**Zoledronic Acid**

**Class:** Bisphosphonate Derivative

**Indications:**

Oncology-related uses: Treatment of hypercalcemia of malignancy (albumin-corrected serum calcium >12 mg/dL); treatment of multiple myeloma; treatment of bone metastases of solid tumors

Nononcology uses: Treatment of Paget’s disease of bone; prevention and treatment of osteoporosis in postmenopausal women; treatment of osteoporosis in men; treatment and prevention of glucocorticoid-induced osteoporosis (in patients initiating or continuing prednisone ≥7.5 mg/day [or equivalent] and expected to remain on glucocorticoids for at least 12 months)

Prevention of bone loss associated with aromatase inhibitor therapy in postmenopausal women with breast cancer; prevention of bone loss associated with androgen deprivation therapy in prostate cancer (unlabeled use)

**Available dosage form in the hospital:** 4MG Vial

**Dosage:**

- **Hypercalcemia of malignancy** (albumin-corrected serum calcium ≥12 mg/dL) (Zometa): I.V.: 4 mg (maximum) given as a single dose. Wait at least 7 days before considering retreatment.

- **Multiple myeloma or metastatic bone lesions from solid tumors (Zometa):** I.V.: 4 mg once every 3-4 weeks

- **Osteoporosis, glucocorticoid-induced, treatment and prevention (Reclast, Aclasta [Canadian brand]):** I.V.: 5 mg once a year

- **Osteoporosis, prevention:** I.V.: Reclast: 5 mg once every 2 years, Aclasta (Canadian brand): 5 mg as a single (one-time) dose

- **Osteoporosis, treatment (Reclast, Aclasta [Canadian brand]):** I.V.: 5 mg once a year; consider discontinuing after 3-5 years of use in patients at low risk for fracture

- **Paget's disease:** I.V.: Reclast: 5 mg as a single dose. Note: Data concerning retreatment is not available; Aclasta (Canadian brand): 5 mg as a single dose. Data concerning retreatment is limited; retreatment with 5 mg (single dose) may be considered for relapse after an interval of at least 1 year from initial treatment.

- **Prevention of aromatase inhibitor-induced bone loss in breast cancer (unlabeled use):** I.V.: 4 mg once every 6 months for 5 years

- **Prevention of androgen deprivation-induced bone loss in nonmetastatic prostate cancer (unlabeled use):** I.V.: 4 mg once every 3 months for 1 year or 4 mg every 12 months
**Renal Impairment**: Note: Prior to each dose, obtain serum creatinine and calculate the creatinine clearance using the Cockcroft-Gault formula.

**Non oncology uses**: Note: Use actual body weight in the Cockcroft-Gault formula when calculating clearance for nononcology uses.

- Clcr ≥35 mL/minute: No dosage adjustment required.
- Clcr <35 mL/minute: Use is contraindicated.

**Oncology uses**: 

*Multiple myeloma and bone metastases:*

- Clcr >60 mL/minute: 4 mg (no dosage adjustment necessary)
- Clcr 50-60 mL/minute: Reduce dose to 3.5 mg
- Clcr 40-49 mL/minute: Reduce dose to 3.3 m
- Clcr 30-39 mL/minute: Reduce dose to 3 mg
- Clcr <30 mL/minute: Use is not recommended.

**Hypercalcemia of malignancy:**

- Mild-to-moderate impairment: No dosage adjustment necessary.
- Severe impairment (serum creatinine >4.5 mg/dL): Evaluate risk versus benefit, not recommended.

**Dosage adjustment for renal toxicity (during treatment):**

- Multiple myeloma and bone metastases: Evidence of renal deterioration: Withhold dose until renal function returns to within 10% of baseline

  - Normal baseline creatinine: Increase of 0.5 mg/dL,
  - Abnormal baseline creatinine: Increase of 1 mg/dL

- Reinitiate therapy at the same dose administered prior to treatment interruption.
- Multiple myeloma: Albuminuria >500 mg/24 hours (unexplained): Withhold dose until return to baseline, then re-evaluate every 3-4 weeks; consider reinitiating with a longer infusion time of at least 30 minutes

**Common side effect:**

Cardiovascular (oncology): Leg edema, hypotension

Central nervous system (oncology and nononcology indications): Fatigue, fever , headache, dizziness, insomnia, anxiety, depression, agitation, confusion, hypoesthesia.

Dermatologic: Alopecia, dermatitis

Endocrine & metabolic: Dehydration, hypophosphatemia, hypokalemia, hypomagnesemia
Gastrointestinal: Nausea, vomiting, constipation, diarrhea, anorexia, abdominal pain, weight loss, appetite decreased

Genitourinary: Urinary tract infection

Hematologic: Anemia, neutropenia

Neuromuscular & skeletal (oncology and nononcology indications): Bone pain, weakness, myalgia, arthralgia, back pain, paresthesia, limb pain, skeletal pain, rigors

Renal: Renal deterioration (up to 40% in patients with abnormal baseline creatinine)

Respiratory: Dyspnea, cough

Miscellaneous: Acute phase reaction, flu-like syndrome

Pregnancy Risk Factor: D