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## THYROID (Cytomel, Synthroid, others) Fact Sheet [G]

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### Bottom Line:

Thyroid augmentation is often chosen for patients with depression-associated lethargy and fatigue. The usual formulation used is T3 (Cytomel). Response rates in clinical trials are mixed and only modest, but thyroid augmentation is inexpensive and well tolerated and may be worth a try, especially for patients on tricyclics (the evidence is less impressive for SSRI augmentation).

### FDA Indications:

Treatment of hypothyroidism.

### Off-Label Uses:

Augmentation and acceleration of antidepressant response.

### Dosage Forms:

- T3: Triiodothyronine (preferred for psychiatric uses):  
**Liothyronine tablets (Cytomel, [G]):** 5 mcg, 25 mcg, 50 mcg.
- T4: Thyroxine (preferred for hypothyroidism):  
**Levothyroxine tablets (Synthroid, Levoxyl, Levotheroid, [G]):** 25 mcg, 50 mcg, 75 mcg, 88 mcg, 100 mcg, 112 mcg, 125 mcg, 137 mcg, 150 mcg, 175 mcg, 200 mcg, 300 mcg.
- Note: T4 is converted to T3 in the body.
- Thyroid product equivalencies: 100 mcg levothyroxine = 25 mcg liothyronine.

### Dosage Guidance:

T3: 25 mcg daily for one to two weeks, increase to 50 mcg if no response (in elderly, start at 12.5 mg and increase gradually up to 50 mcg). Give in the morning.

**Monitoring:** Check TSH (thyroid stimulating hormone) level before treatment. Repeat every six to 12 months.

**Cost:** \$

### Side Effects:

- Most common: At doses used in augmentation, there are rarely any side effects.
- Serious but rare: Reduced bone density; hyperthyroidism, which might theoretically occur (watch for these symptoms: tremor, palpitations, heat intolerance, sweating, anxiety, increased frequency of bowel movements, shortness of breath, and exacerbation of cardiac arrhythmia).
- Contraindications: Recent MI, adrenal insufficiency.
- Pregnancy/breastfeeding: Considered safe.

### Mechanism, Pharmacokinetics, and Drug Interactions:

- Mechanism for depression not well understood; it may work by generally stimulating metabolism and energy.
- Metabolized by CYP450; t<sub>1/2</sub>: 1 day.
- Caution in patients with warfarin as blood thinning effects may be increased.

### Clinical Pearls:

- Efficacy: Mixed evidence.
- After two failed courses of antidepressants, augmentation with T3 or lithium was compared in the STAR\*D trial. Remission rates with T3 were modest and numerically, but not statistically, higher: 25% with T3 vs 16% with lithium, and lithium patients had more side effects.
- The majority of T3 augmentation studies have been in patients taking TCAs, though there are some data with SSRIs and other antidepressants.
- Efficacy for augmentation in partial or non-responders is independent of baseline TSH. Goal TSH is at or below lower limit of normal range, but caution to avoid hyperthyroid symptoms.

### Fun Fact:

You may have patients ask you about taking “natural” thyroid. They may be referring to desiccated thyroid, which is derived from extracts of bovine or porcine thyroid glands and contains T3 and T4 in a 1:4 ratio (60 mcg contains about 38 mcg of T4 and 9 mcg of T3).