



General principles

- Consider osteoporosis in older people, especially those living in residential aged care facilities.
- Osteoporosis is subclinical, but is a risk factor for fractures.
- Use a fracture risk calculator to assess patient risk.
- Treat osteoporosis with lifestyle changes and pharmacological treatment.
- Check for adequate dietary intake of calcium, and supplement if necessary.
- Vitamin D supplementation may be required if the patient has inadequate levels of exposure to the sun.
- A careful risk–benefit analysis is important prior to initiation of pharmacological treatment for osteoporosis.

Practice points

Practice points	References	Grade
Assess the fracture risk of all older people using risk calculators that have been validated	1	Grade of Recommendation: D
Consider vertebral fracture and X-ray if the patient has a clinical kyphosis or historical height loss of ≥ 3 cm	1	Consensus-based recommendation
Consider calcium and vitamin D as preventive strategies and prior to medical treatment	1	Grade of Recommendation: C
Recommend exercise, healthy eating, ceasing smoking and low alcohol intake as part of a healthy life, and contribution to good bone health	1	Consensus-based recommendation
Oral bisphosphonates and denosumab are effective options for the management of osteoporosis	1	Various

Introduction

Osteoporosis is an often-overlooked diagnosis, and patients in residential aged care facilities (RACFs), who are often at high risk for fragility fractures, would benefit from appropriate and individualized prevention, assessment and management. The RACGP's *Osteoporosis prevention, diagnosis and management in postmenopausal women and men over 50 years of age*, second edition, was published in 2017 and contains comprehensive and detailed recommendations.¹ The purpose of this chapter in the *RACGP aged care clinical guide (Silver Book)* is to add some interpretation to those guidelines for the RACF setting.

Clinical context

Osteoporosis is defined as low bone mineral density (BMD) and abnormal bone architecture. These changes lead to increased risk of fragility fracture, where hip fractures in older people have a high mortality rate.² As osteoporosis is subclinical, it is the risk of fractures that is most relevant to patients.

Assessing risk for fractures

There are multiple fracture risk calculators that have been validated and are available for use (Grade of Recommendation: D), such as the following:¹

- FRAX score³
- Garvan Fracture Risk Calculator

Risk stratification is valid without a BMD test;⁴ however, the Pharmaceutical Benefits Scheme (PBS) criteria for anti-resorptive drugs require a BMD T-score of <-2.5 or a proven minimal trauma (or fragility) fracture.

The US National Osteoporosis Foundation guidelines recommend the commencement of treatment when the 10-year risk of hip fracture is estimated to be $\geq 3\%$ on the FRAX score, or when the 10-year risk of major osteoporotic fracture is 20% or higher.⁵ It has been proposed that many Australian residents of RACFs will fall into this risk category.

In practice

Primary prevention

Assessing the fracture risk of all residents in RACFs is good practice, as many of those assessed will be found to have a high risk of fractures. A decision will need to be made as to whom to treat and for whom primary prevention is unnecessary. Balancing the decision with the concept of preventing polypharmacy is vital (refer to Part A. Polypharmacy). Points to consider when making that decision include:

- prognosis – if the patient's prognosis is poor, there is less benefit from prevention
- frailty – a higher frailty score indicates a poorer prognosis; however, a moderate frailty score may be a good indicator for use of preventive medication (refer to Part A. Frailty)
- patient and family – patient and family goals and wishes are important to consider; this is an area where shared decision making is critical
- whether the patient is able and willing to go for a dual-energy X-ray absorptiometry (DXA) scan or X-ray. These investigations are not necessary for risk stratification, but are necessary for prescribing osteoporosis medication on the PBS in the absence of a fragility fracture.

Secondary prevention

The above factors considered in primary prevention also hold true for secondary prevention. However, the indication for treatment and the benefits accrued is higher for secondary prevention.

A practice point is to seek out the patient's history regarding fractures. Often, there is a change of GP care when a patient enters an RACF, and any previous history of more minor fractures in the patient's history can be missed.

Consider that if the patient has a clinical kyphosis or historical height loss of ≥ 3 cm, there may be a vertebral fracture and an X-ray may be prudent.¹

Management

Lifestyle factors are an important part of osteoporosis management. Adequate calcium and vitamin D are not only a preventive strategy in themselves, but also require consideration prior to medical treatment (Grade of Recommendation: C).¹ Hypocalcaemia during treatment can occur if the patient has a low dietary calcium intake or low vitamin D stores.

Exercise, healthy eating, ceasing smoking and low alcohol intake are part of a healthy life, and contribute to good bone health. In an RACF setting, exercise and diet are often in the realm of the staff. Adding recommended exercises and diet to the patient's care plan will encourage the RACF to implement your plan.¹

Pharmacological management

Calcium and vitamin D may be considered for older people in RACFs where appropriate, as these have previously been shown to have some evidence in the prevention and reduction in the risk of falls in RACFs (refer to Part A. Falls).⁶ Vitamin D in individuals with low levels reduces rate of falling. Consider calcium supplementation if dietary calcium is considered to be inadequate.¹

Oral bisphosphonates and denosumab are effective options for the management of osteoporosis (refer to reference 1 for variations in recommendation); however, consideration needs to be made regarding administration and side effects. The recommendation is that bisphosphonates are given in a fasting state (eg prior to breakfast), and the patient is to remain upright and seated for 30 minutes after taking the medication.^{7,8,9} The logistics of this may be challenging in an RACF.

Osteonecrosis of the jaw is a worrisome but rare complication of bisphosphonates. A careful review of the dental hygiene of the patient is recommended prior to starting the drug.

Denosumab is given as a subcutaneous injection every six months. It is important to monitor for hypocalcaemia, especially since patients in RACFs are at risk of decreased renal function (estimated glomerular filtration rate [eGFR] < 30 mL/min). Replacing calcium and vitamin D prior to the initiation of denosumab and monitoring serum calcium after seven to 10 days is important in RACF patients to avoid hypocalcaemia.

References

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