

# Evaluation and Treatment of Osteoporosis



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## KEYWORDS

- Osteoporosis • Postmenopausal women • Men • Screening • Diagnosis • Treatment

## KEY POINTS

- Screening for osteoporosis is recommend in all women more than 65 years of age or in women aged 50 to 64 years with certain risk factors.
- Treatment should be considered in postmenopausal women with osteoporosis on dual-energy x-ray absorptiometry scan, history of fragility fracture, or osteopenia plus a FRAX (Fracture Risk Assessment Tool) score of greater than or equal to 3% at the hip or greater than or equal to 20% at other sites.
- All of the osteoporosis agents decrease the risk of vertebral fractures but only some bisphosphonates, denosumab, and estrogen decrease hip fracture risk.
- Make sure the medication chosen to treat osteoporosis decreases fracture risk at the site of decreased bone mineral density or fracture. Also consider side effects, contraindications, secondary benefits, cost, and likelihood of adherence.
- Bisphosphonates should be first-line therapy in most cases.

## INTRODUCTION

As the population ages, osteoporosis-related and osteoporosis-related fractures pose a significant public health concern. Although there has been a recent decline in hip fracture incidence in white women and men in the United States, rates are holding fairly steady in black, Asian, and Hispanic men and women.<sup>1</sup> Because of the aging of the population, fracture rates are expected to increase by 48% in the United States over the next 25 years to greater than 3 million fractures associated with a cost of \$25.3 billion.<sup>2</sup> Seventy-one percent of all fractures and 75% of all fracture-related costs occur in women.<sup>2</sup> Approximately 20% of patients with a hip fracture do not survive for more than a year from diagnosis and more than 50% never completely regain

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their prefunction status.<sup>3</sup> Knowing these risks, the aim is for appropriate diagnosis and treatment of osteoporosis. The focus of this article is on the pharmacologic management of osteoporosis in postmenopausal women. It is important to recognize that non-pharmacologic interventions such as exercise, smoking cessation, fall prevention, and avoidance of heavy alcohol use are also recommended in the treatment of osteoporosis but these are not addressed in this article.

## WHOM TO SCREEN

Most expert groups recommend screening with dual-energy x-ray absorptiometry (DXA) scan in postmenopausal women at age 65 years or older regardless of risk factors. For postmenopausal women between the ages of 50 and 64 years, differing screening recommendations exist. Organizations such as the National Osteoporosis Foundation (NOF), Endocrine Society, and Canadian Osteoporosis Society recommend screening in this age group when risk factors are present. Risk factors include advanced age, previous fracture, long-term glucocorticoid use, low body weight (less than 58 kg [127 lb]), family history of hip fracture, tobacco use, or excess alcohol use, with the most robust risk factors being age and previous low-trauma fracture<sup>4</sup> (**Box 1**). The United States Preventive Services Task Force (USPSTF) proposed the use of the FRAX calculator (<https://www.shef.ac.uk/FRAX/>) to determine need for screening in women aged 50 to 64 years.<sup>5</sup> If the FRAX 10-year major osteoporotic risk is greater than or equal to 9.3%, which is equivalent to a 65-year-old white woman without risk factors, then the USPSTF recommends screening with dual-energy x-ray absorptiometry (DXA) scan.<sup>6</sup> There are other, less complicated, screening tools, such as the Osteoporosis Risk Assessment Instrument (ORAI), Osteoporosis Self-assessment Tool (OST), Osteoporosis Index of Risk (OSIRIS), and Simple Calculated Risk Estimation Score (SCORE), which performed equally to FRAX in predicting fracture in comparison studies<sup>7,8</sup> (**Table 1**).

There are limited data to guide recommendations regarding rescreening if initial testing does not reveal osteoporosis. Most expert groups recommend rescreening in 1 to 2 years if women are at high risk for accelerated bone loss. In 2012, a prospective cohort study of almost 5000 women estimated the time interval for 10% of these women to develop osteoporosis before having a clinical hip or vertebral fracture. Based on this study the following rescreening recommendations can be considered. If baseline T score is  $-2.00$  to  $-2.49$  (advanced osteopenia) or if risk factors are present for accelerated bone loss regardless of T score, then repeat DXA every 2 years. If baseline T score is  $-1.50$  to  $-1.99$  (moderate osteopenia) with no risk factors for

### Box 1

#### Risk factors for osteoporosis

- Advanced age
- Previous low-trauma fracture
- Long-term glucocorticoid use
- Low body weight (<58 kg [127 lb])
- Family history of hip fracture
- Tobacco use
- Excess alcohol use

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