Is your patient (man or woman) over 50?*

Think Osteoporosis

No history of minimal trauma fracture

Investigate risk of osteoporosis

One or more risk factors? MBS item no.

- Minimal trauma fracture 12306
- Recurrent falls No rebate
- Family history (parent or sibling) No rebate
- Early menopause (<45) or hypogonadism 12312
- >3 months glucocorticoid use (> or = 7.5mg/day) 12312
- Coeliac disease/other malabsorption disorders 12315
- Inflammatory arthritis 12315
- Primary hyperparathyroidism 12315
- Hyperthyroidism 12315
- Chronic liver or kidney disease 12315
- Over 70 years of age 12323
- Breast cancer treated with aromatase inhibitors No rebate
- Prostate cancer on androgen deprivation therapy No rebate
- Anti-epileptic medications No rebate
- Low body weight No rebate
- Organ or bone marrow transplant No rebate
- HIV and treatment No rebate
- Major depression, especially treated with SSRIs No rebate
- Type 1 and 2 Diabetes mellitus No rebate
- Multiple myeloma or monoclonal gammopathies No rebate

Possible vertebral fracture?

- Height loss
- Back pain
- Kyphosis: Spinal x-ray to confirm

BMD test recommended (MBS 12306)

Established osteoporosis

Treat for secondary fracture prevention

Available on the PBS for men and women of any age with a minimal trauma fracture:

- Alendronate
- Risedronate
- Zoledronic acid
- Denosumab
- Strontium ranelate

Available on the PBS for post-menopausal women with a minimal trauma fracture:

- Raloxifene

Available on the PBS for men and women with a very high risk of fracture (T-score < -3.0, two or more minimal trauma fractures and at least one new fracture after 12 months on anti-resorptive therapy):

- Teriparatide

Repeat BMD test in 2 years
One year in some circumstances

Do BMD test (DXA)

T-score -1.0 to -2.5

Osteopenia

Ensure

- Calcium 1300mg/day
- Vitamin D >50nmol/L
- Weight bearing exercise
- Falls prevention

See over for further details

Repeat BMD test in 2-5 years depending on severity

T-score ≤ -2.5

Osteoporosis

Treat when risk factors are present to prevent first fracture

Possible exceptions: modifiable risk factors only, women under 55 or men under 60, as these are associated with lower absolute fracture risk.

Currently, not all patients requiring treatment to prevent first fracture are eligible for PBS re-imbursement. Available on the PBS for men and women aged 70 and over:

- Alendronate (T-score ≤ -2.5)
- Risedronate (T-score ≤ -2.5)
- Denosumab (T-score ≤ -2.5)
- Zoledronic acid (T-score ≤ -3.0)

For women under 60 with menopausal symptoms: HRT

Adequate calcium, vitamin D and exercise are important

Repeat BMD test in 2 years
One year in some circumstances

Special circumstances for treatment

People on oral or inhaled corticosteroids (7.5mg per day prednisolone or equivalent for at least 3 months) and T-score of ≤ -1.5 or less should have preventive drug therapy.

Women treated with aromatase inhibitors for breast cancer and men on anti-androgen therapy should have preventive osteoporosis drug therapy, dependent on their absolute risk of fracture.

*Based on RACGP guidelines. Refer to guidelines and Osteoporosis Australia’s Medical Guides for more information.
**Calcium**

Over 50% of Australians do not get enough calcium

**Recommended daily dietary calcium intakes (RDI):**

<table>
<thead>
<tr>
<th>Group</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>1000</td>
</tr>
<tr>
<td>Women over 50</td>
<td>1300</td>
</tr>
<tr>
<td>Men over 70</td>
<td>1300</td>
</tr>
<tr>
<td>People with osteoporosis</td>
<td>1300</td>
</tr>
</tbody>
</table>

**Calcium content of key foods (per standard serve):**

<table>
<thead>
<tr>
<th>Food</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk and yogurt (including low fat versions)</td>
<td>304-488</td>
</tr>
<tr>
<td>Cheese</td>
<td>121-209</td>
</tr>
<tr>
<td>Tinned fish</td>
<td>175-486</td>
</tr>
<tr>
<td>Selected green vegetables</td>
<td>12-91</td>
</tr>
<tr>
<td>Tofu (firm)</td>
<td>150-850</td>
</tr>
<tr>
<td>Selected nuts and tahini</td>
<td>30-66</td>
</tr>
<tr>
<td>Dried fruit</td>
<td>32-160</td>
</tr>
<tr>
<td>Fortified milk</td>
<td>520</td>
</tr>
<tr>
<td>Soy milk (including low fat versions)</td>
<td>309-367</td>
</tr>
</tbody>
</table>

Recommend foods rich in calcium. Aim for 3 serves of dairy per day.

**Calcium supplementation**

- 500-600mg per day
- Combine with a vitamin D supplement if necessary

**Recommended for people who are:**

- Unable to get adequate calcium from their diet
- Taking osteoporosis medications
- Taking corticosteroids (>3 months)
- Elderly and housebound or in residential care (combine with vitamin D)

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**Vitamin D**

Deficiency is associated with low bone density and increased risk of falls

**Vitamin D levels should be at least 50nmol/L at the end of winter (10-20nmol/L higher in summer)**

**Groups at risk of vitamin D deficiency (test late winter/early spring):**

- People in residential care or housebound, particularly the elderly
- Disabled, chronically ill or obese people
- Indoor workers
- Darker skinned people
- People who cover their skin for cultural or religious reasons
- People with medical conditions or taking medications that interfere with vitamin D metabolism

**Vitamin D status and recommended supplement:**

<table>
<thead>
<tr>
<th>Serum 25-OHD (nmol/L)</th>
<th>Recommended supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50</td>
<td>Adequate Not required</td>
</tr>
<tr>
<td>30-49</td>
<td>Mild deficiency 1000-2000IU/day</td>
</tr>
<tr>
<td>12.5-29</td>
<td>Moderate deficiency 3000-5000IU/day for 6-12 weeks, followed by maintenance dose of 1000-2000 IU/day</td>
</tr>
<tr>
<td>&lt;12.5</td>
<td>Severe deficiency</td>
</tr>
</tbody>
</table>

**Sunshine requirements for adequate vitamin D:**

- Summer: 6-7 minutes on average mid-morning or mid-afternoon (fair skin)
- Winter: Up to 30 minutes at noon, depending on latitude (fair skin)
- Darker skin requires 3-6 times longer exposure

**When sun exposure is inadequate, prevent deficiency with supplements:**

<table>
<thead>
<tr>
<th>Group</th>
<th>Recommended supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>People under 70</td>
<td>At least 600IU/day</td>
</tr>
<tr>
<td>People over 70</td>
<td>At least 800IU/day</td>
</tr>
<tr>
<td>Sun avoiders</td>
<td>1000-2000IU/day</td>
</tr>
</tbody>
</table>

Window glass, sunscreens and covering clothing inhibit vitamin D synthesis.

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**Exercise**

Weight bearing PLUS resistance

**At least 30 minutes, 3-5 times/week**

- Weight bearing:
  - Running
  - Impact aerobics
  - Jump rope
  - Dancing
  - Basketball
  - Netball
  - Tennis
  - Stair climbing

- Resistance:
  - Hand weights
  - Ankle weights
  - Gym equipment

- Exercise should be:
  - High impact
  - Regular
  - Intense
  - Progressive
  - Varied

- Non-weight bearing exercise (swimming, cycling) and leisure walking does not improve bone density.

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**Falls prevention**

90% of hip fractures result from a fall

**Risk factors**

- Muscle weakness, gait, poor balance
- Syncope/dizziness
- Medications
- Vision
- Environment

**Intervention**

- Low risk: Tai Chi
- Mod risk: Targeted exercise
- Over 80: Individual home exercise (physiotherapist)
- Foot orthoses, footwear advice, home-based foot and ankle exercises (podiatrist)
- Cardiac pacing if appropriate
- Review. Give calcium/vitamin D supplements.
- Review spectacle requirements.
- Home hazard assessment (occ. therapist)

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