



## HYPOTHYROIDISM

# Patients with hypothyroidism who are taking levothyroxine doses of <125 mcg have more stable serum TSH levels than those on higher doses

### BACKGROUND

Hypothyroidism occurs when the thyroid gland cannot produce enough thyroid hormone to meet the needs of the body. It is diagnosed by an elevated TSH level and low T<sub>4</sub> levels. Primary hypothyroidism is very common, particularly in women, and is reported to affect at least 5% of the US population. After diagnosis, treatment is usually begun with daily levothyroxine (L-T<sub>4</sub>) pills with a goal of restoring the TSH level to the normal range and improving the symptoms of hypothyroidism. Thereafter, current guidelines recommend measuring the TSH level once or twice a year to ensure the L-T<sub>4</sub> dose is appropriate as some patients may require a dose adjustment. However, it is not clear if there are some patients where it may be safe to test the TSH levels less frequently. The purpose of the current study was to determine if there were any factors that could identify a subset of patients that could be monitored safely on a less frequent basis.

### THE FULL ARTICLE TITLE

Pecina J et al Levothyroxine Dosage is Associated with Stability of TSH Values. *Am J Med.* December 2013. pii: S0002-9343(13)01021-8. doi: 10.1016/j.amjmed.2013.11.012 [Epub ahead of print].

### SUMMARY OF THE STUDY

The authors studied 715 patients from the Department of Family Medicine of the Mayo Clinic in Rochester, Minnesota who, in 2006 had been a) diagnosed with hypothyroidism b) were taking L-T<sub>4</sub> replacement and c) had a normal TSH level. Those who were under 18 years old, were pregnant, had thyroid cancer or who were taking drugs such as amiodarone or lithium that interfere with thyroid function were excluded. Patients were followed

for six years until December 31, 2012 and the authors measured how long it took for a patient to develop an abnormal TSH level.

The study found that the only risk factor for having an abnormal TSH level was the dose of L-T<sub>4</sub> that a patient was taking. Those taking more than 125 mcg of L-T<sub>4</sub> per day were much less likely to maintain normal TSH levels over time than those taking less than 125 mcg per day. At 1 year, 91% of the patients taking daily doses of 125 mcg or less continued to have a normal TSH, while only 73% of patients taking more than 125 mcg per day had normal TSH. At 2 years, 75% of patients on doses of 125 mcg or less continued to have TSH levels in the normal range, but only 45% of patients on more than 125 mcg/day had continued normal TSH values.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that hypothyroid patients on L-T<sub>4</sub> doses <125 mcg daily have more stable TSH levels than those on higher doses. This may be due to some residual thyroid function that can help maintain normal TSH levels in patients on lower doses. Further, this study suggests that it may be safe to monitor TSH levels every 2 years instead of at least every year in patients who are taking less than 125 mcg of L-T<sub>4</sub> per day.

— Philip Segal, MD

### ATA THYROID BROCHURE LINKS

Hypothyroidism: <http://www.thyroid.org/what-is-hypothyroidism>

Thyroid Hormone Treatment: <http://www.thyroid.org/thyroid-hormone-treatment>

### ABBREVIATIONS & DEFINITIONS

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

**TSH: thyroid stimulating hormone** — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.



## **HYPOTHYROIDISM**, continued

**Levothyroxine (L-T<sub>4</sub>)**: the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

**Thyroid hormone therapy**: patients with hypothy-

roidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. Replacement therapy means the goal is a TSH in the normal range and is the usual therapy.