

DRUG INTERACTIONS

Some medications may alter the effectiveness of Thyroxine. The list includes:

- Anticoagulants
- Antidepressants
- Antivirals
- Antimalarials
- Diabetic medications
- Corticosteroids/ anti-inflammatory medications
- Estrogen containing medications
- Heart failure medications e.g. amiodarone
- Iron and Calcium Supplements
- Antacids

RISKS FACTORS FOR HYPOTHYROIDISM

- Those with a family history of autoimmune thyroid disorders
- Postpartum women
- Those with other autoimmune endocrine conditions (e.g. Type 1 Diabetes mellitus, Addison's disease, Ovarian failure)
- Those with non-endocrine autoimmune disorders (e.g. Coeliac disease, Rheumatoid arthritis, Lupus, Vitiligo, Pernicious anemia, and Sjögren syndrome).
- Those living in areas with moderate to severe iodine deficiency

HYPOTHYROIDISM IN AUSTRALIA

Around 1 in 14 Australians suffer with a thyroid condition, with hypothyroidism being the most common. Thyroid conditions affect more females than males, approximately 5:1. Hashimoto's Thyroiditis is the most common cause of thyroid dysfunction. Iodine deficiency has also re-emerged in Australia over recent years and may cause mild thyroid failure if not addressed.

DIET AND NUTRITION

The thyroid gland uses iodine mostly available from the diet to produce thyroid hormones. Foods sources high in iodine include: seafood, some breads, dairy and iodised salt . Too little iodine can cause goitre and lead to hypothyroidism as insufficient iodine results in insufficient thyroid hormone production. Too much iodine can also trigger a thyroid problem in susceptible individuals and aggravate existing thyroid problems where autoimmunity is the cause.

The amino acid tyrosine is needed in combination with iodine to form a precursor hormone that the cells of the thyroid gland convert into T4 and T3. The body is able to make its own tyrosine when required. Selenium is a particularly important mineral for the thyroid gland and the metabolism of thyroid hormone. It is needed for the conversion of T4 into active T3. Brazil nuts are a good source of selenium.

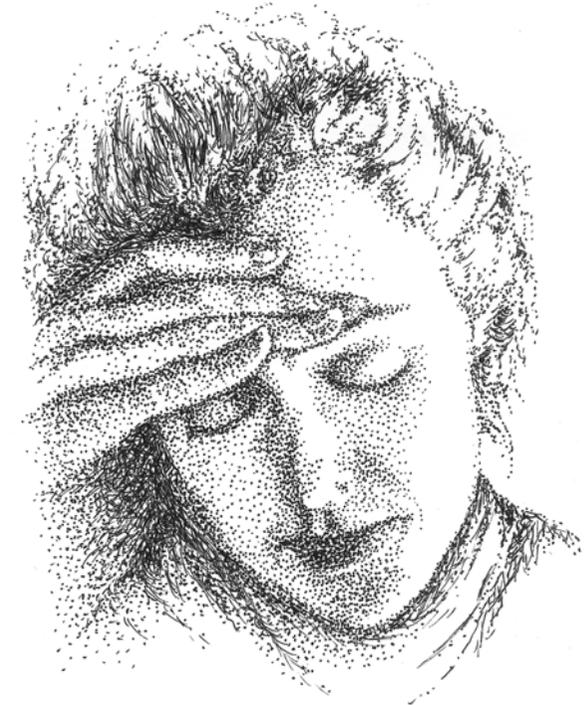
*Disclaimer:
All materials provided by Thyroid Australia are for information purposes only and do not constitute medical advice*

Supported by:

Hypothyroidism



THYROID
AUSTRALIA



*Important Information on
an Underactive Thyroid
Gland*

WHAT IS THE THYROID GLAND?

The thyroid is a gland located in your neck just under the Adam's apple. It is shaped like a butterfly. It is reliant on Thyroid Stimulating Hormone (TSH) which is sent from the pituitary gland in the brain to release two thyroid hormones - Thyroxine (T4) and Triiodothyronine (T3). These hormones are essential for maintaining normal metabolism and control a number of physiological and psychological functions. Under normal circumstances, the release of thyroid hormone into the bloodstream is carefully regulated. When thyroid inflammation or disease occurs, the thyroid may become damaged and unable to maintain normal hormone levels.



WHAT IS HYPOTHYROIDISM?

Hypothyroidism refers to any state in which thyroid hormone production is below normal; an underactive thyroid gland. This results in a deficiency of thyroid hormone and a slower metabolic rate.

CAUSES OF HYPOTHYROIDISM?

- Hashimoto's Thyroiditis (autoimmune)
- Lymphocytic Thyroiditis after Hyperthyroidism
- Thyroid Destruction (from radioactive iodine or surgery)
- Pituitary or Hypothalamic Disease
- Medications e.g. lithium; amiodarone
- Iodine Deficiency
- Congenital abnormalities

SYMPTOMS

- Feeling cold, and lower body temperature
- Low energy; unrelenting fatigue
- Depression (low mood, increased anxiety etc)
- Poor memory and concentration (brain fog)
- Irregular heart rhythm
- Unexplained or excessive weight gain
- Muscle fatigue; swelling; aches; cramps
- Dry, coarse and/or itchy skin
- Dry, coarse and/or thinning hair
- Constipation
- Elevated cholesterol
- Heavy and prolonged periods
- Infertility and miscarriage
- Goitre (enlarged thyroid gland)

THYROID TESTING

Serum TSH should be the first test in the diagnosis of hypothyroidism. An elevated serum TSH level identifies patients with primary hypothyroidism regardless of its cause or severity. Normal serum TSH levels in disease-free populations are typically 0.4 to 4.0 $\mu\text{U/L}$. This reference range is under review and may have its upper limit reduced to 2.5 $\mu\text{U/L}$.

Thyroxine (T4): Free T4 measures the free, unbound thyroxine levels in your bloodstream. Free T4 is typically lowered in hypothyroidism.

Triiodothyronine (T3): Free T3 is the active form of thyroid hormone, as T4 is converted to T3 within the body. Free T3 is typically lowered in hypothyroidism.

Thyroid antibodies may be ordered to search for evidence of autoimmune thyroid diseases, such as Hashimoto's Thyroiditis. Thyroid antibodies (Anti Thyroid peroxidase TPO-Ab and Anti-Thyroglobulin Tg-Ab) may remain positive for years, and do not provide an indication of whether the person has normal or abnormal thyroid function.

TREATMENT

The standard treatment for hypothyroidism is thyroid hormone replacement therapy with thyroxine (T4) in tablet form. The exact amount of T4 prescribed to correct thyroid disorders must be individualized for each patient. When determining the initial dose of T4 physicians take several factors into consideration:

- The patient's age
- The patient's weight
- The patient's heart status
- The severity of hypothyroidism

Total replacement in an adult is calculated at approximately 1.8 $\mu\text{g/kg/day}$.

Blood Tests should be repeated every 6-8 weeks to monitor changes in thyroid hormone levels. A review of blood results and symptoms will indicate the need for increase or decrease in prescribed dose.

Women, who become pregnant, take the contraceptive pill or who start Hormone Replacement Therapy for menopause will need to increase their thyroxine dose.

T4 MEDICATION

- Oroxine and Eutroxsig are the two brand names of thyroxine available in Australia
- Thyroxine needs to be taken on an empty stomach or 3hrs after food for best absorption
- Thyroxine circulates with a 7-10 day half-life
- Thyroxine levels build up slowly in the bloodstream and its full benefit may not be realized for a few weeks to a few months.
- Regular monitoring of blood hormone levels along with clinical evaluation is vital in finding optimal replacement therapy.
- In some cases T3 medication may be required in conjunction with T4 to restore all thyroid hormone levels to normal.