

OSTEOPOROSIS REVIEW

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Osteoporosis screening rates are low and not a high priority during appointments. Patients are frequently surprised by the diagnosis as it is painless until a patient suffers a fracture. Fractures can result in chronic pain and functional decline. Patients often decline treatment due to medication side effects and forget to take daily calcium and vitamin D.

WHAT IS IT?

Osteoporosis is defined as low bone mass with deteriorating structure which leads to an increased risk of fracture due to fragility (NIH). In 2020, IOF expects 47 million low bone mass cases and 14 million osteoporosis cases causing great financial burden. Almost 25% of women and 5% of men over 65 have osteoporosis(1). After a fracture, there is a 10% risk of another fracture within a year and 31% in the next 5 years(3).

RISK FACTORS

Bone mass reaches a peak in females by age 185 as constant remodeling is done by osteoclasts which resorb bone and osteoblasts which build bone (2). Risk factors reduce bone health and density. Uncontrollable factors are age, gender, loss of height, family history, previous fractures, menopause, hysterectomy, and previous fractures. Controllable risk factors include alcohol consumption, smoking, poor nutrition, low BMI, low vitamin D, and decreased exercise(3).

SCREENING

Multiple osteoporosis guidelines identify females 65 and older as prime candidates for screening and recommend DEXA and FRAX results to guide treatment. A DEXA scan produces a report with normal bone at 1 to -1, osteopenia -1 to -2.5, and osteoporosis -2.5 and lower. FRAX tools are specific to continent, country, and race and patient characteristics and identify the 10 year risk of fracture(6). A score $\geq 3\%$ for a hip fracture and $\geq 20\%$ a major osteoporotic related fracture informs the decision to treat especially for those with osteopenia.

TREATMENT OPTIONS

Most guidelines recommend calcium and vitamin D replacement. Checking calcium and Vitamin D levels before treatment. If the Vitamin D level is low, replacement with 50,000 u of D3 once a week for 8 weeks will increase the level into the normal range. Daily calcium intake should be 1200mg and vitamin D of 800 IU(3).

Along with calcium and vitamin D, multiple prescription medications exist, including oral, subcutaneous, and IV. Check kidney function before prescribing. These medications either block breakdown or build bone. Bisphosphonates can be prescribed for 5 years before a drug holiday for most patients. A new class of drug, sclerostin inhibitors, promotes bone growth.

Weight bearing exercises such as walking, running, and light weights build bone. Patients should continue to reduce smoking and drinking, and maintain a healthy BMI. Medication reconciliation can identify drugs that may worsen osteoporosis(5).

SUMMARY

As providers, we can make osteoporosis a priority in our practice by discuss the facts and risk factors with your patients. If a DEXA is not available, use a tool such as FRAX to determine their fracture risk. Reducing fracture risk and a lifetime of functional decline and pain is worth the time you spend.

REFERENCES

- 1 Looker, A. C. (2015) Percentage of Adults Aged 65 and Over With Osteoporosis or Low Bone Mass at the Femur Neck or Lumbar Spine: United States, 2005–2010. Retrieved from https://www.cdc.gov/nchs/data/hestat/osteoporosis/osteoporosis2005_2010.pdf
- 2 International Osteoporosis Foundation (2020). *Internal Osteoporosis Foundation. No More Broken Bones! Take Action for prevention, diagnosis, and treatment.* Retrieved from <https://www.osteoporosis.foundation/>
- 3 National Institutes of Health (2018). *NIH Osteoporosis and related bone diseases national resource center. Osteoporosis Overview.* Retrieved from <https://www.bones.nih.gov/health-info/bone/osteoporosis/overview>
- 4 Chen, X., Wang, Z., Duan, N., Zhu, G., Schwarz, E. M., & Xie, C. (2018). Osteoblast-osteoclast interactions. *Connective Tissue Research*, 59(2), 99–107. <https://doi.org/10.1080/03008207.2017.1290085>
- 5 National Center for Biotechnology Information. (n.d.). *Screening to Prevent Osteoporotic Fractures: An Evidence Review for the U.S. Preventive Services Task Force* [Internet]. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK532080/table/table1/>
- 6 WHO (n.d.). *FRAX Fracture Risk Assessment Tool Calculation Tool.* Retrieved from <https://www.sheffield.ac.uk/FRAX/tool.aspx?country=9>

Osteoporosis Guideline Comparison					
	Year	Eval Age	Gender	Frax	DEXA
AACE	2016	50+	PM Female	Y	Y
ACOG	2014	65+	Female	Y	Y
NOF	2014	65+ 70+	Female Male	Y	Y
AAFP	2011	65+	Female	N	Y Refer to USPSTF recommendations
WHO	2008	40-90	Female Male	Y	Y

- AACE- American Association of Clinical Endocrinology
- ACOG- American College of Obstetricians and Gynecologists
- NOF- National Osteoporosis Foundation
- AAFP- American Academy of Family Practice
- WHO-World Health Organization