

OCTOBER 2017

MEDISYSTEM NEWSLETTER

MediSystem™
Pharmacy
A SHOPPERS DRUG MART COMPANY

WHAT IS OSTEOPOROSIS?

Osteoporosis is a condition characterized by weak bones and increased risk of fracture [1]. A number of different factors may lead to decreased bone strength like low bone mineral density and small bone size, among others [1].

The biggest concern in residents with osteoporosis is fractures. Osteoporosis is often characterized as a “silent” disease since there are no clinical symptoms until a fracture occurs [4]. People with osteoporosis suffer fragility (or low-trauma) fractures. These are fractures from standing height or lower (i.e. from forces that would not normally cause a fracture). The most common fractures in patients with osteoporosis are wrist, vertebral and hip [1].

WHAT ARE THE RISK FACTORS FOR OSTEOPOROSIS?

- Advanced age
- Personal history of fragility fracture after age 40
- Non-traumatic vertebral compression deformities
- Long-term (>3 months) glucocorticoid therapy
- Low body weight (<58kg)
- Family history of hip fracture
- Cigarette smoking
- Excessive alcohol intake
- Medical conditions that inhibit absorption of nutrients

While osteoporosis is common in older men, men are less likely to develop osteoporosis or have fractures versus women [5].



APPROXIMATELY 1 OF 4 WOMEN AND 1 OF 8 MEN OVER THE AGE OF 50 IN CANADA HAVE OSTEOPOROSIS

DIAGNOSIS, SIGNS, SYMPTOMS

Bone loss occurs without signs or symptoms. There are no clinical manifestations of osteoporosis until a fracture occurs [6]. A diagnosis of osteoporosis can be made when a fragility fracture occurs or by screening for the disease [7]. Osteoporosis can be diagnosed based on a bone mineral density (BMD) test and risk assessment [7]. The outcome of this test is a T-score. A T-score ≤ -2.5 suggests osteoporosis while a T-score between -1.0 and -2.5 is suggestive of low bone mass or osteopenia [7]. BMD testing has been recommended in women 65 years of age and older and in postmenopausal women younger than 65 with risk factors (see above)[7]. Routine testing is not typically recommended in men unless they are judged to be at high fracture risk (see risk factors above)[8].

TREATMENT

DRUG THERAPY

Guidelines suggest that residents who are deemed to be at high risk of a fracture should receive drug therapy (see Table 1)[9].

TABLE 1. Candidates for pharmacologic therapy for osteoporosis (postmenopausal women and men 50+ years of age)[10].

History of hip or vertebral fracture
T-score ≤ -2.5 (BMD test measured with DXA) at femoral neck or spine
T-score between -1 and -2.5 at femoral neck or spine AND 10-year probability of hip fracture $\geq 3\%$ or 10-year probability of any osteoporosis-related fracture $\geq 20\%$ (e.g. based on Fracture Risk Assessment Tool [FRAX])

Guidelines recommend bisphosphonates (Table 2) as first-line therapy of osteoporosis [9,10]. Bisphosphonates cannot be used in residents with poor kidney function (CrCl < 30 mL/min), with difficulty swallowing or with esophageal conditions [9]. For those residents, denosumab (Prolia®) can be considered (see Table 2)[9,10]. Other options include teriparatide [10]. Osteoporosis treatment decisions should be made based on resident-specific factors (e.g. kidney function, ability to swallow, goals of care).



TABLE 2. Medications used to reduce risk of fractures in residents with osteoporosis [9,11,12].

DRUG CLASS	ADVERSE EFFECTS	COMMENTS
Bisphosphonates Alendronate (Fosamax, Fosavance®), Risedronate (Actonel), Zoledronic Acid (Aclasta®)	Upper GI side effects (reflux, esophagitis) – incidence low if proper administration procedures followed Osteonecrosis of the jaw (rare) Atypical femur fractures (rare) Hypocalcemia (rare; more common with IV) Musculoskeletal pain (rare)	Oral options (alendronate, risedronate) available in weekly or monthly dosing; IV (zoledronic acid) given once yearly Take oral bisphosphonates on empty stomach with plain water and stay upright for at least 30 to 60 minutes after taking (note: Actonel® DR can be taken with food/drink) Oral bisphosphonates should not be used when CrCl < 30 mL/min, in residents with dysphagia or other esophageal disorders, and in residents who cannot sit up right for at least 30 minutes
Denosumab (Prolia®)	Musculoskeletal pain Hypocalcemia (rare) Skin reactions (eczema, cellulitis - rare) Serious infections (rare)	Not typically recommended as first-line option, but may be considered if contraindications to bisphosphonates Residents who are hypocalcemic should not receive denosumab until hypocalcemia corrected

RESIDENTS WITH LIMITED LIFE EXPECTANCY

The 2015 LTC fracture prevention guidelines suggest that starting drug therapy is likely not appropriate in residents with limited life expectancy (<1 year) due to the benefits of drug therapies requiring up to 1 year to take effect [9].

OTHER INTERVENTIONS

Residents receiving either bisphosphonates or denosumab should have optimal intake of calcium and vitamin D [10]. The 2015 LTC fracture prevention guidelines recommend a calcium intake of 1200mg/day (elemental calcium) which can be met with diet and/or supplements of up to 500mg elemental calcium per day if dietary calcium intake is not sufficient [9]. The recommended intake of vitamin D is 800-2000 IU per day [9]. In residents at high risk of fracture, fall prevention strategies are also suggested and may include: exercise (balance and strength training), medication review, assistive devices and addressing environmental hazards [9].

PREVENTION

Strategies for preventing osteoporosis and fractures include weight-bearing exercises (30 minutes most days of week), balanced and adequate nutrition (protein, calcium, vitamin D), smoking cessation and fall prevention strategies [9,10].

References: Manolagas S. Pathogenesis of osteoporosis [Internet]. 2017. Available from: www.uptodate.com; Zarowitz BJ, Cheng L-I, Allen C, O'Shea T, Stolshek B. Osteoporosis prevalence and characteristics of treated and untreated nursing home residents with osteoporosis. J Am Med Dir Assoc [Internet]. 2015 Apr;16(4):341-8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25726417>; Zimmerman SI, Girman CJ, Buie VC, Chandler J, Hawkes W, Martin A, et al. The prevalence of osteoporosis in nursing home residents. Osteoporos Int [Internet]. 1999;9(2):151-7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10367043>; Osteoporosis Canada. What is osteoporosis? [Internet]. 2017. Available from: <http://www.osteoporosis.ca/osteoporosis-and-you/what-is-osteoporosis/>; Osteoporosis Canada. Osteoporosis facts and statistics [Internet]. 2017. Available from: <http://www.osteoporosis.ca/osteoporosis-and-you/osteoporosis-facts-and-statistics/>; Rosen H, Drezner M. Clinical manifestations, diagnosis, and evaluation of osteoporosis in postmenopausal women [Internet]. 2017. Available from: www.uptodate.com; Lewiecki E. Osteoporotic fracture risk assessment [Internet]. 2017. Available from: www.uptodate.com; Rao S, Budhwar N, Ashfaq A. Osteoporosis in men. Am Fam Physician. 2010;82(5):503-8.; Papaioannou A, Santesso N, Morin SN, Feldman S, Adachi JD, Crilly R, et al. Recommendations for preventing fracture in long-term care. Cmaj. 2015;187(15):1135-44.; Rosen H, Drezner M. Overview of the management of osteoporosis in postmenopausal women [Internet]. 2017. Available from: www.uptodate.com; Rosen H. The use of bisphosphonates in postmenopausal women with osteoporosis [Internet]. UpToDate. 2017. Available from: <http://www.uptodate.com/contents/the-use-of-bisphosphonates-in-postmenopausal-women-with-osteoporosis>; Rosen H. Denosumab for osteoporosis [Internet]. 2017. Available from: www.uptodate.com