Liothyronine in combination with levothyroxine shared care agreement
*(Existing patients only (BLACK for new))

1. REFERRAL CRITERIA
   - Shared Care is only appropriate if it provides the optimum solution for the patient.
   - Prescribing responsibility will only be transferred when it is agreed by the consultant and the patient’s GP that the patient’s condition is stable or predictable.
   - Patients will only be referred to the GP once the GP has agreed in each individual case.
   - When transferred, the patient will be given a supply of liothyronine sufficient for 4 weeks maintenance therapy after a minimum of 3 months treatment (See appendix 1)

2. AREAS OF RESPONSIBILITY

<table>
<thead>
<tr>
<th>GP responsibilities</th>
<th>Consultant responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To not initiate liothyronine in any new patients</td>
<td>1. To ensure that all alternative causes of symptoms have been excluded (See appendix 2)</td>
</tr>
<tr>
<td>2. Encourage patients to attend their annual follow-up appointment with a NHS endocrinologist for patients established on liothyronine</td>
<td>2. To assess the patient, establish the diagnosis and confirm the need for liothyronine</td>
</tr>
<tr>
<td>3. Follow specialist dosing and monitoring recommendations</td>
<td>3. Undertake baseline ECG if deemed appropriate.</td>
</tr>
<tr>
<td>4. To monitor side effects of treatment and seek advice from the specialist if necessary</td>
<td>4. To prescribe, monitor and assess response biochemically and assess physical and psychological wellbeing after at least 3 months of treatment and until treatment dose is stabilised.</td>
</tr>
<tr>
<td>5. Report any adverse events via the Yellow Card Scheme of the Medicines and Health Care Regulatory Agency (MHRA) at <a href="http://www.yellowcard.mhra.gov.uk">www.yellowcard.mhra.gov.uk</a></td>
<td>5. Advise GP of frequency of TSH, free T4 and free T3 monitoring.</td>
</tr>
<tr>
<td>6. To liaise with the specialist regarding any complications of treatment</td>
<td>6. For established patients agree a follow up schedule. At each appointment, after clinical review and discussion with patient, consider feasibility of switching to levothyroxine and/or dose reduction in liothyronine.</td>
</tr>
<tr>
<td>7. To deal with general health issues of the patient</td>
<td>7. Inform GP of clinical reasons for continuing liothyronine and include dosing and monitoring information.</td>
</tr>
<tr>
<td>8. To check for possible drug interactions when newly prescribing concurrent medication</td>
<td>8. If patient is suitable for switching, manage the switch to levothyroxine before transferring care of the patient back to the GP</td>
</tr>
<tr>
<td>9. To be available for advice if the patient’s condition changes and to arrange for the patient to be followed up as necessary</td>
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</tr>
</tbody>
</table>

Patient responsibilities
1. Report to the specialist or GP if he/she does not have a clear understanding of the treatment.
2. Share any concerns in relation to treatment with liothyronine
3. Present rapidly to the GP or secondary care specialist should their condition significantly worsen.
4. Report any other adverse effects to the specialist or GP whilst taking liothyronine
5. Agree to attend for blood tests, specialist appointments and monitoring when required.

3. COMMUNICATION AND SUPPORT

i. Hospital contact:
   University Hospitals of Derby & Burton NHS Foundation Trust.
   Consultant/nurse via switchboard: 01332 340131
   Endocrinology team.

Chesterfield Royal Hospital Foundation Trust
Consultant via switchboard: 01246 277271

ii. out of hours contact and procedures:
Pharmacy, UHDB, ask for on-call pharmacist via switchboard: 01332 340131
Endocrinology, UHDB, ask for on-call Endocrinologist Consultant via switchboard: 01332 340131
Contact the CRH on-call Medic for the relevant specialty via switchboard: 01246 277271
### 4. CLINICAL INFORMATION

#### i. Prescribed indications
- Used for the treatment of coma of myxoedema, the management of severe chronic thyroid deficiency and hypothyroid states occurring in the treatment of thyrotoxicosis.
- Liothyronine sodium may be preferred for treating severe and acute hypothyroid states because of its rapid and more potent effect, but thyroxine sodium is normally the drug of choice for routine replacement therapy.
- Liothyronine can be used to treat ongoing symptoms of hypothyroidism that have a significant impact on quality of life despite adequate biochemical resolution of hypothyroidism with levothyroxine monotherapy.

#### ii. Therapeutic summary
Liothyronine is a manufactured form of triiodothyronine, a thyroid hormone.

#### iii. Dose & Route of administration
Initially 10-20 micrograms daily; increased to a maximum of 60 micrograms daily in 2-3 divided doses, dose should be increased gradually, smaller initial doses given for the elderly.

Daily doses of liothyronine >60mcg/day outside of this shared care agreement.

Method of administration
Liothyronine should be taken orally. Based on cost effective grounds & information provided by the company the local Trusts have agreed that the liothyronine tablets may be halved, using the score line of the tablet, to help administer doses.

#### iv. Duration of treatment
Indefinite

#### v. Adverse effects
**Rare or very rare**
- Alopecia; angina pectoris (more common at excessive dosage); arrhythmia (more common at excessive dosage); diarrhoea (more common at excessive dosage); heat intolerance; muscle cramps; muscle weakness; palpitations (more common at excessive dosage); tachycardia (more common at excessive dosage); vomiting (more common at excessive dosage)

**Frequency not known**
- Agitation; fever; flushing; headache; hyperhidrosis; insomnia (more common at excessive dosage); oedema; restlessness (more common at excessive dosage); skin reactions; tremor (more common at excessive dosage); weight decreased

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Action to be taken</th>
<th>By whom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina, arrhythmia</td>
<td>Stop Liothyronine, check TSH &amp; discuss with specialist.</td>
<td>GP</td>
</tr>
<tr>
<td>Palpitations, restlessness, tremor, diarrhoea, headache, muscle cramps</td>
<td>Continue liothyronine, check TSH</td>
<td>GP</td>
</tr>
</tbody>
</table>

For a full list of all potential adverse event please refer to the spc.

#### vi. Monitoring Requirements
- Monitoring is by TSH levels measured from blood tests taken prior to the morning medication.
- The aim of the treatment is to maintain TSH of 0.4-2.5mU/L with the T3 and T4 in the normal range.

Specialist:
Initial biochemical monitoring and treatment for at least 3 months and also following a dose change for at least 6-8 weeks.

Annual follow-up to consider feasibility of switching to levothyroxine
GP:
Monitoring after dose stabilization which should only be required annually unless there is a change in symptoms that may warrant the checking of TSH levels.

vii. Clinically relevant drug interactions

- Liothyronine sodium therapy may potentiate the action of anticoagulants. Phenyltoin levels may be increased by liothyronine. Anticonvulsants, such as carbamazepine and phenyltoin enhance the metabolism of thyroid hormones and may displace thyroid hormones from plasma proteins. Initiation or discontinuation of anticonvulsant therapy may alter liothyronine dose requirements.
- If co-administered with cardiac glycosides, adjustment of dosage of cardiac glycoside may be necessary.
- Colestyrnamine and colestipol given concurrently reduces gastrointestinal absorption of liothyronine.
- Liothyronine raises blood sugar levels and this may upset the stability of patients receiving antidiabetic agents.
- Liothyronine increases receptor sensitivity to catecholamines thus accelerating the response to tricyclic antidepressants. A number of drugs may affect thyroid function tests and this should be borne in mind when monitoring patients on liothyronine therapy.
- Co-administration of oral contraceptives may result in an increased dosage requirement of liothyronine sodium.
- Amiodarone may inhibit the de-iodination of thyroxine to triiodothyronine resulting in a decreased concentration of triiodothyronine with a rise in the concentration of inactive reverse triiodothyronine.
- As with other thyroid hormones, Liothyronine may enhance effects of amitriptyline and effects of imipramine.
- Metabolism of thyroid hormones accelerated by barbiturates and primidone (may increase requirements for thyroid hormones in hypothyroidism).
- Requirements for thyroid hormones in hypothyroidism may be increased by oestrogens.

This list is not exhaustive. The manufacturer's summary of product characteristics (SPC) and the most current edition of the British National Formulary should be consulted for full information on contra-indications, warnings, side-effects and drug interactions.

viii. Contra-indications

Liothyronine is contraindicated in: (Discuss with NHS Endocrinologist)
- Known hypersensitivity to the drug or any of its excipients
- Thyrotoxicosis
- Cardiac arrhythmias
- Angina
- Pregnancy

ix. Supply of ancillary equipment

Not applicable

x. Supply, storage and reconstitution instructions

Not applicable

xi. Prepared by

Dominic Moore- Lead Pharmacist Commissioning University Hospitals of Derby & Burton

This does not replace the SPC, which should be read in conjunction with it.
Date Prepared: October 2019 Review Date: September 2022
Hospital No: «HOSPITAL_NUMBER»
NHS No: «NHS_NUMBER»

{Insert date}

PRIVATE & CONFIDENTIAL
«GP_TITLE» «GP_INITIALS» «GP_SURNAME»
«GP_ADDRESS_1»
«GP_ADDRESS_2»
«GP_ADDRESS_3»
«GP_ADDRESS_4»
«GP_POSTCODE»

DERBYSHIRE JAPC SHARED CARE AGREEMENT LETTER

Dear «GP_TITLE» «GP_SURNAME»

«FORENAME_1» «SURNAME» «DATE_OF_BIRTH»
«CURRENT_ADDRESS_1» «CURRENT_ADDRESS_2» «CURRENT_ADDRESS_3»
«CURRENT_ADDRESS_4» «CURRENT_POSTCODE»

Your patient was seen on {Insert date} with a diagnosis of {Insert diagnosis}. I have initiated the following medication {Insert drug name} and am writing to ask you to participate in the shared care for this patient.

This medication has been accepted as suitable for shared care by the Derbyshire Joint Area Prescribing Committee (JAPC). I agree to the secondary care responsibilities set out in the shared care agreement for this medication (available from www.derbyshiremedicinesmanagement.nhs.uk клинические гайдлайн на обслуживание пациентов. я должен получить ваше согласие на участие в обслуживании этого пациента. Где предварительные анализы установлены в соответствии с условиями, я направляю эти результаты ниже.

<table>
<thead>
<tr>
<th>Dose Regimen</th>
<th>Date {Insert medicine name} started</th>
<th>Date for GP to start prescribing {Insert medicine name} from</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

The baseline test results are (if applicable):

I confirm I have explained to the patient: the risks and benefits of treatment, the baseline tests conducted the need for monitoring, how monitoring will be arranged, and the roles of the consultant / nurse specialist, GP and the patient in shared care. I confirm the patient has understood and is satisfied with this shared care arrangement at this time.

If you do NOT wish to participate in shared care for this patient, usually under clinical grounds, please complete the attached form.

Yours sincerely

{Consultant name}
**GP RESPONSE TO SHARED CARE** (only complete & send if **NOT** participating in shared care)

Shared care is produced by GPs and specialists knowledgeable in the field of that drug usage. The shared care has been approved by the JAPC. This allows a more convenient service to the patient and cost effective use of NHS resources.

<table>
<thead>
<tr>
<th>Patient:</th>
<th>NHS No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant:</td>
<td>Medicine requested for shared care:</td>
</tr>
</tbody>
</table>

I will **NOT** be undertaking the GP responsibilities as described in the agreed shared care guideline. My clinical reasons for declining shared care for this patient are listed in the box below:

Yours sincerely

{GP name}
{Surgery}

Please send a copy of this response to:

1. The specialist/consultant requesting shared care
2. AN ANONYMISED COPY OF THIS FORM ONLY to the Medicines Management Clinical Effectiveness Team, 1st Floor East Point, Cardinal Square, 10 Nottingham Road, Derby, DE1 3QT or E-MAIL: ddcgc.medicinesmanagement@nhs.net

(Sending a copy of this form to the Clinical Effectiveness Team will help to identify any inappropriate requests for shared care e.g. indication not covered, hospital monitoring requirements not fulfilled. It will also help to inform the CCG prescribing group of the reasons shared care is not being undertaken allowing for changes to be made in future updates to improve patient care).
APPENDIX 1 Prescribing of Liothyronine in combination with levothyroxine in Endocrinology: Hypothyroidism

**Liothyronine Monotherapy**
- Liothyronine monotherapy is not recommended or supported by local endocrinologists in hypothyroidism.

**Combination Levothyroxine and Liothyronine General Guidance**
- Combination levothyroxine / liothyronine should not be used routinely in the management of hypothyroidism as there is insufficient population based clinical evidence to show that combination therapy is superior to levothyroxine monotherapy.
- There is insufficient evidence at present to specify the quality of life measures to be adopted during a trial of combination levothyroxine and liothyronine, or during a trial titration from liothyronine to levothyroxine.

APPENDIX 2 Some possible causes of persistent symptoms in euthyroid patients on levothyroxine

<table>
<thead>
<tr>
<th>Endocrine/autoimmune</th>
<th>Haematological</th>
<th>End organ damage</th>
<th>Nutritional</th>
<th>Metabolic</th>
<th>Drugs</th>
<th>Lifestyle</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>Anaemia</td>
<td>Chronic liver disease</td>
<td>Deficiency of any of the following: Vitamin B12, Folate, Vitamin D, Iron</td>
<td>Obesity, Hypercalcaemia, Electrolyte imbalance</td>
<td>Beta-blockers, Statins, Opiates</td>
<td>Stressful life events, Poor sleep pattern, Work-related exhaustion, Alcohol excess</td>
<td>Obstructive sleep apnoea, Viral and postviral syndromes, Chronic fatigue syndrome, Carbon monoxide poisoning, Depression and anxiety, Polymyalgia rheumatica, Fibromyalgia</td>
</tr>
<tr>
<td>Adrenal insufficiency</td>
<td>Multiple myeloma</td>
<td>Chronic kidney disease</td>
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<tr>
<td>Hypopituitarism</td>
<td></td>
<td>Chronic disease</td>
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<td>Coeliac disease</td>
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<td>Congestive cardiac failure</td>
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<tr>
<td>Pernicious anaemia</td>
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