UR MEDICINE

GER-E-NEWS

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Osteoporosis

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INTRODUCTION

Osteoporosis is a metabolic bone disease caused by osteoclastic bone resorption that is not balanced by osteoblastic bone formation. The result is weak bones that are susceptible to fracture. In general, the gradual loss of skeletal mass begins in the 4th decade of life for women and in the 5th or 6th decade of life for men. According to the CDC, the prevalence of osteoporosis in women > 50 years of age is 18.8%. In men > 50 years of age, it is 4.2%. Approximately 11 million Americans have osteoporosis in the US. About 50% of them will experience an osteoporosis-related fracture in their lifetime.

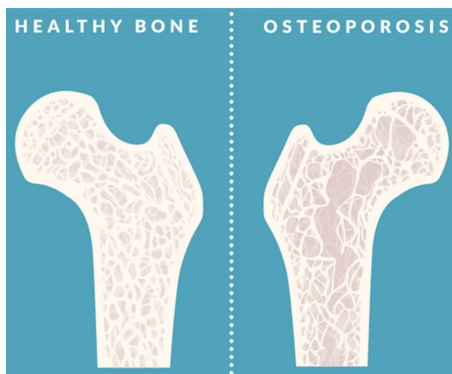
Clinical Risk Factors

- Advancing Age
- Previous Fracture
- Glucocorticoid therapy
- Parental history of hip fracture
- Low body weight
- Current cigarette smoking
- Excessive alcohol consumption
- Inflammatory conditions (rheumatoid arthritis, inflammatory bowel disease, etc.)
- Secondary osteoporosis (chronic liver disease, malabsorption, etc.)

SCREENING

Screening for osteoporosis should occur for:

- Women ≥ 65 years of age and men ≥ 70 years of age
- Younger postmenopausal and perimenopausal women and men 50-69 years of age with clinical risk factors for fracture



DIAGNOSIS

A diagnosis of osteoporosis is made when any of the following criteria are met:

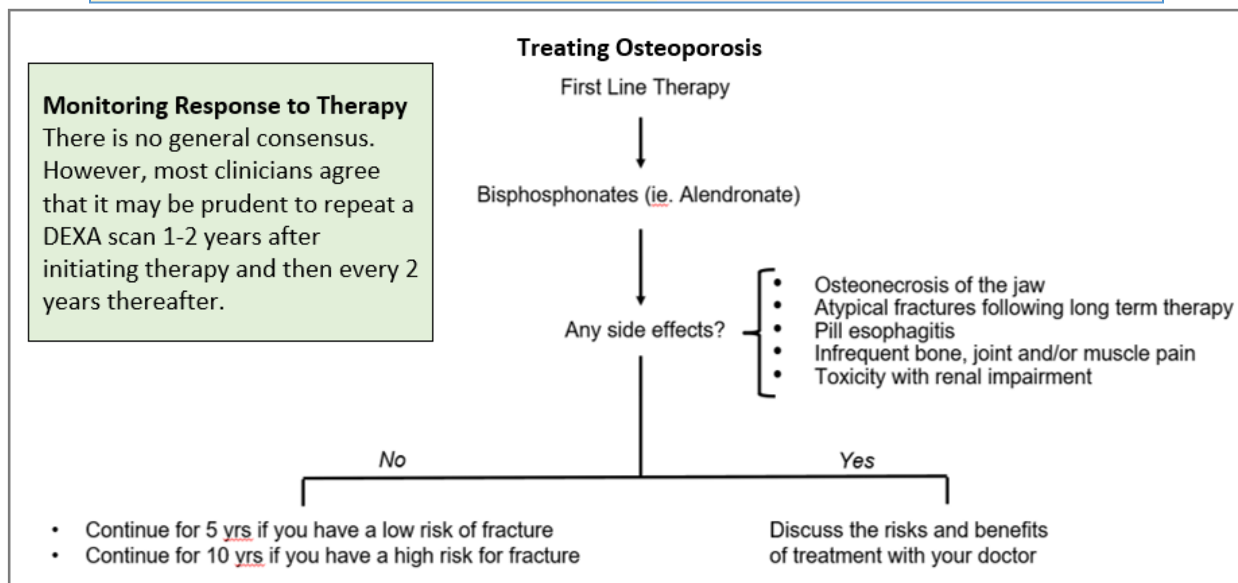
- The presence of a hip or vertebral fracture
- A T-score ≤ -2.5 at the femoral neck or spine after appropriate evaluation to exclude secondary causes
- A low bone mass (T-score between -1.0 and -2.5 at the femoral neck or spine) **and** a 10-year probability of a hip fracture ≥ 3% or a 10-year probability of a major osteoporosis-related fracture ≥ 20%.

Non-Pharmacologic Treatments	
• Education on fall prevention • Adequate weight-bearing exercise • Smoking cessation • Avoidance of heavy alcohol use • Avoidance of drugs that increase bone loss	• A daily intake of 1000 IU of Vitamin D through a combination of diet and supplement • A daily intake of 1200 mg of calcium through a combination of diet and supplement

PHARMACOLOGICAL TREATMENTS

There are two main types of osteoporosis medications: antiresorptive agents and anabolic agents. The first line therapy are bisphosphonates which are a type of antiresorptive therapy. The most commonly used are oral alendronate, residronate, and ibandronate. Zoledronate and ibandronate can be given intravenously if indicated. Other medications used for osteoporosis can be used when bisphosphonates are contraindicated. They are commonly prescribed by an osteoporosis specialist rather than a general practitioner. You can refer to the following table for the different types of medications available.

Medical Therapies for Osteoporosis	
Antiresorptive Agents	**Anabolic Therapies**
Bisphosphonates	PTH analogues (teriparatide, abaloparatide)
RANKL Antibodies (Denosumab)	Antisclerostin Inhibitors
Calcitonin	
Selective Estrogen Receptor Modulators (SERMs)	



BOTTOM LINE

- Osteoporosis leads to thin and weak bones that are at risk for fracture.
- It is important to screen for osteoporosis in those at risk given its effects on morbidity and mortality.
- Treatment includes medications such as bisphosphonates which are first line therapy, as well as exercise/physical therapy.

References

1. Amin, S., et al. “Trends in fracture incidence: a population-based study over 20 years.” Journal of bone and mineral research vol. 29,3 (2014): 581-9. doi:10.1002/jbmr.2072
2. Black, D. M., et al. “Effects of continuing or stopping alendronate after 5 years of treatment: the Fracture Intervention Trial Long-term Extension (FLEX): a randomized trial.” JAMA vol. 296,24 (2006): 2927-38. doi:10.1001/jama.296.24.2927.
3. Boucher, B. J. “The problems of vitamin d insufficiency in older people.” Aging and disease vol. 3,4 (2012): 313-29.
4. Clynes, M. A., et al. “The epidemiology of osteoporosis.” British medical bulletin vol. 133,1 (2020): 105-117. doi:10.1093/bmb/ldaa005.
5. Centers for Disease Control and Prevention. “Osteoporosis”. National Center for Health Statistics. April 14, 2021.
6. Qaseem, A., et al. “Treatment of Low Bone Density or Osteoporosis to Prevent Fractures in Men and Women: A Clinical Practice Guideline Update From the American College of Physicians.” Annals of internal medicine vol. 166,11 (2017): 818-839. doi:10.7326/M15-1361.
7. Swayambunathan, J., et al. “Incidence of Hip Fracture Over 4 Decades in the Framingham Heart Study.” JAMA internal medicine vol. 180,9 (2020): 1225-1231. doi:10.1001/jamainternmed.2020.2975.