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

Medication	**Route**	**Dose**	**Clinical Pearls Adjustments**
Alendronate	Oral	*Prophylaxis*: 5 mg once daily OR 35 mg once weekly *Treatment*: 10 mg once daily OR 70 mg once weekly	- Should be administered first thing in the morning, at least 30 minutes before the first food, beverage, or medication - Should be taken with 8 ounces of plain water - Patient should remain upright for at least 30 minutes and until after first food of the day - The tablet should be swallowed whole; do not chew or suck - CrCl <35 mL/min: Use not recommended
Risedronate	Oral	Immediate release tablet: *Prophylaxis*: 5 mg once daily OR 35 mg once weekly OR 150 mg once a month *Treatment*: 5 mg once daily OR 35 mg once weekly OR 150 mg once a month Delayed release tablet *Treatment*: 35 mg once weekly	Immediate release tablet: - Should be administered first thing in the morning, at least 30 minutes before the first food, beverage, or medication - Should be taken with 8 ounces of plain water - Tablet should be swallowed whole; do not crush or chew Delayed release tablet: - Should be administered immediately after breakfast - Should be taken with 4 ounces of plain water - Patient should remain upright for at least 30 minutes and until after first food of the day - Tablet should be swallowed whole; do not cut, split, crush, or chew - CrCl <30 mL/min: Use not recommended

Ibandronate	Oral OR IV	*Prophylaxis*: 2.5 mg once daily (PO) OR 150 mg once monthly (PO) *Treatment*: 2.5 mg once daily (PO) OR 150 mg once monthly (PO) 3 mg every 3 months (IV)	- 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
Zoledronic acid	IV	*Prophylaxis*: 5 mg once every 2 years *Treatment*: 5 mg once a year	- 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

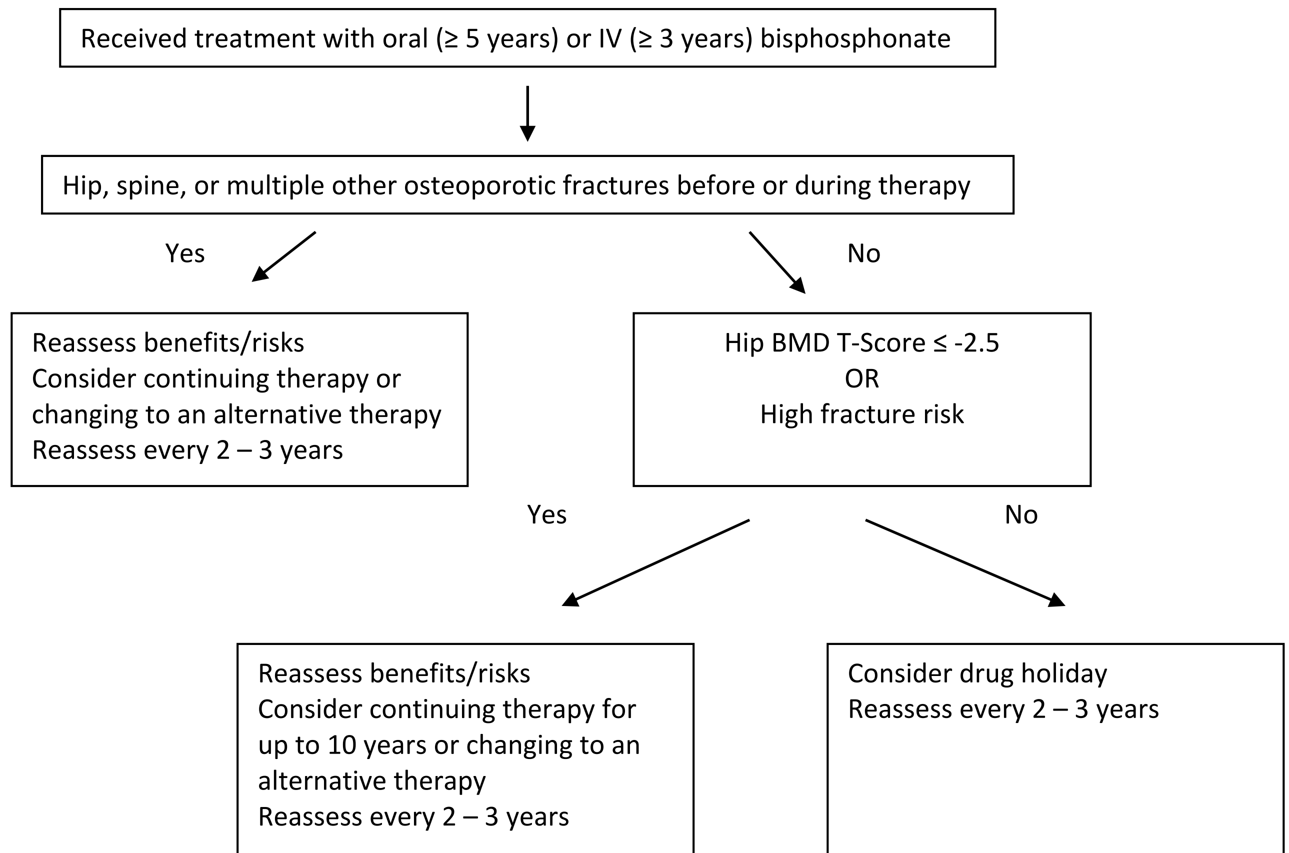
- Erosive esophagitis
  - Linked to Barrett's carcinoma
- Osteonecrosis of the jaw
- Atypical femur fractures
- Musculoskeletal pain
- Gastrointestinal intolerance

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



References

1. Cosman, F., et al. (2014). "Clinician's Guide to Prevention and Treatment of Osteoporosis." Osteoporos Int 25(10): 2359-2381.
2. Adler, R. A., et al. (2016). "Managing Osteoporosis in Patients on Long-Term Bisphosphonate Treatment: Report of a Task Force of the American Society for Bone and Mineral Research." J Bone Miner Res **31**(1): 16-35.
3. Diab, D. L. and N. B. Watts (2013). "Bisphosphonate drug holiday: who, when and how long." Ther Adv Musculoskelet Dis **5**(3): 107-111.