Osteoporosis screening, who to screen?
All post menopausal women > 65yrs. Post menopausal women < 65yrs with additional risk factors. Premenopausal woman or man with fragility fracture or secondary causes predisposing to fractures. All patients with a history of vertebral fracture or low trauma fracture. Hyperparathyroid patients. Chronic (>3 month) use of steroids (> 5mg/day prednisone).

Clinical fracture risk factors:

Predictors of low bone mass:
Females, elderly, sex hormone deficiency, Caucasian/Asian race, low body mass index, family history of osteoporosis, low calcium intake, smoking, excessive alcohol use, chronic steroid use, history of low-trauma fractures, sedentary lifestyle, metabolic abnormalities.

Fall risk factors:
Postural hypotension, balance deficits, visual or hearing impairment, use of benzodiazapines and psychotropics.

Contraindications to ERT:
Breast cancer history or strong family history of breast cancer, other estrogen dependent neoplasia, undiagnosed vaginal bleeding, history of thromboembolism, Gall bladder disease*, Liver disease* (* = relative contraindication only)

Bone mineral density T-score criteria for osteopenia and osteoporosis
Normal ≥ -1.0
Osteopenia Between -1.0 and -2.5
Osteoporosis ≤ -2.5

Rheum or Endocrine consult for:
Evaluation of multiple fractures despite normal BMD, progressive bone loss or fractures despite therapy, secondary osteoporosis, abnormal calcium, phosphorus, alkaline phosphatase, use of teriparatide.

Guidelines for Osteoporosis

Patient with risk factors?

Prevention:
Calcium intake > 1200 mg/day ( Dietary + supplements)
Regular weight bearing exercise.
Avoid smoking, minimize alcohol and caffeine, adequate Vitamin D intake of 800IU.
Avoid excessive thyroid replacement (TSH < 2).
Bisphosphonates for all patients on chronic steroids.

Densitometry screen. Z and T-score results?

T < -2.5
Evidence of testosterone deficiency?
Yes and Male
Yes and Female
-2.5 < T < -1.0
No
5 years to re-evaluate response to therapy.

Patient female with hx of low-trauma fractures or at increased fx risk?
(Consider calculating Frax score)

Follow up densitometry (same type).
2-3 years to re-evaluate response to therapy.

Significant disease progression?
Yes
Add or switch to bisphosphonate if not already on, else consider calcitonin or endocrine/ rheumatology consult.

T 1st line bisphosphonate, 2nd line raloxifene, 3rd line HRT
Individualize risk
No
Continue therapy

R. Batra 10/31/11, 08/2012, 08/2013
Pharmacologic Agents for Treatment of Osteoporosis

2013 SCAN Formulary Drugs

<table>
<thead>
<tr>
<th>Medication</th>
<th>Tier Level &amp; Notes</th>
<th>Dosing &amp; Administration</th>
<th>Adverse Drug Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biphosphonates</strong></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| alendronate       | 1                  | • GIO* prevention for men: 5mg PO QD  
• GIO prevention: 5mg PO QD for women receiving estrogen and 10 mg PO QD in women not receiving estrogen  
• Osteoporosis treatment in men: 10 mg PO QD or 70 mg PO QW (every week)  
• PMO* prevention: 35 mg PO QW or 5 mg PO QD  
• PMO treatment: 70 mg PO QW or 10 mg PO QD  
• GIO (men and women): 5mg PO QD  
• Osteoporosis treatment in men: 35 mg PO QW  
• PMO prevention & treatment: 5 mg PO QD or 35 mg PO QW or 75 mg/day PO for 2 days of each month or 150 mg PO monthly. | Abdominal pain, esophagitis, bone pain, muscle pain, nausea  
Not recommended if CrCl is less than 35 ml/min                                                                 |
| ACTONEL (risedronate) | 3 [ST]            |                                                                                                                                                            | Abdominal pain, arthralgia, diarrhea, nausea, rash  
Not recommended if CrCl is less than 30 ml/min                                                                 |
<table>
<thead>
<tr>
<th>Drug</th>
<th>PA/ST</th>
<th>Dosing Information</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>BONIVA IV (ibandronate)</td>
<td>4 [PA]</td>
<td>Inj: 3mg IV Q 3 months</td>
<td>Nausea, fever, vomiting, dyspnea (not recommended if CrCl is less than 35 ml/min)</td>
</tr>
<tr>
<td>ibandronate oral</td>
<td>2 [ST]</td>
<td>Oral: PMO prevention &amp; treatment: 150 mg PO monthly or 2.5 mg PO QD</td>
<td>Nausea, fever, vomiting, dyspnea (not recommended if CrCl is less than 35 ml/min)</td>
</tr>
<tr>
<td>PROLIA (denosumab)</td>
<td>4 [PA]</td>
<td>Treatment of PMO and Osteoporosis in men: 60mg SC every 6 months</td>
<td>Back pain, arthralgia, extremity pain</td>
</tr>
<tr>
<td>zoledronic acid inj 5mg/100ml</td>
<td>2 [PA]</td>
<td>GIO prevention &amp; treatment and treatment of PMO and Osteoporosis in men: 5mg IV every 12 months. PMO prevention: 5mg IV every 24 months.</td>
<td>Pyrexia, myalgia, headache, arthralgia, extremity pain</td>
</tr>
</tbody>
</table>

**Selective Estrogen Receptor Modulator**

<table>
<thead>
<tr>
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<th>Dosing Information</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVISTA (raloxifene)</td>
<td>3 [QL]</td>
<td>PMO prevention &amp; treatment: 60 mg PO QD</td>
<td>Hot flashes, arthralgia, sinusitis, flu like syndrome, headache</td>
</tr>
</tbody>
</table>

**Estrogens (Indicated for Osteoporosis prevention)**

<table>
<thead>
<tr>
<th>Drug</th>
<th>PA/ST</th>
<th>Dosing Information</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>estradiol oral</td>
<td>2</td>
<td>0.5mg PO daily</td>
<td>Peripheral edema, nausea/vomiting, breast tenderness</td>
</tr>
<tr>
<td>estradiol patches</td>
<td>2</td>
<td>Transdermal system: start at 0.025 mg per week</td>
<td>Peripheral edema, nausea/vomiting, breast tenderness</td>
</tr>
<tr>
<td>Medication</td>
<td>Strength</td>
<td>Dosage</td>
<td>Common Side Effects</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------</td>
<td>--------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>estradiol/ norethindrone</strong></td>
<td>2</td>
<td>0.5mg /0.1mg PO QD</td>
<td>Peripheral edema, nausea/vomiting, breast tenderness</td>
</tr>
<tr>
<td>JINTELI (norethindrone acetate/ ethinyl estradiol)</td>
<td>2</td>
<td>1mg/5mcg PO QD</td>
<td>Peripheral edema, nausea/vomiting, breast tenderness</td>
</tr>
<tr>
<td>PREMARIN (conjugated estrogens)</td>
<td>3</td>
<td>0.3 – 0.625 mg PO QD</td>
<td>Peripheral edema, nausea/vomiting, breast tenderness</td>
</tr>
<tr>
<td>PREMPRO, PREMPHASE (medroxyprogesterone/ conjugated estrogens)</td>
<td>3</td>
<td>Start at 0.3mg/1.5mg PO QD</td>
<td>Peripheral edema, nausea/vomiting, breast tenderness</td>
</tr>
<tr>
<td><strong>Calcitonin-salmon, Nasal Spray (Indicated for PMO treatment)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>calcitonin</td>
<td>2</td>
<td>1 spray (200 IU) / day, alternating nostrils</td>
<td>Nasal symptoms (e.g., nasal crusts, dryness, redness, nasal sores, irritation, itching, soreness, infection)</td>
</tr>
<tr>
<td>fortical (calcitonin)</td>
<td>2</td>
<td>1 spray (200 IU) / day, alternating nostrils</td>
<td>Nasal symptoms (e.g., nasal crusts, dryness, redness, nasal sores, irritation, itching, soreness, infection)</td>
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Updated: 8/2013
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<tr>
<th>Medication</th>
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<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIACALCIN inj (calcitonin)</td>
<td>4 [PA] 100 IU SQ/IM QOD - QD</td>
<td>Injection site reaction, nausea, vomiting</td>
</tr>
<tr>
<td><strong>Parathyroid Hormone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FORTEO (teriparatide)</td>
<td>5 [PA] GIO (men and women), PMO treatment: 20 mcg SC daily</td>
<td>Hypertension, arthralgia, rhinitis, nausea, dizziness, pain, asthenia, headache</td>
</tr>
</tbody>
</table>

*GIO: glucocorticoid-induced osteoporosis PMO: postmenopausal osteoporosis

** Estrogens with or without progesterone (oral and topical patch products only) are considered High Risk Medications or medications that generally should be avoided in the elderly due to the evidence of carcinogenic potential (breast and endometrium) and lack of cardio-protective effect and cognitive protection in older women.

Brand-name drugs are capitalized and generic drugs are listed in lower-case italics.


Updated: 8/2013
Osteoporosis Guidelines adapted from:


