



## HYPOTHYROIDISM

### Switching levothyroxine brands frequently results in abnormal thyroid function tests

#### BACKGROUND

Hypothyroidism is a condition in which the thyroid gland is underactive and does not produce enough thyroid hormone. Hypothyroidism can be treated with levothyroxine, the main hormone secreted by the thyroid gland. There are different manufacturers that make levothyroxine. When levothyroxine is branded, for example Synthroid™, Levoxyl™ and Tirosint™ in the United States, Thyrox in Europe, every prescription filled is for that same brand. When levothyroxine is generic (non-branded), prescriptions may be filled with levothyroxine from different manufacturers. Because potency of levothyroxine between manufacturers is variable, there is a possibility that changing brands may affect thyroid function tests. However, there is limited data on the impact of changing brands on thyroid function.

In 2016, the manufacturer of the levothyroxine brand Thyrox experienced an interruption in production that required approximately 350,000 Dutch patients to change their levothyroxine supplier. The current study examined the effect of the shortage of the levothyroxine brand Thyrox in the Netherlands and subsequent switch to a different brand on thyroid stimulating hormone (TSH) levels.

#### THE FULL ARTICLE TITLE

Flinterman LE et al 2020 Impact of a forced dose-equivalent levothyroxine brand switch on plasma TSH: A cohort study. *Thyroid*. Epub 2020 Mar 18. PMID: 32188356  
Summary of the study

Patient information in 2 databases representing more than 25% of the Dutch population were used for this study. Patients taking at least 25 mcg Thyrox daily for at least one year were included. Of these, 85% were women, and the average age was ~60 years. Two groups were included: a group of patients who switched from Thyrox to another brand and a group of patients who continued taking Thyrox. TSH levels were obtained at set intervals for patients in the same group receiving the same dose of levothyroxine. In the group of patients on <100 mcg levothyroxine who continued taking Thyrox daily and had a previously normal TSH, 19% had an abnormal TSH level in follow-up. In the group of patients on <100 mcg levothyroxine who were switched and had a previously normal TSH, 24% of the group had an abnormal TSH level in follow-up. For patients on >100 mcg of levothyroxine, there was a greater difference: 24% of the group taking Thyrox and 63% of those who switched brands had abnormal TSH levels. A low/suppressed TSH was more likely to occur in patients who switched brands than those who continued on Thyrox with no brand switch.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Changing to the same dose of a different brand levothyroxine was associated with abnormal TSH levels in more patients compared to those who continued on the brand Thyrox. These results suggest that switching levothyroxine brands may require a dose change in a larger number of patients.

— Priya Mahajan, MD

#### ATA THYROID BROCHURE LINKS

- Hypothyroidism (Underactive): <https://www.thyroid.org/hypothyroidism/>
- Thyroid Hormone Treatment: <https://www.thyroid.org/thyroid-hormone-treatment/>
- Thyroid Function Tests: <https://www.thyroid.org/thyroid-function-tests/>





## HYPOTHYROIDISM, continued

### ABBREVIATIONS & DEFINITIONS

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

**Levothyroxine (T4):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirosint™ and generic preparations.

**Thyroid hormone therapy:** patients with hypothyroidism 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.

**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.

