alendronate (a-len-dron-ate)

**Indications**

Treatment and prevention of postmenopausal osteoporosis. Treatment of osteoporosis in men. Treatment of Paget’s disease of the bone. Treatment of corticosteroid-induced osteoporosis in patients (men and women) who are receiving 7.5 mg of prednisone/day (or equivalent) with evidence of decreased bone mineral density.

**Action**

Inhibits resorption of bone by inhibiting osteoclast activity. Therapeutic Effects: Reversal of the progression of osteoporosis with decreased fractures. Decreased progression of Paget’s disease.

**Pharmacokinetics**

Absorption: Poorly absorbed (0.6–0.8%) after oral administration.

Distribution: Transiently distributes to soft tissue, then distributes to bone.

Metabolism and Excretion: Excreted in urine.

Half-life: 10 yr (reflects release of drug from skeleton).

**Contraindications/Precautions**

Contraindicated in: Abnormalities of the esophagus which delay esophageal emptying (i.e. strictures, achalasia); Inability to stand/sit upright for at least 30 min; Renal insufficiency (CCr < 35 mL/min); OB, Lactation: Safety not established.

Use Cautiously in: History of upper GI disorders; Pre-existing hypocalcemia or vitamin D deficiency; Receiving chemotherapy or corticosteroids, poor oral hygiene, periodontal disease, dental disease, anemia, esophagitis, infections, or poorly-fitting dentures (may ↑ risk of jaw osteonecrosis).

**Adverse Reactions/Side Effects**

CNS: headache.

EENT: blurred vision, conjunctivitis, eye pain/inflammation.

CV: atrial fibrillation.

GI: abdominal distention, abdominal pain, acid regurgitation, constipation, diarrhea, dyspepsia, dysphagia, esophageal cancer, esophageal ulcer, esophagitis, flatulence, gastritis, nausea, taste perversion, vomiting. Dental: myalgia, photodermatitis, rash, MI, musculoskeletal pain, femur fracture, osteonecrosis (primarily jaw). Genetic: None reported.

**Drug Interactions**

Drug-Drug: Calcium supplements, antacids, and other oral medications ↓ absorption of alendronate. Doses ↓ to 10 mg/day ↑ risk of adverse GI events when used with NSAIDs (65 mg/day) ↑ blood levels.

Drug-Food: Food significantly ↓ absorption. Caffeine (coffee, tea, cola), mineral water, and orange juice also ↓ absorption.

**Route/Dosage**

PO (Adults):

- Treatment of osteoporosis — 10 mg once daily or 70 mg once weekly.
- Prevention of osteoporosis — 5 mg once daily or 35 mg once weekly.
- Treatment of Paget’s disease — 40 mg once daily for 6 mo. Re-treatment may be considered for patients who relapse. Treatment of corticosteroid-induced osteoporosis in men and postmenopausal women — 5 mg once daily. Treatment of corticosteroid-induced osteoporosis in postmenopausal women not receiving estrogen — 10 mg once daily.

**NURSING IMPLICATIONS**

**Assessment**

- Osteoporosis: assess patients for low bone mass before and periodically during therapy.
- Paget’s Disease: assess for symptoms of Paget’s disease (bone pain, headache, decreased visual and auditory acuity, increased skull size). Lab Test Considerations: Assess serum calcium before and periodically during therapy. Hypocalcemia and vitamin D deficiency should be treated before initiating alendronate therapy. May cause mild, transient ↑ of calcium and phosphate.
- Paget’s Disease: Monitor alkaline phosphatase before and periodically during therapy. Alendronate is indicated for patients with alkaline phosphatase twice the upper limit of normal.

**Nursing Considerations**

Potential Nursing Diagnoses
Risk for injury (Indications)

**Implementation**
- PO: Administration first thing in the morning with 6–8 oz plain water 30 min before other medications, beverages, or food. Oral solution should be followed by at least 2 ounces of water. Swallow tablets whole; do not crush, break, or chew.
- For effervescent tablets dissolve 1 tablet in half a glass (4 oz) of plain room temperature water (not mineral water or flavored water). Wait at least 5 minutes after the effervescence stops, stir the solution for approximately 10 seconds and drink contents.

Patient/Family Teaching
- Instruct patient on the importance of taking exactly as directed, first thing in the morning, 30 min before other medications, beverages, or food. Waiting longer than 30 min will improve absorption. Alendronate should be taken with 6–8 oz plain water (mineral water, orange juice, coffee, and other beverages decrease absorption); if a dose is missed, take the missed dose as soon as remembered and resume the next morning; do not double doses or take later in the day. If a weekly dose is missed, take the morning after remembered and resume the following week on the chosen day. Do not take 2 tablets on the same day. Do not discontinue without consulting health care professional.
- Caution patient to remain upright for 30 min following dose to facilitate passage to stomach and minimize risk of esophageal irritation. Advise patient to discontinue alendronate and report back pain or difficulty swallowing, retrosternal pain, or new/worsening heartburn.
- Advise patient to eat a balanced diet and consult health care professional about the need for supplemental calcium and vitamin D.
- Encourage patient to participate in regular exercise and to modify behaviors that increase the risk of osteoporosis (stop smoking, reduce alcohol consumption).
- Advise patient to inform health care professional of abnormal bleeding prior to dental surgery.
- Caution patient to use sunscreen and protective clothing to prevent photosensitivity reactions.
- Advise patient to notify health care professional if blurred vision, eye pain, or inflammation occur.

**Evaluation/Desired Outcomes**
- Prevention or decrease in the progression of osteoporosis in postmenopausal women. Bone density for medication periodically. Consider discontinuation of alendronate after 3–5 years in patients with low risk of fractures. If discontinued, reassess fracture risk periodically.
- Treatment of osteoporosis in men.
- Decrease in the progression of Paget’s disease.
- Treatment of corticosteroid-induced osteoporosis.

Why was this drug prescribed for your patient?

- Advise female patient to notify health care professional if pregnancy is planned or suspected or if she is breast feeding.