



## HYPOTHYROIDISM

### Appropriate treatment with thyroid hormone can decrease the excess death associated with hypothyroidism

#### BACKGROUND

Hypothyroidism causes a wide range of problems in the body, affecting vital systems like heart and blood vessels. Symptoms of hypothyroidism include feeling slow, sluggish, cold, puffy, constipated and dry skin. In its' extreme form, severe hypothyroidism, known as myxedema coma, can cause death. Hypothyroidism can also increase blood cholesterol levels. Because of this, studies have tried to determine the risk of death in patients with hypothyroidism. Some studies showed an increased risk while others showed either no risk or a decreased risk.

This study aimed to investigate the risk of death in patients with hypothyroidism as well as examining the effects of over- and under-treatment of hypothyroidism with thyroid hormone.

#### THE FULL ARTICLE TITLE

Lillevang-Johansen M et al 2018 Over- and under-treatment of hypothyroidism is associated with excess mortality: a register-based cohort study. *Thyroid* 28:566–574. Epub 2018 Apr 26. PMID: 29631518.

#### SUMMARY OF THE STUDY

The study was done in Denmark. Several large national registries were used to collect information about thyroid tests, diagnoses, and filled prescriptions between January 1, 1995 and January 1, 2011. Patients who had at least two elevated TSH levels within a 6-month period or one elevated TSH and two filled thyroid hormone prescriptions in the following year were included in the study. Patients who had thyroid surgery or radioactive iodine treatment, who had earlier hyperthyroidism or pituitary disease, younger than 18 years old, or who were lost to follow-up were excluded from the study. There were 3 groups: 1) hypothyroid patients who were treated with thyroid hormone (2235 individuals, 76.9%),

2) hypothyroid patients who were not treated (673 individuals, 23.1%) and 3) a group of people with normal thyroid function (232,260 individuals). The hypothyroidism group was further divided into 2 groups based on severity: mild and marked hypothyroidism.

There were more women in the hypothyroidism groups (68.1% to 85.6%) compared to those without thyroid problems (55.7%). In the hypothyroidism group, treated patients had higher TSH levels and the untreated group had more additional health problems. Almost all the patients in marked hypothyroidism group were treated with thyroid hormone (96% of females and 95% of males). On the other hand, in the mild hypothyroidism group, 71% of women and only 47% of men were treated. The death rate was significantly higher in the untreated hypothyroidism group compared to those with treated hypothyroidism and those without thyroid problems. Causes of death were similar. Periods of elevated TSH was associated with an increased risk of death in both treated and untreated groups. In the treated group, periods of low TSH (overtreatment) was also associated with an increased risk of death and had a greater impact.

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

This study shows that untreated hypothyroidism was associated with an increased risk of death and appropriate treatment with thyroid hormone decreases this risk. This was true even in the group with mild hypothyroidism. Finally, even with treatment, if the dose of thyroid hormone is not enough, and especially if it is too much, the risk of death was higher. Patients and physicians should discuss treatment goals and make a clear monitoring plan. Regular TSH measurements and follow-ups are important to safely use thyroid hormone, especially to avoid over-treatment.

— Ebru Sulanc, MD, FACE





## HYPOTHYROIDISM, continued

### ATA THYROID BROCHURE LINKS

Hypothyroidism (Underactive): <https://www.thyroid.org/hypothyroidism/>

Thyroid Function Tests: <https://www.thyroid.org/thyroid-function-tests/>

Thyroid Hormone Treatment: <https://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.

**Hyperthyroidism:** a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

**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.

**Levothyroxine (T<sub>4</sub>):** 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. Suppressive therapy means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

