Bone Health Overview
A guide for pharmacists – An accredited CPD resource

About Osteoporosis
Osteoporosis is a disease where bones become brittle and can fracture more easily. A minor bump/fall can cause a fracture (ie: ‘minimal trauma’ fracture). Any bone can be affected by osteoporosis but the most common fracture sites are the hip, spine (often undetected and dismissed as back pain), wrist, ribs, pelvis and upper arm. Improving bone health in the community, and reducing the risk of osteoporosis and related fractures, is an important opportunity for all health professionals. Pharmacists play a key role in ensuring adequate calcium and vitamin D intake generally, and assisting patients with prescribed osteoporosis medications.

Assess: Calcium Intake
- Calcium can be obtained from the diet and from supplementation.
- Recommended levels of calcium vary based on age.

Daily calcium recommended levels are:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Recommended levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>children (9-11 years)</td>
<td>1,000mg per day</td>
</tr>
<tr>
<td>teens (12-18 years)</td>
<td>1,300mg per day</td>
</tr>
<tr>
<td>adults (19 years +)</td>
<td>1,000mg per day</td>
</tr>
<tr>
<td>women (50 years +)</td>
<td>1,300mg per day</td>
</tr>
<tr>
<td>men (70 years +)</td>
<td>1,300mg per day</td>
</tr>
<tr>
<td>pregnancy</td>
<td>1,000mg per day</td>
</tr>
</tbody>
</table>

Key Points
- Optimal calcium and vitamin D levels are important in the maintenance of skeletal health.
- Average dietary intake of calcium in Australia is below recommended levels.
- Vitamin D deficiency is a health issue in Australia that can be easily addressed.
- Specific exercises can assist bone health.
- Compliance with osteoporosis medications is vital to reduce risk of fracture in patients with diagnosed osteoporosis.

Calcium content of key foods:

<table>
<thead>
<tr>
<th>Food</th>
<th>Calcium (mg per standard serve)</th>
</tr>
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<tbody>
<tr>
<td>milk, cheese and yoghurt</td>
<td>300-400 mg</td>
</tr>
<tr>
<td>tinned salmon and sardines</td>
<td>220-400 mg</td>
</tr>
<tr>
<td>tofu-calcium set</td>
<td>150-800 mg</td>
</tr>
<tr>
<td>nuts and tahini</td>
<td>65-110 mg</td>
</tr>
<tr>
<td>selected green vegetables</td>
<td>18-43 mg</td>
</tr>
</tbody>
</table>

Calcium supplementation:
- Calcium supplementation of 500-600 mg per day is considered useful for people who do not obtain adequate dietary intake.

NOTE: General information calcium supplements: Calcium supplementation does not have major effects on the absorption of other micronutrients. Calcium carbonate requires gastric acidity for optimal absorption (best taken with meals), calcium in other forms like citrate does not require gastric acidity.

Recommend: For bone health
Calcium supplements are most important when:
- Dietary intake of calcium is low (see table of daily calcium required).
- Patients are prescribed osteoporosis treatments.
- Patients have malabsorption diseases (reducing calcium absorption) eg: coeliac disease.
- Corticosteroid use longer than 3 months (which impacts bone density).
- People are elderly and household (or in residential care).
Assess: Vitamin D

Vitamin D can be obtained from sunlight and from supplements.
- Vitamin D is important for the absorption of calcium.
- Lack of vitamin D is associated with lower bone density (and other conditions).
- For Australians the main source of vitamin D is from sunlight. Safe sun exposure is based on latitude and the time of year. For example:
  - A moderately fair skin person requires sun exposure most days.
  - People with darker skin require exposure times 3-6 times longer.
  - For a full table of sun exposure times visit [www.osteoporosis.org.au](http://www.osteoporosis.org.au)
  - Vitamin D is only found in small quantities in a few foods.

<table>
<thead>
<tr>
<th>Summer</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-7 minutes (mid morning or mid afternoon)</td>
<td>7-30 minutes (at midday) depending on location</td>
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Assess: Exercise for bone health

- Exercise is important to maintain healthy bones.
- Sedentary lifestyle is a risk factor for osteoporosis.
- Exercise is important for rehabilitation post fracture, as part of a rehabilitation plan. Patients should consult with their doctor before exercising.

Bones like:
- Short high intensity bursts of exercise rather than long, slower low impact exercise.
- Exercise that becomes progressively harder.
- Variety in exercise routines to vary forces placed upon bones.

Recommend: For bone health

For bone health

- Osteoporosis Australia recommends a supplement of at least 600 IU (under 70 years) or 800 IU (over 70 years) per day for people who do not get adequate sun exposure for a range of reasons. For sun avoiders 1,000-2,000 IU per day is advised.
- In people with mild vitamin D deficiency, vitamin D supplementation of 1,000-2,000 IU per day is recommended.
- In people with moderate to severe vitamin D deficiency a higher replacement dose of 3,000-5,000 IU per day is required for 6-12 weeks, followed by maintenance dose of 1,000-2,000 IU per day. This treatment should be supervised by a GP.

Recommend: For bone health

30 minutes of exercise 3-5 times per week.

What type of exercise?

<table>
<thead>
<tr>
<th>Weight-bearing</th>
<th>Resistance</th>
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<tbody>
<tr>
<td>exercise done in standing position involving full weight of body</td>
<td>exercise using gym equipment or hand/ankle weights</td>
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<tr>
<td>eg: brisk walking, jogging, skipping, tennis, dancing, netball, basketball</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Patients with diagnosed osteoporosis should consult a physiotherapist before commencing exercise. Non weight-bearing exercise (eg: swimming, cycling) does not enhance bone density.

This activity has been accredited for 0.25 hours and 0.25 Group 1 CPD credit or 0.5 Group 2 CPD credits upon successful completion of assessment. These credits are suitable for inclusion on an individual pharmacist’s CPD plan. To access the associated assessment go to [www.osteoporosis.org.au](http://www.osteoporosis.org.au) (under health professionals select pharmacists) and follow the enrolment instructions.