

Patient leaflet about use of liothyronine (T3) in hypothyroidism

This leaflet is based on a joint British Thyroid Association/Society for Endocrinology consensus statement published in Clinical Endocrinology on 06 June 2023. It provides information for people with primary hypothyroidism who do not feel well on levothyroxine treatment and wish to discuss alternative treatments with their doctor.

What is hypothyroidism?

Primary hypothyroidism, also known as thyroid underactivity, is a common disorder of the thyroid gland that causes low levels of thyroid hormone. Around two million people in the UK are known to have hypothyroidism. It is more common as people get older and ten times more women are affected than men. The condition is usually caused by an autoimmune disease (Hashimoto's thyroiditis), treatment for hyperthyroidism (radioactive iodine treatment or surgery), following treatment for thyroid cancer, or radiotherapy treatment for other cancers.

The standard treatment for hypothyroidism is levothyroxine (or L-T4) tablets which are safe and very effective. Most people respond within weeks of starting this treatment and report improved well-being and reduction in the common symptoms of hypothyroidism, e.g. tiredness, feeling cold, muscle aches and brain fog.

I don't feel well on levothyroxine. What can I do?

Some people continue to experience ongoing symptoms even when the results of their blood tests show they are on the correct dose of L-T4. It is not well understood why some patients do not feel well when treated with L-T4. This could be due to various reasons including the person having other health conditions (also called co-morbidities).

In this case your doctor would be recommended to consider the following steps

1. Consider adjusting the levothyroxine prescription dose to see if a change of dose improves symptoms
2. Exclude other health conditions or life-style factors as being the cause of your ongoing symptoms
3. Confirm whether the original diagnosis of primary hypothyroidism was correct.

In some people it is possible that they may not actually require levothyroxine because the initial blood tests at the time of diagnosis were only temporarily abnormal and would have returned to normal without treatment. For this reason, your doctor may consider a trial off levothyroxine. You would simply stop levothyroxine for some weeks and have blood tests after this to determine if you can remain off it.

Are there alternative treatments for hypothyroidism?

The thyroid gland produces thyroid hormone in the form of thyroxine (T4) and tri-iodothyronine (T3). The majority of the thyroid hormone produced is in the form of T4. T4 is converted to T3 in tissues of the body.

Levothyroxine (L-T4) contains T4, and this is converted to T3 in the body. T3 is available in the form of a tablet, L-T3 (liothyronine), but this is **not** recommended for routine use in hypothyroidism.

Natural desiccated thyroid (NDT), also known as desiccated thyroid extract (DTE), is produced from animal thyroid and is not recommended for use.

If your doctor believes that your symptoms are not well managed by treatment with levothyroxine (L-T4) alone they may suggest a trial of (L-T3) liothyronine in addition to L-T4. This is called combination L-T3/L-T4 treatment.

Why is liothyronine not routinely prescribed?

Even though there have been many studies looking into the effectiveness of L-T3, the research has not shown that it is a better treatment option (either on its own, or combination with L-T4) than L-T4 alone. Despite this, a small number of patients find that their symptoms do improve with L-T3 treatment.

Is liothyronine a safe treatment for hypothyroidism?

Compared with L-T4, there has been only limited research carried out on the safety of L-T3. Most of the trials which have compared patients treated with L-T4 and a combination L-T3/L-T4 do not show risks to their health, provided that the thyroid hormone levels are maintained within a normal range.

Importantly, L-T3 is not recommended in pregnancy since it does not cross the placenta and there is a risk that the baby will not receive the correct amount of thyroid hormone to develop properly.

Combination L-T4/L-T3 treatment is more likely than L-T4 therapy alone to cause the thyroid hormone levels to be too high.

It is important to remember that overtreatment with either medication can lead to increased risks of an irregular heart rhythm, strokes, other forms of heart disease, fractures and osteoporosis. Overtreatment can be determined by blood tests. It is therefore essential that you take this medication only as prescribed by your doctor and ensure that you have follow up thyroid blood tests to check you are taking the correct dose. It is dangerous to increase your L-T3 dose without medical supervision.

Will I be prescribed liothyronine?

The decision to start treatment with L-T3 should always be reached following a discussion between you and your doctor. NHS doctors are not obliged to start this treatment, or to continue prescribing it to someone who was prescribed it by another doctor. This is because the evidence from clinical trials of combination L-T3/L-T4 shows that it does not improve symptoms for most people.

If your doctor has prescribed L-T3 for you, it is because they think your ongoing symptoms of hypothyroidism may improve with this treatment. You have probably been prescribed this medicine in combination with L-T4 on a trial basis to see if this is more effective for you than L-T4 alone.

Before starting the trial, your doctor may ask you to answer a few short questions as part of a Quality-of-Life questionnaire. By answering the same questions at the end of the trial you and your doctor will have a better understanding about whether the treatment has improved your symptoms.

How is liothyronine prescribed?

L-T3 is usually prescribed in combination with L-T4 (combination therapy). It should only be prescribed on its own (monotherapy) for patients who have a confirmed allergy to L-T4 or to the ingredients commonly used in its tablet form.

L-T3 should not be used in pregnancy, or in children or adolescents. If you are planning a pregnancy, you should discuss this with your doctor.

L-T3 should not be used in people with known heart disease or osteoporosis, and should be used with caution in people at high risk of these conditions.

Your doctor will advise you how and when to take your tablets. To get the maximum benefit from them it may be necessary to split the tablet.

What should I do if I forget to take my tablet?

If you miss a dose of this medicine, take it as soon as possible. However, if it is almost time for your next dose, skip the missed dose and go back to your regular dosing schedule. You should not take double doses of L-T3.

The morning dose of L-T3 can be taken on an empty stomach with L-T4 (if you are taking a combination of both medications) but a split dose (2nd dose) of L-T3 can be taken with or without food later in the day.

What to do if I feel unwell while taking liothyronine?

Contact your doctor right away if you start to have chest pain, fast or irregular heartbeat, excessive sweating, difficulty with breathing, heat intolerance, nervousness, sleeplessness, tremors, change in appetite, weight gain or loss, vomiting, diarrhoea or fever. These could be symptoms of too much thyroid medication in your body.

What follow up care should I expect while I am taking liothyronine?

Depending on local agreement between hospital doctors and GPs, once your thyroid levels are stable your follow up care may remain with your endocrinologist or you may be discharged back to your GP for ongoing monitoring, as necessary.

How often should I be followed up, and with who?

The frequency of follow up appointments and bloods test will be tailored for individual

patients. However, once you are on a stable dose of medication, the frequency of blood tests will usually be 6-12 monthly.

If your thyroid tests show that you are being overtreated, as indicated by a blood TSH level below the reference range, then you may be at increased risk of health problems. In this case more detailed monitoring (such as your bones and heart health), may be requested, along with recommendations to reduce doses of L-T4 and/or L-T3.

How will I know if the trial has been successful?

Not all patients find that their symptoms improve with L-T3 so your doctor will monitor whether it is benefiting you. Your thyroid function tests should be maintained within the normal reference range over a period of 3-6 months, and once this is achieved, and if your symptoms have improved, your doctor may decide that you should continue to use this medication.

What happens if the trial is successful?

If the trial is successful, you should be able to continue to receive L-T3 on prescription. Depending on where you live, you may see a specialist for periodic review, or you may be discharged to your GP with advice from the thyroid specialist on the dose of medication you need and what monitoring is required in future.

What happens if the trial is not successful?

If your symptoms do not improve during the period that you are prescribed a trial of L-T3 your doctor will recommend stopping L-T3 and will continue to prescribe you L-T4 only.

Are there other steps I can take to help myself?

Other lifestyle factors are very important to our overall health and well-being. It is recommended that you follow a healthy diet, take regular exercise, have adequate sleep and try to reduce stress.

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Further information:

British Thyroid Foundation

www.btf-thyroid.org



British Thyroid Association

<https://www.british-thyroid-association.org/>



Society for Endocrinology
<https://www.yourhormones.info/>

