calcium lactate (kal-see-um lak-tate)

Cal-Lac

Classification
Therapeutic: mineral and electrolyte replacements/supplements

Pregnancy Category C

Indications
PO: Treatment and prevention of hypocalcemia. PO: Adjunct in the prevention of postmenopausal osteoporosis.

Action
Essential for nervous, muscular, and skeletal systems. Maintain cell membranes and capillary permeability. Act as an activator in the transmission of nerve impulses and contraction of cardiac, skeletal, and smooth muscles. Essential for bone formation and blood coagulation. Therapeutic Effects: Replacement of calcium in deficiency states.

Pharmacokinetics
Absorption: Absorption from the GI tract requires vitamin D.
Distribution: Readily enters extracellular fluid. Crosses the placenta and enters breast milk.
Metabolism and Excretion: Excreted mostly in the feces; 20% eliminated by the kidneys.
Half-life: Unknown.

TIME/ACTION PROFILE (effects on serum calcium)

ROUTE ONSET PEAK DURATION
PO unknown unknown unknown
IV immediate immediate 0.5–2 hr

Contraindications/Precautions
Contraindicated in: Hypercalcemia; Renal calculi; Ventricular fibrillation.

Use Cautiously in: Patients receiving digitalis glycosides; Severe respiratory insufficiency; Renal disease; Cardiac disease.

Adverse Reactions/Side Effects
CNS: headache, tingling.
CV: arrhythmias, bradycardia.
GI: constipation, nausea, vomiting.
GU: calculi, hypercalciuria.

Interactions
Drug-Drug: Hypercalcemia increases the risk of digoxin toxicity. Chronic use with antacids in renal insufficiency may lead to mild alkalosis. Injection by mouth decreases the absorption of orally administered tetracyclines, fluoroquinolones, phenytoin, and iron salts. Excessive amounts may decrease the effects of calcium channel blockers. Decreases absorption of tetracyclines and iron salts (do not take within 2 hr of calcium supplements). May decrease the effectiveness of oral contraceptives. Concurrent use with diuretics (thiazide) may result in hypercalcemia. May decrease the ability of sodium polystyrene sulfonate to decrease serum potassium.
Drug-Food: Cereals, spinach, or rhubarb can decrease the absorption of calcium supplements. Calcium acetate should not be given concurrently with other calcium supplements.

Route/Dosage
1 gram of calcium lactate contains 130 mg elemental calcium (6.5 mEq calcium).

Hypocalcemia (dosed as calcium lactate)
PO (Adults):— 1.5–3 g/day in 3 divided doses.
PO (Children and Infants): 500 mg/kg/day in 4 divided doses, maximum 9 g/day.
PO (Neonates): 400–500 mg/kg/day in 4–6 divided doses.

NURSING IMPLICATIONS
Assessment
● Calcium Supplement/Replacement: Observe patient closely for symptoms of hypocalcemia (parasthesia, muscle twitching, laryngospasm, colic, cardiac arrhythmias, Gravis’s or Trousseau’s sign). Notify respiratory or other health care professional if these occur. Protect symptomatic patients by elevating and padding siderails and keeping bed in low position.
● Monitor patient for digitalis glycoside toxicity in cases of toxicity.

Lab Test Considerations: Monitor serum calcium or urinary calcium, chloride, sodium, potassium, magnesium, albumin, and parathyroid hormone (PTH) concentrations before and periodically during therapy for treatment of hypocalcemia.

DOSAGE FORMS
● Oral: 4% granules; tablet

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May cause decreased serum phosphate concentrations with excessive and prolonged use.

**Toxicity and Overdose:** Assess patient for nausea, vomiting, anorexia, thirst, severe constipation, paralytic ileus, and bradycardia. Contact physician or other health care professional immediately if these signs of hypercalcemia occur.

**Potential Nursing Diagnoses**
- Imbalanced nutrition: less than body requirements (Indications)
- Risk for injury, related to osteoporosis or electrolyte imbalance (Indications)

**Implementation**
- PO: Administer with plenty of fluids with or following meals.

**Patient/Family Teaching**
- **Calcium Supplement:** Encourage patients to maintain a diet adequate in vitamin D.
- Do not administer concurrently with foods containing large amounts of oxalic acid (spinach, rhubarb), phytic acid (beans, cereals), or phosphorus (milk or dairy products). Administration with milk products may lead to milk-alkali syndrome (nausea, vomiting, confusion, headache). Do not take within 1–2 hr of other medications if possible.
- Instruct patient to take missed doses as soon as possible, then go back to regular schedule.
- Advise patient to avoid excessive use of tobacco or beverages containing alcohol or caffeine.
- **Osteoporosis:** Advise patients that exercise has been found to arrest and reverse bone loss. Patient should discuss any exercise limitations with health care professional before beginning program.

**Evaluation/Desired Outcomes**
- Increase in serum calcium levels.
- Decrease in the signs and symptoms of hypocalcemia.

Why was this drug prescribed for your patient?