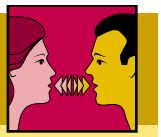
CLIENT TEACHING GUIDELINES
Drugs for Osteoporosis



General Considerations

- Osteoporosis involves weak bones that fracture easily and may cause pain and disability.
- Important factors in prevention and treatment include an adequate intake of calcium and vitamin D (from the diet, from supplements, or a combination of both sources), regular weight-bearing exercise, and drugs that can slow bone loss.
- It is better to obtain calcium and vitamin D from foods such as milk and other dairy products. Approximately 1000 to 1500 mg of calcium and 400 IU of vitamin D are recommended daily.
- If unable to get sufficient dietary calcium and vitamin D, consider supplements of these nutrients. Consult a health care provider about the types and amounts. For example, a daily multivitamin and mineral supplement may contain adequate amounts when added to dietary intake. If taking other supplements, avoid those containing bone meal because they may contain lead and other contaminants that are toxic to the human body. Do not take more than the recommended amounts of supplements; overuse can cause serious, life-threatening problems.
- The main drugs approved for prevention and treatment of osteoporosis are the bisphosphonates (eg, Fosamax, Actonel). These drugs help prevent the loss of calcium from bone, thereby strengthening bone and reducing the risks of fractures.
- For people at high risk for development of osteoporosis (eg, postmenopausal women, men and women who take an oral or inhaled corticosteroid such as prednisone or fluticasone [Flonase]), or those being treated for osteoporosis, a baseline measurement of bone mineral density and periodic follow-up measurements are needed. This is a noninvasive test that does not involve any injections or device insertions.

Self-Administration

- If taking a calcium supplement, calcium carbonate 500 mg twice daily is often recommended. This can be obtained from an inexpensive over-the-counter antacid called Tums, which contains 200 mg of calcium per tablet.
- Do not take a calcium supplement with an iron preparation, tetracycline, ciprofloxacin, or phenytoin. Instead, take the drugs at least 2 hours apart to avoid calcium interference with absorption of the other drugs.
- If taking both a calcium supplement and a bisphosphonate, take the calcium at least 2 hours after the bisphosphonate. Calcium, antacids, and other drugs interfere with absorption of bisphosphonate.
- Take bisphosphonates with 6 to 8 oz of water at least 30 minutes before any food, other fluid, or other medication. Beverages other than water and foods decrease absorption and effectiveness.
- Take a bisphosphonate in an upright position and do not lie down for at least 30 minutes. This helps prevent esophageal irritation and stomach upset.

PRINCIPLES OF THERAPY

Management of Hypocalcemia

Treatment of hypocalcemia includes giving a calcium preparation and perhaps vitamin D.

1. Acute, severe hypocalcemia is a medical emergency and requires IV administration of calcium, usually 10 to 20 mL of 10% calcium gluconate (1 to 2 g of calcium). Doses may be repeated, a continuous infusion may be given, or oral supplements may be used to avoid symptoms of hypocalcemia and maintain normal serum calcium levels (as measured every 4 to 6 hours). Once the condition is stabilized, treatment is aimed toward the underlying cause or preventing recurrence. Serum magnesium levels should also be measured, and, if hypomagnesemia is present, it must be treated before treatment of hypocalcemia can be effective.
2. For less acute situations or for long-term treatment of chronic hypocalcemia, oral calcium supplements are preferred. Vitamin D is given also if a calcium preparation alone cannot maintain serum calcium levels within a normal range.
3. Calcium deficits caused by inadequate dietary intake affect bone tissue rather than serum calcium levels. Calcium supplements can decrease bone loss and fractures, especially in women. Calcium carbonate contains the most elemental calcium by weight (40%) and is inexpensive. It is available in the nonprescription antacid called Tums. Calcium citrate is reportedly better absorbed than calcium carbonate.
4. If hypocalcemia is caused by diarrhea or malabsorption, treatment of the underlying condition decreases loss of calcium from the body and increases absorption.
5. When vitamin D is given to treat hypocalcemia, dosage is determined by frequent measurement of serum calcium levels. Usually, higher doses are given initially and lower doses for maintenance therapy.
6. Calcium salts and vitamin D are combined in many over-the-counter preparations promoted as dietary supplements (Table 26–1). These preparations contain variable amounts of calcium and vitamin D. Calcium 600 mg and vitamin D 200 IU once or twice daily are