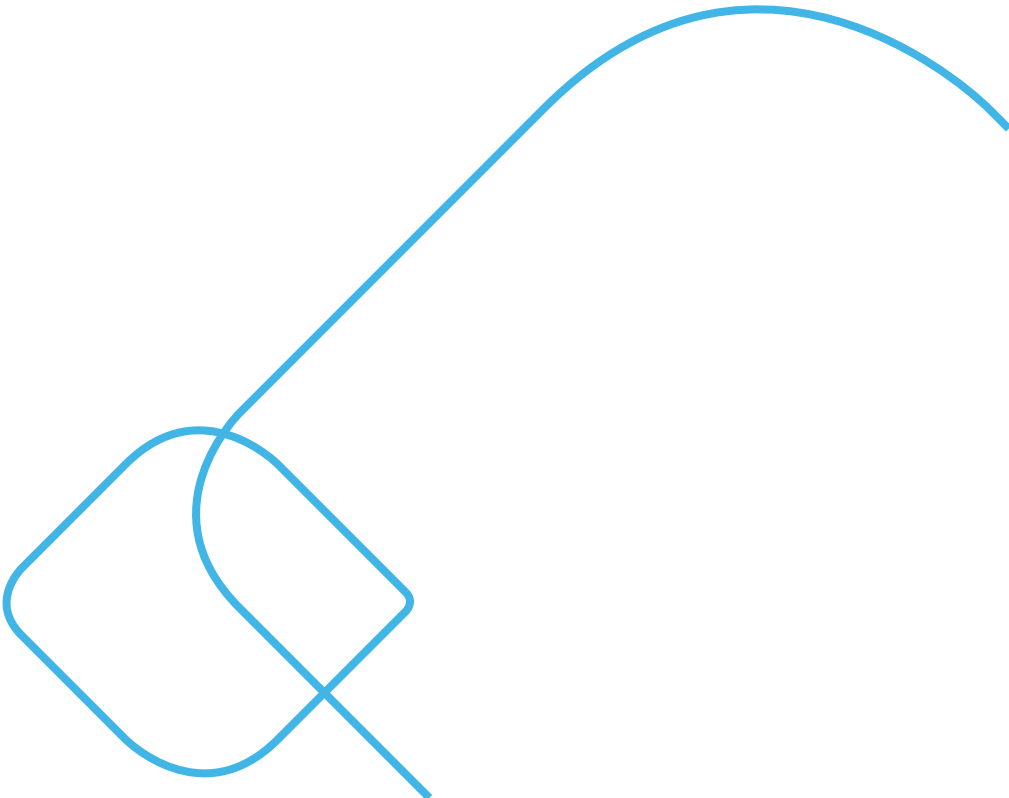


Evidence for

# T3 hormone replacement

In Primary Hypothyroidism



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## What is hypothyroidism?

Hypothyroidism is the name given to the condition resulting from an underactive thyroid gland. This means the thyroid gland is not producing enough thyroid hormone for the body's needs.

A normally functioning thyroid gland releases two hormones: T4 (thyroxine) and T3 (triiodothyronine); the body converts T4 into T3 to meet its requirements.

## What is the treatment for hypothyroidism?

The treatment for hypothyroidism is Levothyroxine (LT4). This is a synthetic version of the thyroxine produced by the thyroid gland.

Good evidence exists that treating hypothyroidism with LT4 alone is sufficient for maintaining good health in most people. We know that once daily LT4 can achieve similar levels of T4 in the blood that would be measured in a person with a healthy thyroid.

## Evidence for LT3 use is weak

Liothyronine (LT3) is a synthetic version of T3. A combined analysis of 11 studies in more than 1200 people concluded that there was no evidence to suggest that the combination of LT4/LT3 is better than using only LT4 in terms of quality of life or other health measures.

## Monitoring LT3 Treatment

LT4 treatment is monitored and adjusted with a blood test to measure Thyroid Stimulating Hormone (TSH). Using TSH to monitor LT3 treatment may not be accurate. This is because LT4 lasts several days in the body and levels are very stable. LT3 lasts a day and the levels vary throughout the day. Therefore, levels of TSH or T3 at one time point may not be a good reflection of optimal thyroid hormone replacement.



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## The RUH, where you matter

### **LT3 Treatment: Safe or unsafe**

Unlike LT4 treatment where there is plenty of information to demonstrate it is safe, there is only 1 observational study which suggests long term safety of combination LT4/LT3 therapy. We know from people with an overactive thyroid that too much thyroid hormone over long periods may cause serious complications. LT3 dosing can give peaks of T3 in the blood that are much higher than would be seen in a healthy patient or in a person treated with LT4.

The peaks in T3 levels associated with LT3 therapy may provoke abnormal heart rhythms in people at risk and would be advised against in patients with heart disease. There are also concerns about too much thyroid replacement increasing the risk of osteoporosis (thin and fragile bones) in the long term.

### **Natural T3 – Armour thyroid**

Armour thyroid (also known as natural desiccated thyroid, NDT) is a dried animal thyroid extract product that is not licensed in the UK. It contains higher amounts of T3 in relation to T4 than are normally present in humans. Furthermore, the proportions of T3 and T4 in each brand can vary. It is not a licensed medication and has not undergone the same safety testing that other medications have. It cannot be prescribed on the NHS. The British Thyroid Association does not recommend its use as it may be unsafe in the long term.

### **What do the thyroid associations say about treatment with LT3?**

The British Thyroid Association does not recommend LT4/LT3 routinely. If it is clear that all other options have been explored then a trial, supervised by endocrinologists, of LT4/LT3 may be considered after discussing the risks and benefits. However, an endocrinologist's clinical judgement may mean that this is not recommended.

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## Comparative cost

LT3 as Liothyronine 10mcg twice daily costs approximately £1,700 per patient per year\*. Synthetic T4 as Levothyroxine 100mcg once daily costs approximately £22 per patient per year. \*BSW Formulary data 2022

## Royal United Hospital Services - referral

Some patients who experience persistent symptoms while taking LT4 ask to trial taking combined LT3/LT4 therapy. Patients who have proven primary hypothyroidism (TSH >10 mu/l), have taken an appropriate dose of LT4 for more than 1 year and in whom the symptoms are not explained by other medical conditions may be referred by their GP to be seen in an Endocrinology clinic. When a patient is referred and their case accepted, they will be added to a waiting list. When seen, they will be assessed to see if a trial of LT3/LT4 is appropriate.

## Further reading

- <https://www.btf-thyroid.org/hypothyroidism-leaflet>
- <https://www.btf-thyroid.org/liothyronine>

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If you would like this leaflet in email form, large print, braille or another language, please contact the Patient Support and Complaints team on 01225 825656.

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Date of publication: December 2024 | Ref: RUH DIA/023  
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