



Figure 2: Approach to pharmacotherapy to prevent fractures. Note: Rec. = recommendation (see Tables 4, 6 and 7 for full recommendations). *Menopausal hormone therapy is a suggested alternative for females younger than 60 years or within 10 years after menopause who prioritize alleviation of substantial menopausal symptoms (Rec. 4.4). †Antiresorptive therapy includes bisphosphonates (alendronate, risedronate and zoledronic acid), denosumab, raloxifene and menopausal hormone therapy. ‡Raloxifene is suggested rather than no treatment for females who have contraindications or substantial intolerance to, or who choose not to take, other suggested therapies (Rec. 4.7). §See Figure 1 for list of risk factors and Appendix 1, Supplementary Table 5, for causes of secondary osteoporosis.

Table 5: Medications for the treatment of osteoporosis*

Drug	Route and dosing	Potential adverse effects	Contraindications	Other considerations	Cost†
Antiresorptive agents					
Bisphosphonates					
Alendronate	Oral: 70 mg weekly <i>or</i> 10 mg daily	<ul style="list-style-type: none"> Esophageal or GI intolerance MSK discomfort Rare: AFF, ONJ 	<ul style="list-style-type: none"> CrCl < 30–35 mL/min Esophageal abnormalities Inability to be upright > 30 min Hypocalcemia 	<ul style="list-style-type: none"> Foods, drinks (except plain water), other drugs should be avoided for > 30–60 min Minerals and dairy impair absorption if taken close together 	\$
Risedronate	Oral: 35 mg weekly <i>or</i> 150 mg monthly <i>or</i> 5 mg daily	<ul style="list-style-type: none"> Esophageal/GI intolerance MSK discomfort Rare: AFF, ONJ 	<ul style="list-style-type: none"> CrCl < 30–35 mL/min Esophageal abnormalities Inability to be upright > 30 min Hypocalcemia 	<ul style="list-style-type: none"> Foods, drinks (except plain water), other drugs should be avoided for > 30–60 min Minerals and dairy impair absorption if taken close together Delayed-release formulation available (taken with food) 	\$
Zoledronic acid	Intravenous: 5 mg yearly	<ul style="list-style-type: none"> Transient flu-like symptoms Hypocalcemia Renal toxicity Rare: AFF, ONJ 	<ul style="list-style-type: none"> CrCl < 35 mL/min Hypocalcemia 	<ul style="list-style-type: none"> Inadequate vitamin D increases risk for hypocalcemia Less frequent dosing than yearly may be considered 	\$\$
RANK-ligand inhibitor (monoclonal antibody)					
Denosumab	Subcutaneous: 60 mg every 6 mo	<ul style="list-style-type: none"> Hypocalcemia Dermatitis, infections MSK discomfort Rare: AFF, ONJ 	<ul style="list-style-type: none"> Hypocalcemia 	<ul style="list-style-type: none"> Inadequate vitamin D increases risk for hypocalcemia Caution warranted in severe renal impairment Rapid bone loss and risk of vertebral fractures if delayed dose or with discontinuation 	\$\$\$
Hormonal therapy					
Menopausal hormonal therapy	Multiple regimens	<ul style="list-style-type: none"> VTE, CVD, stroke Breast cancer 	<ul style="list-style-type: none"> VTE, CVD, stroke, estrogen-dependent tumours, abnormal vaginal bleeding, active liver disease 	<ul style="list-style-type: none"> Only in postmenopausal women 	\$–\$\$
Raloxifene (SERM)	Oral: 60 mg daily	<ul style="list-style-type: none"> VTE, CVD, stroke Vasomotor symptoms, leg cramps 	<ul style="list-style-type: none"> VTE, CVD, stroke, abnormal vaginal bleeding 	<ul style="list-style-type: none"> Only in postmenopausal women 	\$
Anabolic agents					
Parathyroid hormone analog					
Teriparatide	Subcutaneous: 20 µg daily for 24 mo	<ul style="list-style-type: none"> Orthostatic hypotension, nausea Hypercalcemia, hypercalciuria MSK discomfort 	<ul style="list-style-type: none"> CrCl < 30 mL/min Bone malignancy, Paget disease, previous skeletal radiation Hypercalcemia disorder Unexplained elevated ALP 	<ul style="list-style-type: none"> Caution warranted with active or previous kidney stone disease 	\$\$\$\$\$
Sclerostin inhibitor (monoclonal antibody)					
Romosozumab	Subcutaneous: 210 mg monthly for 12 mo	<ul style="list-style-type: none"> Myocardial infarction, stroke Hypocalcemia MSK discomfort Rare: AFF, ONJ 	<ul style="list-style-type: none"> Previous myocardial infarction or stroke Hypocalcemia 	<ul style="list-style-type: none"> Inadequate vitamin D increases risk for hypocalcemia Caution warranted in severe renal impairment 	\$\$\$\$\$

Note: AFF = atypical femoral fracture, ALP = alkaline phosphatase, CrCl = creatinine clearance, CVD = cardiovascular disease, GI = gastrointestinal, MSK = musculoskeletal, ONJ = osteonecrosis of the jaw, RANK = receptor activator of nuclear factor κ - β , SERM = selective estrogen receptor modulator, VTE = venous thromboembolism.

*Information in this table is not meant to be exhaustive and should not replace complete details provided by drug monographs (available in the Compendium of Pharmaceuticals and Specialties at myrx.ca). Further information on some medications available in selected references.^{15,43,46–51}

†Relative cost.