teriparatide (ter-i-par-a-tide)
Forteo

Classification
Therapeutic: hormones
Pharmacologic: parathyroid hormones (rDNA origin)

Pregnancy Category C

Indications
Treatment of osteoporosis in postmenopausal women at high risk for fractures. To increase bone mass in men with primary or hypogonadal osteoporosis at high risk for fractures. Treatment of osteoporosis in men and women with glucocorticoid-induced osteoporosis at high risk for fractures. Most useful for those who have failed or are intolerant to other osteoporosis therapies.

Action
Replaces calcium and phosphate metabolism in bone and kidney by binding to specific cell receptors, stimulates osteoblastic activity. Increases serum calcium and decreases serum phosphorus. Therapeutic Effects: Increased bone mineral density with reduced risk of fractures.

Pharmacokinetics
Absorption: Extensively absorbed after subcut administration.
Distribution: Unknown.
Metabolism and Excretion: Metabolized by the liver; metabolites renally excreted.
Half-life: 1 hr (after subcut use).

TIME/ACTION PROFILE (effects on serum calcium)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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</thead>
<tbody>
<tr>
<td>Subcut</td>
<td>2 hr</td>
<td>4–6 hr</td>
<td>16–24 hr</td>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity; Paget's disease of the bone or other metabolic bone disease. Unexplained ↑ alkaline phosphatase; Pregnancy or lactation.

Use Cautiously in: Active or recent urolithiasis.

Adverse Reactions/Side Effects
CV: orthostatic hypotension. MS: muscle spasm.

Interactions
Drug-Drug: Transient hypercalcemia may ↑ the risk of digoxin toxicity.

Route/Dosage
Subcut (Adults): 20 mcg once daily.

NURSING IMPLICATIONS
Assessment
• Assess patient for bone mineral density before and periodically during therapy.
• Lab Test Considerations: Effects ↑ serum calcium and ↓ serum phosphorus. Maximum effect is within 4–6 hr. By 16–hr post-dose, serum calcium has returned to near baseline. If hypercalcemia persists, discontinue teriparatide and evaluate cause of hypercalcemia.

Potential Nursing Diagnoses
Risk for injury (Indications)

Implementation
• Use of teriparatide should not continue more than 2 yr.
• Subcut: Administer subcut into thigh or abdominal wall once daily. May be administered at any time of day without regard to food. Solution should be clear and colorless. Do not use if solid particles appear, or if solution is cloudy or colored. Store pen in the refrigerator; do not freeze or use if it has been frozen. Minimum time out of refrigerator: use immediately and return to refrigerator. Forteo pen can be used for up to 28 days after the first injection. After the 28-day use period, discard the Forteo pen, even if it still contains some unused solution.

Patient/Family Teaching
• Advise patient to administer medication at same time each day. Administer missed doses as soon as remembered that day. Do not take more than one injection/day.
Instruct patient on proper administration technique and disposal of needles. Patient should read Medication Guide and User Manual before starting therapy and re-read them each time prescription is refilled. User manual can be found at www.forteo.com/control/pen user manual. Caution patient to throw pen away after 28-day use period and not to share their pen with other patients.

Discuss the importance of other treatments for osteoporosis (supplemental calcium and/or vitamin D, weight-bearing exercise, modification of behavioral factors such as smoking and/or alcohol consumption).

May cause orthostatic hypotension during first several doses. Caution patient to administer medication in a lying or sitting position. If light-headedness or palpitations occur, lie down until symptoms resolve. Notify health care professional if symptoms persist or worsen.

Instruct patient to notify health care professional if persistent symptoms of hypercalcemia (nausea, vomiting, constipation, lethargy, muscle weakness) occur.

Emphasize the importance of follow-ups for bone mineral density.

Evaluation/Desired Outcomes

- Increased bone mineral density with reduced risk of fractures.

Why was this drug prescribed for your patient?