



PIC QUESTION OF THE WEEK: 4/20/09

Q: Please provide the relative dosage equivalency of thyroid replacement products and discuss some key aspects of drug interactions with these preparations.

A: In 2007, Synthroid® ranked sixth and a generic version of levothyroxine (T₄) placed fifth among dispensed prescriptions in the United States.* Levothyroxine is recommended by the American Association of Clinical Endocrinologists (AACE) as the initial agent of choice for most patients. The typically required *euthyroid* replacement dose in the elderly is approximately 1 mcg/kg/d, while a dose of 1.6 mcg/kg/d is generally necessary for healthy adults. Remember, the elderly and patients with existing cardiovascular disease are especially susceptible to excess thyroid replacement. In these patients, 25 mcg to 50 mcg of T₄ is a common *starting* dose that is adjusted based on subsequent TSH levels (normally repeated in 6-8 weeks).

Approximate Dosage Equivalents of Thyroid Replacement Products	
Preparation	Dosage Equivalent
Thyroid, desiccated	~ 60 – 65 mg (1 grain)
Levothyroxine	60 – 65 mcg
Liothyronine	25 mcg
Liotrix	12.5 mcg T ₃ /50 mcg T ₄ (1 grain)

Calcium and iron supplements can significantly decrease the absorption of levothyroxine. There are various suggestions as to the optimal interval between administration of these products; however, most experts would recommend a *minimum* of two hours between the administration of levothyroxine and use of calcium or iron supplements. Some have even elected to prescribe T₄ at bedtime to reduce the influence of food, calcium, and iron on its absorption. Proton pump inhibitors (PPIs) may also reduce T₄ absorption; however, the clinical significance of this interaction has yet to be resolved. A repeat TSH level may be indicated in some patients receiving combined PPIs and T₄. Taking T₄ two hours before the PPI may be advisable. An excellent review of the many aspects of hypothyroidism and its treatment can be obtained from the *Clinics* review cited below.

* Lamb E. Top 200 prescription drugs of 2007. Pharm Times 2008;74(5):20-3.

References:

- Devdhar M, Ousman YH, Burman KD. Hypothyroidism. Endo Clin North Am 2007;36(3):595-615.
- American Association of Clinical Endocrinologists. Medical guidelines for clinical practice for the evaluation and treatment of hyperthyroidism and hypothyroidism.
http://www.aace.com/pub/pdf/guidelines/hypo_hyper.pdf (Accessed April 14, 2009)

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Alexis L. Kay and Ashley T. Jakosh, Pharm.D. Candidates

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