not all labs are rec for everyone) CMP (includes calcium), PTH (if calcium is high, if vit D is really low then PTH falsely elevated), CBC, vit D level, am urine pH, 24 hour urine for calcium excretion, markers for inflammation (HS, hrCRP), markers of bone loss in urine (NTX), Celiac disease (anti-tissue transglutaminase, anti gliadin antibodies) if evidence of malabsorption</p>	<p>High urine calcium: consider thiazide diuretics or diet changes: 8-10 servings of fruits and veggies daily, avoid sodas, reduce sugar, minimize dairy (get calcium from other food sources), minimize caffeine, vit K, potassium bicarbonate, magnesium, boron Low urine pH: increase fruits and veggies, add potassium bicarbonate (normal: 6-8) Inflammation: reduce sugar and processed foods, increase anti-inflammatory foods: green veggies, avocado, olive oil, nuts, berries, oily fish, hemp seed, flaxseed, reduce response to stress - meditation/ mindfulness/sleep/exercise, vit B complex (B2 25mg/d, B6 50 mg/d, B12 500-1000 mcg/d), folic acid, fish oil 3gm/d, turmeric Low vit D: vit D, vit K</p>
<p>Medical Problems that increase risk: depression, eating disorders (anorexia, bulimia), late onset of starting periods, early menopause, diabetes, weight <127, poor health, chronic kidney disease, ankylosing spondylitis, autoimmune diseases, cancer, celiac, Crohns, Cushings, cystic fibrosis, hyperthyroidism, hyperparathyroidism, multiple sclerosis, Ulcerative colitis, Parkinsons, chronic liver disease, lactose intolerant, bariatric surgery affecting absorption of nutrients</p>	
<p>Medications that increase risk: too much thyroid hormone, steroids, anti-seizure drugs, chemo, depo-provera, long term heparin, thiazolidinediones (Avandia), PPIs (ex: Prilosec), SSRIs (ex Prozac), thiazide diuretics, aromatase inhibitors (used for breast cancer)</p>	
<p>Habits that increase OP: alcohol >2/d, smoking, vaping</p>	

MEDICATIONS:

Medication	Dose	Benefits % increase in (spine/hip)	Side effects	Risk
Boniva	150 po/mo	50/?	Reflux, muscle pain	ONJ, atypical fractures
Fosamax	70 mg po/ week	50/50	Reflux, muscle pain	ONJ, atypical fractures
Reclast	5 mg IV/ year	70/40	Muscle aches, fevers, headaches (first year: 32%, 2nd year 7%)	ONJ, atypical fractures

Calcitonin (use in women > 5yrs from menopause)	200U nostril/d	30/0	Runny nose, bloody nose, muscle aches, headache	Rare cancers, anaphylaxis, since it doesn't work well it is NOT a first line treatment
HRT	Varies	35/35		Breast cancer, DVT (risks are low)
Evista	60 mg/d	30/0	Hot flashes, leg cramps	DVT
Forteo (limit to 24 months)	20mg SQ daily	65/55	Leg cramps, nausea, dizzy	Osteosarcoma in rats, avoid if high Calcium level, bone cancer, bone loss is rapid after stopping treatment so recommend immediately follow with bisphosphonate
Prolia	60 mg SQ/ 6 mo	60/40	Decreases calcium, rash, muscle and back pain	Skin infections, ONJ, atypical fractures, bone loss is rapid after stopping treatment so recommend follow with bisphosphonate

Duration of treatment: reassess at 3-5 years, in all meds that are NOT bisphosphonates, see rapid loss of benefit once stopping the meds

Bisphosphonates: don't use if you have problems with kidney function (don't use in GFR<35 ml/min); may also reduce risk of breast cancer, may decrease overall mortality (chance of dying)

ONJ: osteonecrosis of the jaw is rare, greatest risk is with doses used for cancer and use > 5yrs, risk ~1-20/1000

- recommend dental exam before starting treatment, extractions before starting treatment

- other risk factors for ONJ: smoking, vascular disease (disease of blood vessels), poor nutrition

Atypical fractures of the hip: very rare, occurs in long term use so reassess if someone needs to continue after 5 years, **symptoms** before the fracture: groin or thigh pain

Age	Low risk <10%	Moderate risk 10-20%	High risk >20%
50	> -2.3	-2.3 to -3.9	< -3.9
55	> -1.9	-1.9 to -3.4	< -3.4
60	> -1.4	-1.4 to -3	< -3
65	> -1	-1 to -2.6	< -2.6
70	> -0.8	-0.8 to -2.2	< -2.2
75	> -0.7	-0.7 to -2.1	< -2.1
80	> -0.6	-0.6 to -2	< -2

DVT: blood clots

SQ: subcutaneous (injection)

10 Year Risk of Fracture Based on Lowest T score (hip or spine):