**Bisphosphonates with a Geriatric Focus**

*Led as a 12-15 minute group discussion with active participation from the trainees. Used a white board to write to add visual learning component.*

**Objectives**

1. Identify appropriate patients for bisphosphonate therapy.

2. Understand adverse effects of bisphosphonates in older patients.

3. Assess the need for bisphosphonate therapy and appropriately monitor after discontinuing.

**Guidelines for Pharmacological Intervention**

- Postmenopausal women and men older than 50 years of age:
  - History of hip or vertebral fracture
  - T-score ≤ -2.5 (DEXA) at the femoral neck, total hip or spine
  - T-score between -1 and -2.5 at the femoral neck or spine, and a 10-year probability of hip fracture ≥ 3% or a 10-year probability of any major osteoporosis-related fracture ≥ 20% based on the U.S.-adapted WHO algorithm

**Clinical Pearls for Bisphosphonates**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Route</th>
<th>Dose</th>
<th>Clinical Pearls Adjustments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alendronate</td>
<td>Oral</td>
<td>Prophylaxis: 5 mg once daily OR 35 mg once weekly OR 10 mg once daily OR 70 mg once weekly</td>
<td>- Should be administered first thing in the morning, at least 30 minutes before the first food, beverage, or medication&lt;br&gt;- Should be taken with 8 ounces of plain water&lt;br&gt;- Patient should remain upright for at least 30 minutes and until after first food of the day&lt;br&gt;- The tablet should be swallowed whole; do not chew or suck&lt;br&gt;- CrCl &lt; 35 mL/min: Use not recommended</td>
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<td>Treatment: 10 mg once daily OR 70 mg once weekly</td>
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<tr>
<td>Risedronate</td>
<td>Oral</td>
<td>Immediate release tablet: Prophylaxis: 5 mg once daily OR 35 mg once weekly OR 150 mg once a month OR 5 mg once daily OR 35 mg once weekly OR 150 mg once a month</td>
<td>Immediate release tablet: - Should be administered first thing in the morning, at least 30 minutes before the first food, beverage, or medication&lt;br&gt;- Should be taken with 8 ounces of plain water&lt;br&gt;- Tablet should be swallowed whole; do not crush or chew&lt;br&gt;Delayed release tablet: - Should be administered immediately after breakfast&lt;br&gt;- Should be taken with 4 ounces of plain water&lt;br&gt;- Patient should remain upright for at least 30 minutes and until after first food of the day&lt;br&gt;- Tablet should be swallowed whole; do not cut, split, crush, or chew&lt;br&gt;- CrCl &lt; 30 mL/min: Use not recommended</td>
</tr>
<tr>
<td>Bisphosphonate</td>
<td>Route</td>
<td>Prophylaxis</td>
<td>Treatment</td>
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<tr>
<td>Ibandronate</td>
<td>Oral OR IV</td>
<td>2.5 mg once daily (PO) OR 150 mg once monthly (PO)</td>
<td>2.5 mg once daily (PO) OR 150 mg once monthly (PO) 3 mg every 3 months (IV)</td>
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<tr>
<td>Zoledronic acid</td>
<td>IV</td>
<td>5 mg once every 2 years</td>
<td>5 mg once a year</td>
</tr>
</tbody>
</table>

- Should be administered first thing in the morning, at least 60 minutes before the first food, beverage, or medication
- Should be taken with 8 ounces of plain water
- Patient should remain upright for at least 60 minutes and until after first food of the day
- The tablet should be swallowed whole; do not chew or suck
- CrCl <30 mL/min: Use not recommended

- Patients may be pre-treated with acetaminophen to reduce the risk of an acute phase reaction (arthralgia, headache, myalgia, fever)
- CrCl <35 mL/min: Avoid use

**Bisphosphonate Class Side Effects**

- Erosive esophagitis
  - Linked to Barrett’s carcinoma
- Osteonecrosis of the jaw
- Atypical femur fractures
- Musculoskeletal pain
- Gastrointestinal intolerance

**Clinical Pearls**

- Take the medication on an empty stomach with a full glass of water (See Clinical Pearls for details)
  - Do not take with mineral water or with other beverages. Only take with plain water.
- Do NOT take with any vitamins or supplements
- Do NOT lie down for at least 30 minutes after administration
- Weekly administration is as effective as daily administration

**Discontinuing Bisphosphonates**

- Low risk patients
  - Low risk patients = no history of fracture or patients with a hip T-score above -2.5
  - After 3 to 5 years
- High risk patients
  - High risk patients = women older than 70 years of age, low hip T-score (≤ -2.5), patients with a previous major osteoporotic fracture, or patients who had a fracture while on bisphosphonate therapy
  - After 10 years
- No taper required for discontinuation
Received treatment with oral (≥ 5 years) or IV (≥ 3 years) bisphosphonate

Hip, spine, or multiple other osteoporotic fractures before or during therapy

Yes

Reassess benefits/risks
Consider continuing therapy or changing to an alternative therapy
Reassess every 2 – 3 years

No

Hip BMD T-Score ≤ -2.5
OR
High fracture risk

Yes

Reassess benefits/risks
Consider continuing therapy for up to 10 years or changing to an alternative therapy
Reassess every 2 – 3 years

No

Consider drug holiday
Reassess every 2 – 3 years

References