OSTEOPOROSIS

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Overview

The aim of this primer is to assist Family Physicians with identifying the high fracture risk patient and initiating treatment. This primer is to be used in conjunction with Osteoporosis Canada’s 2010 Quick Reference Guide (QRG).

- Osteoporosis: a systemic skeletal disease characterized by low bone density (or low bone mass) and/or micro-architectural deterioration of bone tissue (low bone quality). Either of these abnormalities of bone, or both together in combination, results in an increase in the fragility of bone, which in turn increases the risk of fracture.
- Fragility Fracture: a fracture occurring spontaneously or following minor injury such as a fall from standing height or less or at walking speed or less, excluding craniofacial, hand, foot and ankle fractures. Fragility fractures of the spine can occur due to bending, coughing, sneezing, reaching or other minor events.

Identifying High Fracture Risk Individuals – Table 1

All individuals over the age of 50 and some below age 50* should be assessed for risk factors for osteoporosis and fracture to identify those at high risk of fracture. The table below describes the 5 clinical scenarios that identify high fracture risk individuals. In the first four scenarios, the patient is automatically at high fracture risk and does not need a CAROC or FRAX calculation to determine their level of risk.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Method of Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragility Fracture of the Hip</td>
<td>History: ensure that hip surgery occurred due to a FF from a minor injury</td>
</tr>
</tbody>
</table>
| Spine Fracture (compression or wedge fracture with disruption of end plate) | Order Spine X-rays if:
  1) ≥ 2 cm prospective height loss*  
  2) ≥ 6 cm historic height loss*  
  3) Reduced rib to pelvis distance ≤ 2 fingers’ breadth*  
  4) Occiput-to-wall distance > 5 cm*  
  5) Moderate fracture risk based on CAROC or FRAX*  
Write: “Lateral Thoracic and Lumbar spine X-ray to rule out vertebral fractures” |
| ≥2 non-spine, non-hip fragility fracture events ** | History: Ensure that the fractures occurred at different times (not due to the same fall) and due to a minor injury (i.e. fragility fracture as describe above) |
| History of 1 non-spine, non-hip fragility fracture and prolonged glucocorticoid use in the previous year | Prolonged glucocorticoid use is defined as ≥ 3 months of cumulative (may or may not be continuous) therapy in the previous year at a prednisone-equivalent dose of ≥ 7.5 mg daily |
| FRAX or CAROC calculation using Femoral Neck T-score from BMD | Please refer to the 2010 Quick Reference Guide for indications for BMD testing and algorithmic fracture risk assessment |

* Please see Osteoporosis Canada’s 2010 Quick Reference Guide for details.
** Several fractures that occur because of one fall incidence are considered to be one single fracture event.

Prevention and Treatment

All individuals irrespective of fracture risk require:

1) Fall prevention:
   - Home safety assessment for those visually impaired or at high fall risk
   - Cataract removal
   - Hip protectors in long term care residents
2) Smoking Cessation
3) Limiting alcohol intake to ≤ 2 drinks/day
4) Exercise:
   - Posture training to reduce the risk of vertebral fractures
   - Balance and coordination (Tai Chi) to reduce fall risk
   - Strength training, weight bearing, stretching to improve bone & muscle strength, reduce bone loss, improve flexibility
   - Modify exercises in cases of spine fracture or high risk for spine fracture
5) Calcium: 1200 mg/day of elemental calcium from all sources but preferably from diet
6) Vitamin D:
   - 400 – 1000 IU for individuals <50 years at low fracture risk
   - 800 – 2000 IU for individuals ≥ 50 years
   - In high fracture risk individuals check vitamin D levels no sooner than 3 months after initiating or changing therapy
   - Once serum levels are stable on supplementation then there is no need for further monitoring or changes in dose
Initiate a first-line antiresorptive agent in all HIGH fracture risk patients from the table below – Table 2*

<table>
<thead>
<tr>
<th>Antiresorptives to prevent ALL types of Fractures</th>
<th>Bisphosphonates</th>
<th>Human Monoclonal Antibody</th>
<th>Hormone Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generic Name</strong></td>
<td>Alendronate</td>
<td>Actonel</td>
<td>Aclasta</td>
</tr>
<tr>
<td><strong>Trade Name(s)</strong></td>
<td>Fosamax</td>
<td>Actonel DR</td>
<td>Actonel</td>
</tr>
<tr>
<td><strong>Route, Dose &amp; Frequency</strong></td>
<td>Oral route</td>
<td>Oral route</td>
<td>5 mg IV infusion once yearly</td>
</tr>
<tr>
<td>70 mg weekly</td>
<td>70 mg/week</td>
<td>5 mg</td>
<td>60 mg SC every 6 months</td>
</tr>
<tr>
<td>70 mg/2800 IU D3 weekly</td>
<td>70 mg/week</td>
<td>5 mg</td>
<td>60 mg SC every 6 months</td>
</tr>
<tr>
<td>70 mg/5600 IU D3 weekly</td>
<td>150 mg monthly</td>
<td>5 mg</td>
<td>60 mg SC every 6 months</td>
</tr>
<tr>
<td>Special Precautions &amp; Side effects</td>
<td>- Contraindicated if eGFR &lt; 30 mL/min</td>
<td>- Hydrate well and correct serum calcium levels prior to administration</td>
<td>- Several dosing options available orally, as patches and creams</td>
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<tr>
<td></td>
<td>- Aclesta and Actonel 150 mg may cause flu-like symptoms</td>
<td>- Several dosing options available orally, as patches and creams</td>
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<tr>
<td></td>
<td>- All oral bisphosphonates (except Actonel DR) should be taken with 1 full glass of water upon awakening (do not bend over/lie down/eat/drink other liquids/take other meds for 30 minutes following intake)</td>
<td>- Several dosing options available orally, as patches and creams</td>
<td></td>
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<tr>
<td></td>
<td>- Actonel DR should be taken with or after ingestion of food (do not bend over/lie down for 30 minutes following intake of Actonel DR)</td>
<td>- Several dosing options available orally, as patches and creams</td>
<td></td>
</tr>
</tbody>
</table>

*Please see Osteoporosis Canada’s 2010 Quick Reference Guide for more treatment options
** See product monographs for details

**Monitoring Therapy**<sup>1,2</sup>

All adults ≥ 50 irrespective of fracture risk require:
1. Annual height measurements
2. Spine X-rays when indicated (see Table 1)
3. Consideration for BMD testing* 
4. In low fracture risk patients repeat fracture risk assessment every 5 years after the age of 65
5. In moderate fracture risk patients repeat BMD testing every 1-3 years depending on general health
6. In high fracture risk patients repeat BMD every 1-3 years as follows:
   - 1 year after initiating drug therapy to rule out rapid bone loss (> 5% BMD) that may be due to poor patient adherence or poor response to the drug
   - every 3 years if the BMD is stable while on drug therapy
   - every 1-3 years in patients with a progressive slow decline in BMD depending on the rate of decline
7. Drug holidays are not indicated in high fracture risk patients

**When to Refer**
1. In the case of rapid bone loss while on therapy
2. In the case of a new fragility fracture while on therapy
3. Poor drug tolerance to several first line agents
4. In the case of rare drug therapy complications such as osteonecrosis of the jaw or atypical femoral fractures
5. When considering treatment with Teriparatide (Forteo) as in the case of painful vertebral fractures
6. In the case of other adverse drug reactions or special concerns

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References can be found online at [http://www.dfcm.utoronto.ca/programs/postgraduateprograme/One_Pager_Project_References.htm](http://www.dfcm.utoronto.ca/programs/postgraduateprograme/One_Pager_Project_References.htm)