Lithium Shared Care Guideline for patients within adult services

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This BLMK wide lithium shared care guideline is based on the National RMOC lithium shared care guideline (issued Jan 2022) and has been modified for local use. It has been ratified by the BLMK Area Prescribing committee (APC), East London Foundation Trust (ELFT) Medicines Committee and Central and Northwest London NHS Trust (CNWL) Trustwide Medicines Optimisation Group.

This guideline refers to patients under a shared care arrangement only. A decision to move to a full transfer of care to the primary care clinician may be applicable for long term, stable patients – such requests should be assessed on a case-by-case basis.

In addition to using this guideline please ensure that the current summaries of product characteristics (SmPCs), British national formulary (BNF) or the Medicines and Healthcare products Regulatory Agency (MHRA) or NICE websites are reviewed for up-to-date information on any medicine.

Contents:

The following organisations contribute to and participate in the BLMK APC – Bedfordshire Luton and Milton Keynes ICB; Bedfordshire Hospitals NHS Foundation Trust; Cambridgeshire Community Services NHS Trust; Central and North-West London NHS Foundation Trust; East London NHS Foundation Trust; Milton Keynes University Hospital NHS Foundation Trust

General Shared Care Guideline (SCG) Principles (as agreed by BLMK APC)

- Medicines considered suitable for shared care are those which should be initiated by a Specialist, but where prescribing and monitoring responsibility may be transferred to Primary Care. Due to their potential side effects, shared care medicines usually require significant regular monitoring, and regular review by the Specialist is needed to determine whether the medicines should be continued. The best interest, agreement and preferences of the patient should be at the centre of any shared care agreement.
- The transfer of prescribing responsibility from the Specialist to the patient's General Practitioner (GP) or Primary Care prescriber should occur when both parties are in agreement that the patient's condition is stable or predictable, and that the Primary Care prescriber has the relevant knowledge, skills and access to equipment to allow them to monitor treatment as indicated in this shared care prescribing guideline.
- The aim of this guideline is to equip Primary Care prescribers with the information to confidently take on clinical and legal responsibility for prescribing the medication under a shared care agreement within their own level of competence.
- Within the Bedfordshire, Luton and Milton Keynes (BLMK) Integrated Care System (ICS), shared care guidelines are produced and updated through a robust governance process, following consultation with a wide range of key stakeholders. On this basis for BLMK ICS approved shared care guidelines, it is anticipated that Primary Care prescribers, upon individual assessment, will accept shared care for the patient if they felt it was clinically appropriate to do so and seek patient consent.
- If the Primary Care prescriber feels that a request for shared care cannot be accepted, i.e. falls outside of their own level of competence, they should initially seek further information or advice from the clinician who is sharing care responsibilities or from another experienced colleague in line with the General Medical Council (GMC) guidance.
- If the Primary Care prescriber is still not satisfied clinically to accept shared care, they should make appropriate arrangements for the patient's continuing care where possible. This may include asking another colleague in their practice to undertake the shared care. In the event, that other colleagues in the practice also decline to share care, the Primary Care prescriber could seek assistance and advice from their Primary Care Network (PCN) (e.g., PCN Pharmacist).
- If the decision, after discussion with the PCN, is to decline shared care, the Primary Care prescriber must notify the Specialist clinician of their decision and reason (See appendix 1) to decline as soon as they can and in a timely manner (within a maximum of 14 days upon receipt of request) in writing and ensure the patient is aware of the change. In this scenario, the prescribing responsibility for the patient remains entirely with the Specialist.
- This principle also applies where shared care needs to be terminated in primary care e.g., due to lack of patient engagement. It is anticipated that these would be very rare events.
- The requirement for the Primary Care prescriber to send confirmation in writing via letter or approved electronic communication to the Specialist team for acceptance of shared care is NOT mandated.
- Where the hospital or Specialist clinician retains responsibility for monitoring drug therapy and/or making dosage adjustments, the Primary Care prescriber must be informed of any dose changes made as soon as possible to avoid medication errors. Similarly, if the Primary Care prescriber makes changes to the patient's medication regimen, the Primary

Care prescriber must inform the Specialist in a timely manner. Primary Care prescribers can contact the Specialist team for advice, training and support as required.

- An agreed method of communication of blood test results and results of investigations between the Specialist, the Primary Care prescriber, the Community Pharmacist and the patient should be agreed at the onset of shared care and documented in the patient's notes in both Secondary care and Primary Care. Blood test results can usually be accessed electronically by both Secondary Care and Primary Care prescribers in the majority of cases. For some medications and in certain cases, the patient may elect to have a patient-held monitoring booklet, e.g., those on warfarin and lithium therapy.
- The principles above apply to shared care arrangements that involve the Specialist service sharing care with GPs and/or other Primary Care prescribers, e.g., Community Nursing Services. Where patient care is transferred from one Specialist service or GP practice to another, a new shared care agreement request must be commenced.

Specialist responsibilities

- Assess the patient and provide a diagnosis; ensure that this diagnosis is within scope of this shared care guideline (see section 2) and communicated to primary care.
- Use a shared care decision making approach; discuss the benefits and risks of the treatment with the patient and/or their carer to enable the patient to reach an informed decision. Obtain and document patient consent.
- Inform the patient and /or carer of risk of teratogenicity in women of childbearing age. (See Section 11)
- Assess for any contraindications and cautions (see section 3)
- Assess for any drug interactions (see section 6) :- there is the potential for significant interactions to occur with lithium. It is important to check the patient's existing medication history and check for any drug interactions when prescribing any new medications or when stopping any existing medications.
- Provide the appropriate drug related counselling and advice to the patient and / or their carer (see section 10)
- Provide an appropriate patient information leaflet and means for the patient to keep a record of their serum plasma lithium levels, such as the purple lithium pack* and explain the importance of recording the serum blood test levels in the booklet to the patient / carers. (NB: The NHS lithium health monitoring App can be used as an alternative to the purple book; however, this is only available on Android devices and is not available via the Apple APP store).

  *(Purple lithium pack contains a patient information booklet, a lithium alert card and a serum blood test monitoring booklet)
- Conduct required baseline investigations and conduct initial monitoring and continue to monitor until shared care has been agreed (see section 7).
- Initiate and optimise treatment as outlined in section 4. Prescribe the maintenance treatment for at least 4 weeks and until optimised.,
- Once treatment is optimised, contact the patient's primary care clinician to request shared care.
- Send a copy of the shared care guideline and a detailed clinic letter to the primary care clinician , providing details of the following:
    - details of the diagnosis,
    - current and ongoing lithium dose,
    - target lithium range for the patient,
    - specific brand of lithium to be prescribed ,
    - any relevant test results and detail when the next monitoring is required.
    - Specialist contact information (section 12)

- Prescribe a sufficient supply of medication to enable transition to a shared care arrangement with primary care, including where there are unforeseen delays to transfer of care.
- Conduct the required reviews and monitoring in section 7. After each review, advise primary care whether treatment should be continued, confirm the ongoing dose, and whether the ongoing monitoring outlined in section 8 remains appropriate.
- Resume prescribing responsibilities if a woman becomes or wishes to become pregnant.
- Resume prescribing responsibilities if a patient is non-compliant or does not attend regular blood test monitoring.
- Provide advice to primary care clinician on the management of adverse effects if required (see section 9)

As this lithium SCG has been approved by BLMK Area prescribing committee (APC) for local use, it will be assumed by the specialist teams that GP practices will be happy to participate in a shared care arrangement for the majority of patients.

In the event that a primary care clinician is not happy to proceed with shared care, they should notify the Specialist team **within 14 days** of receipt of the request, detailing the reasons why a shared care is not appropriate for the particular patient (see appendix 1 for examples of acceptable reasons for declining shared care)

Primary Care Responsibilities

- Prescribe ongoing treatment as detailed in the specialist's request and as per section 4,
- Assess for any contraindications and cautions (see section 3)
- Check for potential drug interactions when prescribing any new medications or when stopping any existing medications. See section 6.
- Prescribe the correct brand name and formulation, as specified by the specialist (as not all brands and formulations are interchangeable due to differences in bioavailability).
- Annotate where possible, the lithium level and date taken on the FP10 as this information is needed by the community pharmacists prior to dispensing the prescription.
- Adjust the dose of lithium prescribed as advised by the specialist.
- Conduct the required monitoring as outlined in section 8. Communicate any abnormal results to the specialist.
- Assess and manage any adverse effects as detailed in section 9 and discuss with specialist team when required.

- Support the patient in keeping an up-to-date record of their serum blood test results and emphasise the importance of recording these in either their purple monitoring booklet or on the NHS Lithium monitoring APP.
- Review plasma lithium levels when tested ,(See section 9 for full details).
- If plasma levels are below the specified target range, check the dose, adherence, and timing of the sample (repeating if necessary) and discuss with specialist.
- If plasma lithium levels are above the specified target range, check the dose, adherence, and timing of the sample (repeating if necessary). Determine whether toxicity is present and discuss with the specialist, with the urgency determined by clinical judgement.
- **If toxicity suspected**, withhold lithium and discuss urgently with the specialist. Plasma lithium levels should be acquired immediately to aid interpretation and facilitate specialist advice.
- Refer the management back to the specialist if the patient becomes or plans to become pregnant.
- Refer the management back to the specialist if the patient is non-compliant with medication and / or blood test monitoring requirements.
- Stop treatment as advised by the specialist.

Patient and /or carer responsibilities

- Take lithium as prescribed and avoid abrupt withdrawal unless advised by their prescriber.
- Attend regularly for blood test monitoring and review appointments with primary care and the specialist and bring their purple lithium pack or NHS monitoring APP to appointments to keep a record of lithium levels.
- Keep contact details up to date with both prescribers.
- Be aware that medicines may be stopped if they do not attend appointments or if they do not attend for regular blood test monitoring.
- Report any mood changes to the GP or Specialist.
- Report adverse effects to their primary care prescriber. Seek immediate medical attention if they develop any symptoms as detailed in section 10.
- Inform their usual community pharmacist that they have started on lithium therapy, specifying the specific brand and formulation prescribed, (as brands and formulations are not interchangeable).
- Report the use of over-the -counter (OTC) medications and any alternative complimentary medicines to their primary care prescriber and be aware they should discuss the use of lithium with the pharmacist before purchasing any over-the-counter medicines due to risk of possible drug interactions.

- Inform any health care professional (e.g. hospital doctor / dentist / pharmacist) at any visits, that they are taking lithium medication and show them their blood test monitoring records.
- In general, to maintain adequate fluid intake - this is particularly important during periods of warm weather and on travelling to countries where the temperature may be very high and also where there is a significant change in physical activity.
- To ensure they maintain their fluid intake, particularly if they have a fever, if they are immobile for long periods or if they are being treated for any type of infection e.g. chest infection , pneumonia as advised by their doctor.
- Avoid dietary changes which could reduce or increase salt intake during lithium treatment as an alteration in sodium intake can affect lithium levels.
- Avoid making any changes to their regular caffeine intake as such a change can affect lithium levels.
- Moderate their alcohol intake to no more than 14 units per week. Avoid recreational drugs.
- Not to drive or operate heavy machinery if lithium affects their ability to do so safely.
- Use an appropriate form of contraception, as agreed with their doctor/nurse/sexual health service.
- Patients of childbearing potential should take a pregnancy test if they think they could be pregnant, and inform the specialist or GP immediately if they become pregnant or wish to become pregnant.

Community Pharmacists

Community pharmacists are advised to use their professional judgment when dispensing a lithium prescription noting the following information: -

- patient / carers should have been advised to either record Lithium levels in a Lithium level monitoring booklet or use the lithium monitoring app.
- Lithium levels should be checked every 3 months for the first year of therapy , reducing to 3-6 monthly (frequency depending on other clinical factors)

Before dispensing a prescription for lithium, community pharmacists are advised to:

- Ensure an appropriate dose is prescribed with clear instructions on use, and NOT ‘as directed’.
- Check that the patient / carer has received appropriate verbal and written information about lithium from the specialist / GP.
- Lithium level Monitoring check :-
    - Check to see if the FP10 has been annotated to state that lithium levels are satisfactory?

- If there are no annotations on the FP10 - ask the patient / carer if they have had a recent lithium blood level checked?
- If the patient does not appear to have had a recent lithium level checked or if the pharmacist is unable to confirm with the patient / carer, the pharmacist should aim to contact the local GP practise to seek clarification that a level has been done. (NB practise staff including practise pharmacists can access the blood test results)
- If the level is reported as not being 'within range', the pharmacist should discuss the patient directly with the GP before dispensing the prescription.

- Confirm that the correct brand name and formulation has been prescribed (as different brands and formulations are not interchangeable and have different bioavailabilities) before dispensing a prescription.
- Check for any drug interactions including over the counter medications/herbal medications.
- Contact the prescribing clinician if in any doubt regarding the dosage prescribed/any concerns relating to the blood test monitoring & blood test results / any concerns regarding compliance issues.

1. Lithium – General Information

Back to top

Lithium is licensed for the treatment and prevention of mania, bipolar depression, recurrent depression (unipolar) and aggressive/self-mutilating behaviour. Not all patients respond to lithium, so the benefits and risks should be regularly and individually assessed. Lithium treatment should not be stopped suddenly, as this can cause relapse.

Lithium has a narrow therapeutic window of between 0.4 and 0.8 mmol/L for most indications, although a narrower range is usually specified on an individual patient basis.

Higher target plasma levels (0.8–1 mmol/L) are occasionally recommended for acute episodes of mania, for patients who have previously relapsed or when subthreshold symptoms of illness are associated with functional impairment. **The specialist service will determine the target range for each patient and advise the primary care prescriber accordingly.**

As the lithium level required to achieve a therapeutic response and the level that can potentially cause toxicity are very close together, it is essential that all patients receiving lithium therapy have regular blood tests to check their serum lithium levels.

Lithium has numerous mild side effects but can be toxic if the dose is too high. Toxicity usually occurs with levels above 1.5 mmol/L but can emerge at lower levels in susceptible patients such as the elderly or those with renal impairment.

Toxicity can also occur when levels are in the 'therapeutic range'. Excluding excessive ingestion, toxicity most commonly arises due to a reduced elimination of lithium. Elimination of lithium is almost exclusively renal and is sensitive to the handling of sodium by the kidneys. Lithium toxicity can itself impair renal function, so rapid escalations in plasma lithium levels may occur. With long-term use, lithium can have adverse effects on the kidneys, the thyroid, and the parathyroid glands.

Lithium should always be prescribed by brand and form; tablets and liquids are not interchangeable. Extra care must be taken when prescribing liquid forms, with clarity over the name and strength of the preparation. Patients should be involved in treatment decisions and understand the importance of lithium monitoring.

This shared care guideline applies to all adults aged 18 and older.

2. Indications

Back to top

Indications:

- Treatment and prophylaxis of mania
- Treatment and prophylaxis of bipolar disorder
- Treatment and prophylaxis of recurrent depression. NB: lithium should not be used as a sole agent to prevent recurrence, see NICE CG90: Depression in adults: recognition and management
- Treatment and prophylaxis of aggressive or self-harming behaviour
- Augmentation of antidepressants[‡] See NICE CG90: Depression in adults: recognition and management

[‡] Off-label indications. (Please note licensed indications vary by manufacturer).

3. Contraindications and cautions

Back to top

This information does not replace the Summary of Product Characteristics (SmPC), and should be read in conjunction with it.

Please see BNF & SmPC for comprehensive information.

Contraindications:

- Hypersensitivity to lithium or any of the excipients
- Addison's disease
- Cardiac disease associated with rhythm disorder
- Cardiac insufficiency
- Family or personal history of Brugada syndrome
- Patients with abnormal sodium levels, including dehydrated patients or those on low sodium diets
- Untreated hypothyroidism
- Severe renal impairment
- Pregnancy (especially the first trimester), unless considered essential
- Breastfeeding

Cautions:

- Mild to moderate renal impairment
- Use in elderly patients
- Adequate and stable sodium and fluid intake should be maintained. This may be of special importance in hot weather, or during infectious diseases, including influenza, gastro-enteritis or urinary infections, when dose reduction may be required.
- Review lithium dose if diarrhoea and/or vomiting present and in cases where the patient has an infection and/or profuse sweating. Adjustments may be required.
- Risk of seizures may be increased if co-administered with drugs that lower the seizure threshold, or in patients with epilepsy.
- Cardiac disease
- May exacerbate psoriasis
- **Surgery:** discontinue 24 hours prior to major surgery and re-commence post-operatively once kidney function and fluid-electrolyte balance is normalised. Discontinuation is not required prior to minor surgery, providing fluids and electrolytes are carefully monitored.

4. Initiation and ongoing dose regimen

Back to top

- Transfer of monitoring and prescribing to primary care , through a shared care arrangement , is normally after at least 12 weeks, and when the patient's dose has been optimised and they have had satisfactory investigation results for at least 4 weeks.
- The duration of treatment & frequency of review will be determined by the specialist, based on clinical response and tolerability.
- All dose or formulation adjustments will be the responsibility of the initiating specialist unless directions have been discussed and agreed with the primary care clinician.
- Termination of treatment will be the responsibility of the specialist.

Initial stabilisation:

If using Lithium carbonate:-

Typically, 400 mg once daily, then adjusted according to patient response and 12-hour plasma levels.

In some scenarios, such as acute mania, a higher starting dose may be preferable. The BNF outlines the typical starting doses by indication and brand.

Doses may initially be divided throughout the day but once-daily administration is preferred when plasma lithium concentration is stabilised in the target range (specified by specialist team).

Lithium carbonate tablets should be prescribed unless there is a specific problem with swallowing difficulties.

If using Lithium citrate:-

Typically, 509 mg or 520 mg twice daily (depending on brand), in the morning and evening, then adjusted according to patient response and 12-hour plasma levels.

Liquid formulations contain lithium citrate and doses are not equivalent to lithium carbonate; bioavailability is significantly different. If a switch in formulation is considered, discuss with the specialist team.

Extra care must be taken when prescribing lithium in liquid form, as some offer different strengths under the same brand names, and some brands are used for the liquid and tablet forms.

The initial period must be prescribed by the initiating specialist.

Maintenance dose (following initial stabilisation):

Individualised, to achieve plasma lithium levels in the range specified for the patient.

The initial maintenance dose must be prescribed by the initiating specialist.

Conditions requiring dose adjustment:

Lower doses may be required in the following circumstances :

- In older or physically frail / low body weight patients,
- in patients with mild to moderate renal impairment and electrolyte imbalance.
- Dose adjustments may also be required in patients prescribed interacting medicines.

Stopping lithium treatment

The decision to stop treatment will be the responsibility of the specialist. Clinicians, patients, and carers should be aware that abrupt discontinuation of lithium increases the risk of relapse. If lithium is to be stopped, the dose should gradually be reduced over a period of at least four weeks but preferably over a period of up to three months.

5. Pharmaceutical aspects

Back to top

Route of administration:	Oral
Formulation:	**Lithium is available as lithium carbonate (tablet formulations) and lithium citrate (liquid formulations). See local Formularies for current product choices (links below)** **Beds & Luton joint formulary** **Milton Keynes joint formulary**

	The patient should be maintained on the same brand and formulation of lithium. If a switch in brand or formulation is considered, refer to the specialist team. **Lithium tablets and liquids are not interchangeable.** Extra care must be taken when prescribing lithium in liquid form, as some offer different strengths (mg/ml) under the same brand name and some brand names (Priadel®) are used for the liquid and tablet forms. **Always prescribe lithium by brand name. Switching preparation (either between brands of the same form or changing between tablets and liquid) requires additional monitoring to ensure that the 12-hour plasma lithium level remains in the desired range.** **Particular care should be taken if prescribing liquid preparations; lack of clarity may lead to the patient receiving a sub-therapeutic or toxic dose.**
Administration details:	Consistency is paramount in lithium treatment and monitoring. Doses should be taken regularly, at the same time every day. Lithium carbonate tablets should not be crushed or chewed. Priadel® 200mg and 400mg tablets have score lines and can be divided accurately to provide dosage requirements as small as 100mg within product license. Liskonum® 450mg tablets are licensed to be halved for the purposes of dose adjustment. Other brands may be scored to facilitate breaking for ease of swallowing, but not to divide into equal doses. Breaking these tablets is not expected to alter their release properties but the accuracy of the division is not established
Other important information:	If a dose is missed, then the next scheduled dose should be taken as usual; a double dose should not be taken to make up for a missed dose. For a given total daily dose, 12-hour plasma lithium levels will differ for once versus twice daily dosing schedules. The schedule should be determined by the specialist and not altered without their advice.

6. Significant medicine interactions

Back to top

The following list is not exhaustive.

Please see eBNF or SmPC for comprehensive information and recommended management.

The following medicines must NOT be prescribed without consultation with specialists:-

- **Medicines that may increase plasma lithium concentrations** (by reducing renal elimination) and so risk toxicity:

- NSAIDs (including cyclo-oxygenase 2 inhibitors). If NSAID use is unavoidable, a dose reduction of lithium may be required and levels should be monitored more frequently; discuss with specialist team. 'As required' use of NSAIDs should be avoided since it may cause fluctuations in lithium levels and makes monitoring levels challenging.
- Diuretics, particularly thiazide diuretics.
- Angiotensin converting enzyme (ACE) inhibitors and angiotensin II receptor antagonists
- Other drugs which alter electrolyte balance with the potential to alter lithium clearance e.g. steroids.
- Certain antibiotics including metronidazole and tetracyclines.

- **Medicines that may decrease plasma lithium concentrations** (by increasing renal elimination) and so risk loss of efficacy:
  - Theophylline.
  - Products which contain sodium bicarbonate e.g. antacids.
  - Empagliflozin
  - Dapagliflozin
- **Medicines that may increase risk of neurotoxicity** when co-administered with lithium:
  - Calcium channel blockers with cardiac effects (e.g. verapamil, diltiazem).
  - Antipsychotics (e.g. haloperidol, olanzapine, clozapine, flupentixol, chlorpromazine).
  - Antidepressants with a serotonergic action (e.g. SSRIs, tricyclic antidepressants, venlafaxine, duloxetine).
  - Carbamazepine.
- **Medicines associated with QT prolongation** (e.g. amiodarone, macrolides, tricyclic antidepressants) – potential for additive effects when co-administered with lithium.

- **Medicines that lower seizure threshold** (e.g. SSRIs, tricyclic antidepressants, antipsychotics) – increased risk of seizures.

Care should be taken on initiation, dose adjustment or discontinuation of any interacting medicines. The onset and degree of the interaction can vary, and additional lithium monitoring is likely to be indicated, with doses adjusted accordingly. Discuss with specialist team.

7. Baseline investigations, initial monitoring and ongoing monitoring to be undertaken by specialist

Back to top

Monitoring at baseline and during initiation is the responsibility of the specialist; only once the patient is optimised on the chosen medication with no anticipated further changes expected in immediate future will prescribing and monitoring be transferred to primary care.

Monitoring at baseline and during initiation is the responsibility of the specialist. Recent and relevant investigation results must be documented in the corresponding letter from specialist.

Baseline (all indications):

- Urea and electrolytes (U&Es), including estimated glomerular filtration rate (eGFR)
- Calcium
- Thyroid function tests (TFTs)
- Electrocardiogram (ECG) recommended for patients with existing cardiovascular disease (CVD) or risk factors
- Full blood count (FBC)
- Height, weight and body mass index (BMI)
- Exclude pregnancy

Additional baseline investigations (bipolar disorder):

- Cardiovascular status including pulse and blood pressure (BP)
- Metabolic status includiq1ng fasting blood glucose, glycosylated haemoglobin (HbA_{1c}) and blood lipid profile.
- Liver function tests (LFTs).

Initial monitoring:

- 12-hour plasma lithium levels one week after initiation and one week after any change in dose or formulation; lithium levels take 4-7 days to reach steady state concentrations. Typically, this means levels will be monitored weekly until the desired level and clinical effect is achieved. Following a dose, levels fluctuate during absorption/distribution, so measurements are made 12 hours post-dose for monitoring purposes.

Ongoing monitoring:
Review patient at least every 12 months to assess their mental health, effectiveness of treatment and the ongoing need for lithium.

8. Ongoing monitoring requirements to be undertaken by primary care

Back to top

See section 10 for further guidance on management of adverse effects/responding to monitoring results.

Monitoring – all indications	Frequency
Plasma lithium level taken 10-14 hours post-dose. NB: samples should be taken as close to 12-hours post-dose as possible. • Record results in the patient's record as well as patient-held purple lithium pack, or other suitable recording mechanism. • It is advisable to document the actual time interval between the last dose and the blood sample	• Measure the person's plasma lithium level **every 3 months** for the first year. • After the first year, the patient should be reviewed by the specialist: if the patient is regarded as stable and has no additional risk factors , a 6 monthly* lithium level monitoring frequency may be considered appropriate. Patients within the following groups should remain on a 3 monthly monitoring schedule: • older people • people taking drugs that interact with lithium • people who are at risk of impaired renal or thyroid function, raised calcium levels or other complications • people who have poor symptom control • people with poor adherence • people whose last plasma lithium level was 0.8 mmol per litre or higher. NB : More frequent monitoring may be required if clinical indications arise or in 'high risk' patients:- (e.g. clinical deterioration, intercurrent illness, develops an inter-current infection, develops signs of toxicity, abnormal blood test results, a change in sodium/fluid intake, or symptoms suggesting abnormal renal or thyroid function such as

	unexplained fatigue, or other risk factors, for example, if the patient is starting interacting medication such as ACE inhibitors, non-steroidal anti -inflammatory drugs, antacids or diuretics. In these situations. the monitoring frequency should be specified by the specialist team and documented in the patients care plan. *NICE recommends that lithium levels may be checked only 6-monthly in stable patients established on lithium for over a year (however this recommendation is outside the manufacturer's recommendations and would constitute off label use).
• **U&Es, including eGFR** • **Calcium** • **TFTs** • **Height, weight, and BMI.**	**Every 6 months.** More frequent monitoring (particularly renal function) may be advised by the specialist team in some circumstances (e.g. elderly, renal impairment, altered TFTs, concurrent interacting medicines).
Signs of toxicity Enquire about and document signs and symptoms which might indicate toxicity, e.g. paraesthesia, ataxia, tremor, cognitive impairment.	**At every consultation with the prescriber regarding lithium treatment**
Additional monitoring – bipolar disorder	**Frequency**
Diet, nutritional status and level of physical activity. **Cardiovascular status including pulse and BP.** **Metabolic status including fasting blood glucose, HbA_{1c} and blood lipid profile.** **LFTs.**	Annually as part of physical health check recommended in NICE CG185 Bipolar disorder: assessment and management.
(If relevant) If monitoring results are forwarded to the specialist team, please include clear clinical information on the reason for sending, to inform action to be taken by secondary care.	

9. Action required based on blood test results; Adverse effects and other management

Back to top

Any serious adverse reactions should be reported to the MHRA via the Yellow Card scheme. Visit www.mhra.gov.uk/yellowcard

For information on incidence of ADRs see relevant summaries of product characteristics

Result	Action for primary care
As well as responding to absolute values in laboratory tests, a rapid change or a consistent trend in any value should prompt caution and extra vigilance.	
12-hour plasma lithium level. **Below target range** NB: range for each patient to be determined by the specialist team. Note that local reference ranges may vary	Ensure level was taken 12 hours after lithium dose. Assess adherence, including discussion with patient and check of GP clinical systems. Offer advice on adherence if appropriate (e.g. daily routines, reminders). Contact specialist team for advice if suspected that the dose is too low.
Above target range NB: range for each patient to be determined by the specialist team. Note that local reference ranges may vary	Ensure level was taken 12 hours after lithium dose and that the correct dose has been prescribed and taken. Check for interactions, hydration, patient's physical and mental status, and features of toxicity. Repeat level if necessary. **Withhold lithium if there are features of toxicity.** Contact specialist team for advice in all cases. If ≥2.0mmol/L – consider sending patient to A&E, based on clinical presentation (e.g. features of toxicity) and inform specialist team.
Within target range but toxicity suspected NB: range for each patient to be determined by the specialist team. Note that local reference ranges may vary	Contact specialist team for advice. Referral to secondary care may be required depending on the severity of symptoms and the certainty of toxicity. Use clinical judgement to determine the urgency of referral.
Within target range but marked change since last level (and there has been no dose change) NB: range for each patient to be determined by the specialist team. Note that local reference ranges may vary	Establish whether level was taken 12 hours after lithium dose. Repeat level with an urgency determined by clinical judgement. Assess adherence, including discussion with patient and check of GP clinical systems. Offer advice on adherence if appropriate (e.g. daily routines, reminders). More frequent monitoring may be required.

Thyroid function **Altered TFTs without symptoms**	Contact specialist team for advice. During lithium treatment, TFTs are commonly abnormal; the TSH can rise early in treatment but settle with time. Note that the symptoms of hypothyroidism can be difficult to discriminate from depression and the common side effects of lithium.
Subclinical hypothyroidism • Raised TSH • Normal T4 - Clinical features not overtly manifest	Contact specialist team for advice, which may include input from endocrinology services. The optimal management of subclinical hypothyroidism during lithium treatment remains controversial, with different thresholds for treatment advocated. Anticipate the need for additional monitoring, investigations and potentially thyroid hormone replacement based on specialist recommendations.
Overt hypothyroidism • High TSH • Low T4 • Symptomatic	Contact specialist team for advice, which may include input from endocrinology services. Thyroid hormone replacement is usually indicated and often continued throughout the course of lithium treatment.
Hyperthyroidism	Contact specialist team for advice, which may include input from endocrinology services.
Renal function **Polyuria and polydipsia**	Polyuria is common with lithium and often well tolerated. Advise the patient to maintain adequate fluid intake and advocate excellent oral hygiene. Contact specialist team for advice, which may include input from nephrology services. In some instances, dose adjustment or specific treatments may be advocated.
U&Es or calcium out of range	Check that the most recent 12-hour plasma lithium level is in the desired range and act accordingly if not. Determine whether there are symptoms and signs related to the electrolyte disturbance or lithium toxicity.

	Consider arranging an ECG in those at risk for QT prolongation. Contact specialist team for advice. Changes in calcium levels may reflect parathyroid dysfunction and input from endocrinology services may be indicated.
• **eGFR <45ml/min** • **rapidly falling eGFR** • **gradual decline in eGFR**	The response to impaired or deteriorating renal function should be individualised. Contact specialist team for advice, which may include input from nephrology services. A cardiovascular risk profile may guide specialist advice and should be provided if available. Use clinical judgement to determine the urgency of consultation. Anticipate the need for increased monitoring as trends in renal function are more useful than absolute values. In the elderly or those at the extremes of muscle mass, creatinine clearance provides a better estimate of renal function than eGFR. Adjustments to dose may be advised. If renal function is significantly compromised, lithium may no longer be an appropriate treatment and specialists will advise accordingly.
Weight and BMI **Outside healthy range**	Provide appropriate support on multicomponent interventions to increase physical activity levels, improve eating behaviour and quality of diet. Remind patient of the importance of maintaining adequate fluid intake and avoiding dehydration while exercising. Consider measuring waist circumference for individualised monitoring. Patients should be instructed to avoid sudden changes in diet, especially avoiding low sodium diets. Lithium levels are influenced by body weight and so for patients being supported to lose weight, lithium levels may need to be checked more frequently (akin to other situations of caution). Use clinical judgement, lithium levels and the rate of weight loss when determining the frequency of blood tests.

Signs of toxicity Typical signs and symptoms include diarrhoea, vomiting, loss of appetite, muscle weakness, lethargy, dizziness, ataxia, lack of coordination, tinnitus, blurred vision, coarse tremor of the extremities and lower jaw, muscle hyper-irritability, choreoathetoid movements, dysarthria, and drowsiness	If lithium toxicity is suspected, do an urgent lithium level immediately and seek specialist advice. Referral to secondary care may be required depending on the severity of symptoms and the certainty of toxicity. Use clinical judgement to determine the urgency of referral.
Physical health check (bi-polar disorder)	Any physical health problems should be treated by the appropriate primary care health professional and communicated to the specialist team within 14 days.

10. Advice to give to patients and carers

Back to top

The specialist will counsel the patient with regard to the benefits and risks of treatment and will provide the patient with any relevant information and advice, including patient information leaflets on individual medicines.

The patient should be advised to report any of the following signs or symptoms to their GP without delay:

- **Lithium toxicity**: diarrhoea, vomiting, loss of appetite, muscle weakness or twitching, clumsiness or poor coordination, dizziness, confusion, tinnitus, blurred vision, coarse tremor, writhing movements, change in speech, lethargy and/or drowsiness, incontinence, restlessness, confusion, seizures/fits.
- **Signs of hypothyroidism**: fatigue, cold intolerance, weight gain, constipation and depression), renal dysfunction (including polyuria and polydipsia), and benign intracranial hypertension (persistent headache and visual disturbance.
- Substantial changes in plasma lithium levels can occur if patients develop diarrhoea or vomiting, or if they become acutely ill for any reason. Patients should seek medical advice in such instances.

At the start of treatment, patients should be given suitable information on lithium and a means to keep a record of their plasma lithium levels, such as the NHSA Patient Safety Agency purple lithium pack (The NHS lithium health monitoring App can be used as an alternative to the purple lithium monitoring book, however this is only available on Android devices and is not available via the Apple APP store).

Additional advice for patients / carers:

- Patients must attend regularly for blood test monitoring and review appointments to ensure their lithium dose remains safe and effective, and bring their purple lithium pack to keep a record of their lithium levels.
- Patients should notify their primary care prescriber straight away if there is any change in their health, e.g. an infection, or significant weight loss. Additional lithium monitoring may be required.
- Lithium should be taken regularly, as prescribed. If doses are missed, patients should not attempt to catch up or double dose.
- Patients should not stop taking lithium suddenly – doing so increases the chance of relapse. If lithium is to be stopped, it should be reduced over at least four weeks and preferably three months.
- The same brand of lithium should always be taken unless otherwise instructed. Patients should become familiar with their brand and check they have received the correct one before taking.
- Substantial changes in plasma lithium levels can occur if patients develop diarrhoea or vomiting, or if they become acutely ill for any reason. Patients should seek medical advice in such instances.
- Explain that changes in hydration and sodium balance can affect plasma lithium levels. Advise patient to maintain adequate fluid intake, particularly in hot weather or when activity levels change (such as increases in exercise or immobility). Large changes in dietary sodium should be avoided – changing dietary regime may inadvertently alter sodium intake.
- Advise patient to not suddenly change their caffeine intake as this can affect lithium level.
- Excessive alcohol consumption should be avoided as it can lead to dehydration, increasing plasma lithium levels and so risk of toxicity.
- Patients should be warned about common drug interactions and advised to present their 'Lithium alert card' whenever they redeem a new prescription.
- Patients should be warned that lithium can also interact with over-the-counter medication (OTC) e.g. herbal medicines, analgesics , cold and flu remedies, indigestion remedie**s.** They should be advised to discuss with the community pharmacist before taking any OTC medication and they should specifically be advised **NOT to take OTC NSAIDs** as these can increase plasma lithium levels and so risk toxicity.
- Lithium may impair performance of skilled tasks (e.g. driving, operating machinery). Patients with a diagnosis of bipolar disorder must notify the Driver and Vehicle Licensing Agency (DVLA); see https://www.gov.uk/bipolar-disorder-and-driving.
- Patients of childbearing potential should be advised that lithium carries additional risks in pregnancy and is a potential teratogen. They should be aware of the need to use reliable contraception. If they

become pregnant while taking lithium, they should not stop taking it, but should tell their doctor straight away if they become pregnant while taking lithium. Breastfeeding should be avoided during treatment with lithium.

- For acute indications such as mania or augmentation, patients may respond within days to weeks of starting lithium. Depending on episode frequency, it may take months or even years to determine whether lithium has proven effective for relapse prevention.

Patient information on this medicine can be found at the following links:

- NHS: https://www.nhs.uk/medicines/lithium/
- MIND: https://www.mind.org.uk/information-support/drugs-and-treatments/lithium-and-other-mood-stabilisers/lithium/

*National Patient Safety Agency purple lithium pack: Supplies of the booklets can be ordered from nhsforms@mmm.com accessible at [ARCHIVED CONTENT] Safer lithium therapy (nationalarchives.gov.uk) .

The NHS lithium health monitoring App is available for android devices , at: https://play.google.com/store/apps/details?id=com.incentivated.nhs.HealthMonitor

11. Pregnancy, paternal exposure and breast feeding

Back to top

It is the responsibility of the specialist to provide advice on the need for contraception to male and female patients on initiation and at each review, but the ongoing responsibility for providing this advice rests with both the primary care prescriber and the specialist.

All patients should be informed of the risks and benefits of taking this medicine during pregnancy and breastfeeding.

Pregnancy:

If a patient becomes pregnant whilst on lithium, the specialist team should be informed immediately (but do not stop the lithium).

Lithium should not be used during pregnancy where possible, especially in the first trimester (risk of teratogenicity, including cardiac abnormalities). In certain cases where a severe risk to the patient could exist if treatment were stopped, lithium has been continued during pregnancy; under these circumstances prescribing is the responsibility of the specialist team.

There is a risk of relapse of bipolar disorder if lithium is withdrawn, particularly in the postnatal period.

Patients of child-bearing potential should be advised to use a reliable form of contraception. It is the responsibility of the specialist to provide advice on the need for contraception to patients on initiation of lithium, and at each review. Under shared care agreements, the ongoing responsibility for providing this advice rests with both the GP and the specialist.

Information for healthcare professionals: https://www.medicinesinpregnancy.org/bumps/monographs/USE-OF-LITHIUM-IN-PREGNANCY/
Information for patients and carers: https://www.medicinesinpregnancy.org/Medicine--pregnancy/Lithium/

Breastfeeding:
Lithium is secreted in breast milk and there have been case reports of neonates showing signs of lithium toxicity. Breastfeeding should be avoided during treatment with lithium.
Information for healthcare professionals: https://www.sps.nhs.uk/medicines/lithium/

Paternal exposure:

- Animal studies have reported spermatogenesis abnormalities that may lead to impairment of fertility. It is unknown if this risk applies to humans.

12. Specialist contact information

Back to top

Central and North-West London NHS Foundation Trust

Name: Grace Khoo
Role and specialty: Advanced Specialist Mental health pharmacist
Daytime telephone number: 01908 724610
Email address: grace.khoo1@nhs.net
Alternative contact: Consultant connect email: hello@consultantconnect.org.uk
Out of hours contact details: Consultant connect tel no: 01865 261467

East London NHS Foundation Trust

Clinical Queries and Specialist Contact Details:-

Non –Urgent Queries:-
Specialist team will aim to answer all non-urgent queries within 72 hours.

Urgent Queries:-
During working hours, the Specialist team will aim to answer urgent queries within 4 hours. If out of hours, contact Luton or Bedford Crisis teams who will triage the call

In cases where immediate action is required, contact A&E

ELFT clinicians
Bedford and Mid-Bedfordshire:-

Triage, Assessment & Brief Intervention Team (TABI) - elt-tr.bedfordtriagecmht@nhs.net; 01234 880404
Bedford Adult MDT Review Team - elft.bedfordmdtreviewcmht@nhs.net; 01234 880404
Bedford Adult Recovery Team - elft.bedfordcmhtrecovery@nhs.net; 01234 880404

Bedford Early intervention Team: 01234 315690
Biggleswade CMHT (Spring House)- Elt-tr.biggleswadecmht@nhs.net; 01767 224922
Ampthill CMHT (Meadow Lodge) - elt-tr.ampthillcmht@nhs.net; 01525 758400
Mid Beds for Older People (The Lawns): elt-tr.midbedsopcmht@nhs.net: 01767 224181
South Beds for Older People: : elt-tr.sbop@nhs.net: 01582 657588
Bedford Older People: elt-tr.bedfordbopscmht@nhs.net : 01234 880345

Luton and South Bedfordshire:-

Brantwood CMHT - elft.brantwood-cmht-referral@nhs.net : 01582 708617
Wardown CMHT - elft.wardown-cmht-referral@nhs.net: 01582 5708609
Dallowdowns CMHT - elft.dallowdowns-cmht-referral@nhs.net: 01525 638400
Stockwood CMHT - elft.stockwood-cmht-referral@nhs.net : 01582 708610
Beacon House Dunstable CMHT: elt-tr.dunstableCMHT@nhs.net :01582 709200
Leighton Buzzard CMHT and South Beds AOT (Crombie House) House: elt-tr.leightonbuzzardcmht@nhs.net; 01525751133
South Beds Older Peoples CMHT- elt-tr.sbop@nhs.net : 01582 657588

ELFT Pharmacy Service (Beds & Luton)

01582 657564
Mob 07774 558416
elft.pharmacyluton@nhs.net

ELFT Perinatal Service

Bedfordshire and Luton Perinatal Mental Health Service
The Lawns Resource Centre
Biggleswade
Beds
SG18 0PT
01767 223153
elft.blperinatal@nhs.net

Bedford and Mid-Bedfordshire Crisis Team

Florence Ball House
Bedford Heath Village
3 Kimbolton Road
Bedford
MK40 2NT
01234 315691
elft.Bedford-CrisisTeam@nhs.net

Luton and South Bedfordshire Crisis Team

Calnwood Court,
Calnwood Road
Luton
LU4 0FB
01582 556971
elft.CRHT-Luton@nhs.net

13. Additional information

Back to top

Where patient care is transferred from one specialist service or GP practice to another, a new shared care agreement must be completed. Ensure that the specialist is informed in writing of any changes to the patient's GP or their contact details.

14. References

Back to top

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- Taylor D, Barnes T, Young A. The Maudsley Prescribing Guidelines in Psychiatry. 13th ed. London: Wiley-Blackwell; 2018, pp. 205-213.

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- NHS UK leaflet: Lithium. Accessed via https://www.nhs.uk/medicines/lithium/ on 17/02/2021.
- National Patient Safety Agency. Safer Lithium Therapy. 2009. Archived resources available via: [ARCHIVED CONTENT] Safer lithium therapy (nationalarchives.gov.uk)

15. Other relevant national guidance

Back to top

- Shared Care for Medicines Guidance – A Standard Approach (RMOC). Available from https://www.sps.nhs.uk/articles/rmoc-shared-care-guidance/
- NHSE guidance – Responsibility for prescribing between primary & secondary/tertiary care. Available from https://www.england.nhs.uk/publication/responsibility-for-prescribing-between-primary-and-secondary-tertiary-care/
- General Medical Council. Good practice in prescribing and managing medicines and devices. Shared care. Available from https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/good-practice-in-prescribing-and-managing-medicines-and-devices/shared-care
- NICE NG197: Shared decision making. Last updated June 2021. https://www.nice.org.uk/guidance/ng197/.

Back to top

Appendix 1: Shared Care Template letter to send to specialist if acceptance of shared care is not deemed appropriate by Primary Care Clinician

Re:

Patient	*[insert Patient's name]*
NHS Number	*[insert NHS Number]*
Identifier	*[insert patient's date of birth and/oraddress]*

Thank you for your request for me to accept prescribing responsibility for lithium for this patient.

BLMK Area Prescribing Committee (APC) in conjunction with its local acute trusts has approved a shared care guideline for the use of lithium in adult services, however In the interest of patient safety **,** it requires a number of conditions to be met before transfer can be made to primary care.

I regret to inform you that in this instance I am unable to take on responsibility due to the following reason(s)

		Tick which apply
1.	**The prescriber does not feel clinically confident in managing this individual patient's condition, and there is a sound clinical basis for refusing to accept shared care** As the patient's primary care prescriber, I do not feel clinically confident to manage this patient's condition because *[insert reason]*. I have consulted with other primary care prescribers in my practice who support my decision. This is not an issue which would be resolved through adequate and appropriate training of prescribers within my practice. **I have discussed my decision with the patient and request that prescribing for this individual remain with you as the specialist, due to the sound clinical basis given above.**	
2.	**The specified condition does not fall within the criteria defining suitability for inclusion in this shared care arrangement.** **Until this condition is identified either nationally or locally as being covered by this shared care guideline, unfortunately the responsibility for providing this patient with their medication needs to remain with you, the specialist.**	

3.	**A minimum duration of supply by the initiating clinician** As the patient has not had the minimum supply of medication to be provided by the initiating specialist, I am unable to take clinical responsibility for prescribing this medication at this time. Therefore, can you please contact the patient as soon as possible in order to provide them with the medication that you have recommended. ***Until the patient has had the appropriate length of supply, unfortunately the responsibility for providing the patient with their medication*** **needs to remain with you, the specialist.**	
4.	**Initiation and optimisation by the initiating specialist** As the patient has not been optimised on this medication, I am unable to take clinical responsibility for prescribing this medication at this time. Therefore, can you please contact the patient as soon as possible in order to provide them with the medication that you have recommended. ***Until the patient is optimised on this medication, unfortunately the responsibility the responsibility for providing the patient with their medication*** **needs to remain with you, the specialist.**	
5.	**Shared Care Guideline not received.** As legal responsibility for clinical care lies with the clinician who signs the prescription, I need to ensure that I am in possession of sufficient clinical information for me to be confident to prescribe this treatment for my patient and it is clear where each of our responsibilities lie to ensure the patient is safely managed***.*** For this reason, I am unable to take clinical responsibility for prescribing this medication at this time, therefore would you please contact the patient as soon as possible in order to provide them with the medication that you have recommended. ***Until I receive the appropriate SCP, unfortunately the responsibility for providing the patient with their medication*** **needs to remain with you, the specialist**	
6.	**Other reason(s) not listed above : (Primary Care Prescriber to complete if there are other reasons why shared care cannot be accepted)**	

NHS England 'Responsibility for prescribing between Primary & Secondary/Tertiary care' guidance (2018) states that "when decisions are made to transfer clinical and prescribing responsibility for a patient between care settings, it is of the utmost importance that the GP feels clinically competent to prescribe the necessary medicines. It is therefore essential that a transfer involving medicines with which GPs would not normally be familiar should not take place without full local agreement, and the dissemination of sufficient, up-to-date information to individual GPs." In this case we would also see the term GP being interchangeable with the term Primary Care Prescriber.

Please do not hesitate to contact me if you wish to discuss any aspect of my letter in more detail and please note, I would be willing to re-consider prescribing for this patient in the future if my specified concerns stated above can be addressed.

I hope to receive more information regarding this shared care agreement as soon as possible.

Yours sincerely

Primary Care Prescriber signature: _____
Date: _____

Primary Care Prescriber address/practice stamp