NHS
Hertfordshire and
West Essex
Integrated Care Board

Liothyronine Review Algorithm

Summary
This algorithm should be used for existing patients on liothyronine tablets i.e. those initiated privately **or** under NHS services prior to 2021.

Primary care:

- GPs **should not** take on prescribing of liothyronine for patients initiated in private clinics, abroad, or via other self-funded routes.
- **Where private patients are unable to continue to self-fund**, they should be reviewed by the primary care prescriber to establish if they meet the NHS initiation criteria (as outlined in the algorithm below). Where a patient **does not** meet these criteria, they should be advised that prescribing under the NHS is not supported, therefore where possible they should stay with their private provider. Where this is not possible, they should be changed to levothyroxine monotherapy by the primary care prescriber. If specialist opinion is required, GPs should refer to the physician who originally initiated liothyronine (wherever possible).
- Where a patient **does appear** to meet the NHS initiation criteria, they should be referred to a consultant NHS Endocrinologist for review, with consideration given by the consultant NHS Endocrinologist to switching to levothyroxine monotherapy where patients do not meet NHS initiation criteria. Where a switch to levothyroxine is recommended, this can take place in primary care using guidance detailed in the Hertfordshire & West Essex (HWE) liothyronine position statement, (with further specialist advice provided if required via NHS e-Referral Service (e-RS) advice and guidance).
- Patients who have been seen privately retain the option of being referred back to the private service for private prescription.
- **Where a patient was started under NHS services prior to 2021** the patient should be reviewed against the NHS initiation criteria (as for private patients who are unable to continue to self-fund). Where a patient **does not** meet these criteria, they should be advised that prescribing under the NHS is no longer supported and they should be changed to levothyroxine monotherapy by the primary care prescriber. If specialist opinion is required, GPs should refer to the physician who originally initiated liothyronine (wherever possible). Only patients who **appear to meet** the NHS initiation criteria should be referred to a consultant NHS Endocrinologist for further assessment.

Secondary care:

- Patients to be reviewed against the NHS initiation criteria (as outlined in the algorithm below).
- Only patients who fulfil the NHS initiation criteria should be offered liothyronine under NHS services.
- Where a patient **does not** meet the NHS initiation criteria, they should be switched to levothyroxine monotherapy.

Key Messages:

- **NHS prescribing of natural thyroid/unlicensed products**
  Where a patient is taking a natural thyroid/unlicensed product (& wishes to remain on it) the patient should be advised that prescribing under the NHS **is not supported** as the safety, quality and efficacy of these products cannot be assured,[3] where possible the patient should stay with their private provider.
- **NHS prescribing of liothyronine monotherapy**
  Liothyronine monotherapy **is not recommended** in the management of hypothyroidism except in the following situations:
    - Some cases of thyroid cancer (see below)
    - Rare cases of levothyroxine induced liver injury

  Where possible the patient should stay with their private provider.

  Liothyronine is recommended as part of the management of thyroid cancer in preparation for radioiodine remnant ablation (RRA), radioiodine therapy (I131) or in preparation for a sestamibi parathyroid scan. Prescribing and related responsibilities should remain with the specialist as this is for short-term use, this is not suitable for continuation in primary care.[2,3]
- **Switching to levothyroxine monotherapy (for patients currently on liothyronine monotherapy, or liothyronine/levothyroxine combination therapy)**
  Primary care: Conversion from liothyronine to levothyroxine should be undertaken using guidance detailed in the HWE liothyronine position statement. If a specialist opinion is required then the referral should be to the physician who originally initiated liothyronine (wherever possible).
  Secondary care: Where a switch to levothyroxine is recommended following review by a consultant NHS Endocrinologist, this can take place in primary care using guidance detailed in the HWE liothyronine position statement, (with further specialist advice provided if required).

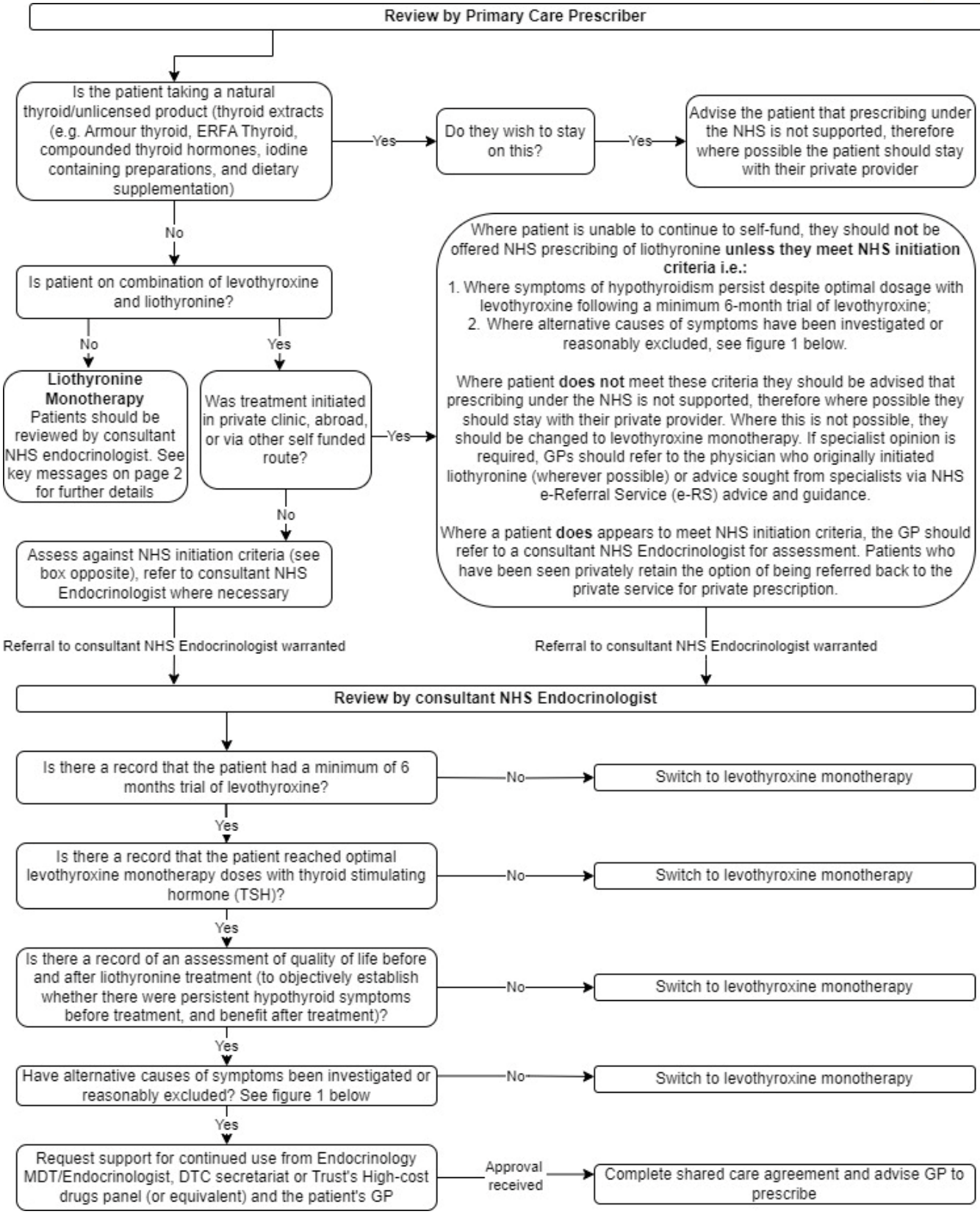
Review by Primary Care Prescriber
Is the patient taking a natural thyroid/unlicensed product (thyroid extracts (e.g. Armour thyroid, ERFA Thyroid, compounded thyroid hormones, iodine containing preparations, and dietary supplementation)
Yes
Do they wish to stay on this?
Yes
Advise the patient that prescribing under the NHS is not supported, therefore where possible the patient should stay with their private provider
No
Is patient on combination of levothyroxine and liothyronine?
No
Yes
Liothyronine Monotherapy
Patients should be reviewed by consultant NHS endocrinologist. See key messages on page 2 for further details
Was treatment initiated in private clinic, abroad, or via other self funded route?
Yes
Where patient is unable to continue to self-fund, they should not be offered NHS prescribing of liothyronine unless they meet NHS initiation criteria i.e.:
1. Where symptoms of hypothyroidism persist despite optimal dosage with levothyroxine following a minimum 6-month trial of levothyroxine;
2. Where alternative causes of symptoms have been investigated or reasonably excluded, see figure 1 below.
Where patient does not meet these criteria they should be advised that prescribing under the NHS is not supported, therefore where possible they should stay with their private provider. Where this is not possible, they should be changed to levothyroxine monotherapy. If specialist opinion is required, GPs should refer to the physician who originally initiated liothyronine (wherever possible) or advice sought from specialists via NHS e-Referral Service (e-RS) advice and guidance.
Where a patient does appears to meet NHS initiation criteria, the GP should refer to a consultant NHS Endocrinologist for assessment. Patients who have been seen privately retain the option of being referred back to the private service for private prescription.
No
Assess against NHS initiation criteria (see box opposite), refer to consultant NHS Endocrinologist where necessary
Referral to consultant NHS Endocrinologist warranted
Referral to consultant NHS Endocrinologist warranted
Review by consultant NHS Endocrinologist
Is there a record that the patient had a minimum of 6 months trial of levothyroxine?
No
Switch to levothyroxine monotherapy
Yes
Is there a record that the patient reached optimal levothyroxine monotherapy doses with thyroid stimulating hormone (TSH)?
No
Switch to levothyroxine monotherapy
Yes
Is there a record of an assessment of quality of life before and after liothyronine treatment (to objectively establish whether there were persistent hypothyroid symptoms before treatment, and benefit after treatment)?
No
Switch to levothyroxine monotherapy
Yes
Have alternative causes of symptoms been investigated or reasonably excluded? See figure 1 below
No
Switch to levothyroxine monotherapy
Yes
Request support for continued use from Endocrinology MDT/Endocrinologist, DTC secretariat or Trust's High-cost drugs panel (or equivalent) and the patient's GP
Approval received
Complete shared care agreement and advise GP to prescribe

Figure 1:

Other potential causes of persistent symptoms, despite patients TSH remaining in the reference range, to consider:

- Rule out other conditions/comorbities[1] – see table below:

Box 1: Possible causes of persistent symptoms in euthyroid patients on levothyroxine:

Endocrine / autoimmune	Haematol-ogical	End organ damage	Nutritional	Metabolic	Drugs	Lifestyle	Other
Diabetes mellitus Adrenal insufficiency Hypopituita-rism Coeliac disease Pernicious anaemia	Anaemia Multiple myeloma	Chronic liver disease Chronic kidney disease Congestive cardiac failure	Deficiency of any of the following: Vitamin B12 Folate Vitamin D Iron	Obesity Hypercalc-aemia Electrolyte imbalance	Betablock-ers Statins Opiates	Stressful life events Poor sleep pattern Work-related exhaustion Alcohol excess	Obstructive sleep apnoea Viral and post viral syndromes including long covid Chronic fatigue syndrome Carbon monoxide poisoning Depression and anxiety Polymyalgia rheumatica Fibromyal-gia Oestrogen Deficiency (menopaus e)

- Confirm with the patient that they are taking their levothyroxine as intended:
- Check the patient's adherence to their levothyroxine
- Establish the frequency of any missed doses.
- Check that levothyroxine is taken at least 1 hour before food (including dietary fibre, milk and soya products) and 4 hours before or after antacids, calcium or iron supplements
- Establish whether there have been any changes in the patient's levothyroxine tablet formulations
- Consider consistently prescribing a specific product known to be well tolerated by the patient. If symptoms or poor control of thyroid function persist (despite adhering to a specific product), consider prescribing levothyroxine oral solution as per MHRA
- In some cases, a retrospective review of the original diagnosis of overt hypothyroidism may be necessary. If there is no biochemical evidence of overt hypothyroidism, a gradual withdrawal of all thyroid hormone preparations is indicated.

Supporting information:

HWEICB liothyronine shared care protocol

HWEICB liothyronine position statement

HWEICB liothyronine patient information leaflet

References:

1. Ahluwalia, R., Baldeweg, S.E., Kristien Boelaert, Chatterjee, K., Dayan, C., Onyebuchi Okosieme, Priestley, J., Taylor, P.N., Vaidya, B., Zammitt, N.N. and Simon (2023). Use of liothyronine (T3) in hypothyroidism: Joint British Thyroid Association/Society for endocrinology consensus statement. *Clinical Endocrinology*, 99(2), pp.206–216. doi:https://doi.org/10.1111/cen.14935.
2. www.england.nhs.uk. (2023a). *NHS England» Items which should not routinely be prescribed in primary care: policy guidance*. [online] Available at: https://www.england.nhs.uk/long-read/items-which-should-not-routinely-be-prescribed-in-primary-care-policy-guidance/.
3. www.england.nhs.uk. (2023b). *NHS England» Liothyronine – advice for prescribers*. [online] Available at: https://www.england.nhs.uk/long-read/liothyronine-advice-for-prescribers/

Version	2.0 • Rebadged with HWE ICB and removal of ENHCCG and HVCCG headers. • Review date removed and replaced with standard statement. • Updates based on most recent recommendations/guidelines.
Developed by	Pharmacy and Medicines Optimisation Team
Date approved/updated	Published and approved February 2021 and APC September 2024
Review date	The recommendation is based upon the evidence available at the time of publication. This recommendation will be reviewed upon request in the light of new evidence becoming available.