Guidelines on Safe Lithium Prescribing and Shared Care

Table of Contents

Background

Lithium is used for the prophylaxis and treatment of mania, hypomania and depression in bipolar disorder, and in the prophylaxis and treatment of recurrent unipolar depression. Lithium is also used as concomitant therapy with antidepressant medication in patients who have had an incomplete response to treatment for acute bipolar depression and to augment other antidepressants in patients with treatment-resistant depression (unlicensed indication, but supported by NICE). It is also licensed for the treatment of aggressive or self-harming behaviour.

Lithium reduces both the number and severity of relapses - it is more effective in preventing manic than depressive relapse. NICE recommends that a mood stabiliser should be prescribed prophylactically after a single manic episode that was associated with significant risk and adverse consequences - NICE supports the use of lithium as a first-line mood stabiliser.

Intermittent treatment with lithium may worsen the natural course of bipolar illness, this has led to recommendations that lithium treatment should not be started unless there is a clear intention to continue for at least 3 years. There is no evidence to suggest that if lithium treatment is effective for the first ten years that effectiveness is lost in the second or third decade of treatment.

Lithium has a narrow therapeutic range; long term use is associated with renal damage and hypothyroidism. Therefore, lithium should not be prescribed unless responsibilities and arrangements for regular monitoring of lithium levels and other essential parameters have been established.

Extra care is required when prescribing lithium for:

- the elderly;
- patients with reduced renal function (eGFR < 60ml/min);
- pregnant women and women of child bearing age;
- patients who have high risk factors for physical illness e.g. hypertension, diabetes, obesity, smoking, urine outflow problems;
- patients taking NSAIDs, ACE-inhibitors, angiotensin-2 antagonists or diuretics;
- patients with learning disabilities

Patients prescribed lithium must have a medication alert activated on PARIS and must be easily identifiable by search on GP clinical records (i.e. lithium added to their repeat prescription).

Key references for this guidance

- NICE CG185 Bipolar disorder: assessment and management (September 2014, last updated February 2016)
- Maudsley Prescribing Guidelines in Psychiatry, 12th edition
- British National Formulary – online via Medicines Complete

General Statements

- Treatment with lithium should be initiated in secondary mental health services
- Regular checks on lithium levels, renal function and thyroid function are essential for safe prescribing.
- Prescribing and monitoring responsibility should remain with secondary care services until a shared care arrangement is agreed with their GP. This includes patients discharged from inpatient settings who have been newly initiated on lithium – responsibility for such patients should initially transfer to the appropriate community mental health team.
- Prescribing and monitoring responsibility of patients with a target lithium level >1 mmol/L must not transfer to primary care.
- Whilst transfer of prescribing and monitoring responsibility is appropriate in other high risk or vulnerable patients, consideration should be given to a higher frequency of specialist review.
- A patient's clinical condition must be stabilised* before requesting shared care. Once the patient is stabilised on lithium they should be considered for shared care between mental health services and the GP. This will normally occur following the 3 month monitoring check.

  **For the purposes of transfer of prescribing and monitoring responsibility, patients are regarded as stabilised once they have shown a response to lithium and there are no recognised problems with compliance or significant acute risks of harm to themselves or to others, or experiencing significant side effects. Their lithium dose will be stable and a 3 month check of lithium plasma levels completed.*
- Prescribing and monitoring tasks for patients on lithium must stay together. A reliable system for accessing monitoring results at the time of prescribing **must** be in place. Prior to issuing a prescription, the prescriber must check that all necessary monitoring tests have been completed and that it is safe to issue a prescription. Where this is not the case, arrangements for monitoring tests should be made as soon as possible
- Whoever initiates tests for monitoring lithium therapy is responsible for acting on the results, particularly increases in lithium levels, levels outside normal/target ranges or results that indicate deteriorating renal or thyroid function
- The Trust maintains a register of lithium patients and the Lithium Registers Team will routinely check WebICE for monitoring results, alerting the TEWV team if monitoring is overdue or if lithium levels indicate that action is required.
- Prescribers must have a system for checking, identifying and dealing with medicines that might adversely interact with lithium therapy. Concurrent treatment with angiotensin converting enzyme (ACE) inhibitors, angiotensin-2 receptor antagonists ("sartans"), thiazide diuretics and non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided if possible
- There must be effective communication between all healthcare practitioners involved with patients on lithium therapy about the target level / range, dosage, monitoring results and changes to concurrent medication.
- The dispensing pharmacist or GP practice must check that monitoring is up-to-date and that it is safe to dispense lithium, by checking the patient-held purple book or contacting the GP surgery or the TEWV lithium registers team

- Patients prescribed lithium should not be discharged from secondary mental health services. In exceptional circumstances an individual agreement for discharge may be considered for a patient who expressly indicates that they do not want to be seen by secondary mental health services. However, discharge should only be considered if lithium treatment is stable, and the patient is adherent to treatment and compliant with monitoring requirements. Discharge arrangements should involve a proper discussion with the GP and the rationale for discharge must be clearly documented.
- Patients who have been discharged from secondary mental health services in the past should be referred back to secondary care unless the exceptional circumstances described above apply. Particular caution should be applied to patients whose lithium therapy becomes unstable (see "Triggers for contacting secondary care mental health services")
- Secondary mental health services have a responsibility to proactively and reactively provide advice to primary care on the management of patients treated with lithium
- Regardless of shared care arrangements in place, secondary mental health services have a responsibility to check monitoring results of all lithium patients when admitted or seen as outpatients with reference to the relevant lithium register
- The patient-held "purple" booklet, alert card and record book developed by the NPSA will be supplied to all patients on lithium and their use supported by healthcare professionals involved in providing care. Patients will also be invited to utilise the "NHS Health Monitor for Lithium" app developed by South West London and St.George's NHS Trust for iOS and Android devices.

Initiation of lithium – *see initiation flowchart in appendix 1*

Pre-treatment screening

Screening for the risk of renal and cardiovascular disease is essential prior to prescribing lithium. The following baseline checks are required:

- eGFR
- Urea & electrolytes
- Creatinine
- Thyroid Function Tests (TFTs)
- Calcium
- Full Blood Count
- ECG (if cardiovascular disease or risk factors, e.g. family history, old age)
- Height
- Weight and BMI
- BP

Concurrent medication must be checked for potential interactions *[template letter for obtaining medical history from GP]*

Patient information

The NPSA Lithium Therapy patient packs containing an information booklet, lithium alert card and record book is available from TEWV pharmacy for new patients and GP practices for longstanding patients who are identified as not having one. Further supplies of the patient pack can be ordered online here.

An "NHS Health Monitor for Lithium" app is available for iOS and Android devices.

The "purple" booklet, alert card and record book developed by the NPSA should be made available to all patients initiated on lithium. Patient details, essential information on the patient's therapy and contacts must be completed when issuing the lithium therapy pack to patients – **for new patients**, **this is the responsibility of the TEWV team**.

Essential details to be completed: -

- Brand; strength and dose of lithium
- Individual target lithium level / range indicating maximum and minimum plasma levels
- Name of people managing lithium therapy
- Dates and results of lithium blood results, e-GFR, TFTs and weight/BMI
- Date of next check
- Any amendments to plasma level range or dose (details in the booklet and alert card must also be amended)

Confirmation that the patient has received written information and verbal advice and the necessary details have been transferred to the booklet, alert card and record book must be noted in Paris and communicated to GP when prescribing transfers

Results of lithium level tests and checks of thyroid function, renal function and weight / BMI monitoring should be recorded in the patient-held record so that healthcare professionals can track changes and have access to the information to make appropriate clinical decisions and maintain safe lithium therapy.

At the start of lithium therapy and throughout treatment patients must receive ongoing verbal and written information about minimising the risks of toxicity. This should cover:

- The importance of having regular blood tests, and the importance of blood samples for lithium levels being taken 12-14 hours after the last dose;

- The signs and symptoms of toxicity; why they might occur and what to do if they do occur;
- The importance of maintaining an adequate fluid intake (e.g. during bouts of diarrhoea and vomiting or during hot weather) and informing their GP or TEWV team if acute infection occurs;
- Avoidance of big changes in dietary salt intake;
- Emphasising good compliance and not to double up if they miss a dose
- Interactions with over the counter medicines e.g. non-steroidal anti-inflammatory drugs, herbal diuretics and sodium bicarbonate containing antacids or urinary alkalinising agents;
- The importance of continuously taking the same brand of lithium;
- Women of child bearing age should be advised to use reliable contraception. Should there be a concern about them being pregnant they should immediately seek professional advice about continuing treatment;
- The importance of using the record book and them or their carer taking it whenever they visit their GP, clinic or hospital, when a new prescription is requested or when collecting a prescription from the dispensing pharmacy / GP surgery

Adding the patient to the TEWV lithium register

After initiation of lithium, the TEWV team should complete the initiation/discontinuation template with the patient's details and email this to the Lithium Registers Team so that the patient can be added to the relevant team register.

Formulations of lithium

Different brands and formulations of lithium are not bioequivalent and care must be taken to make sure that the patient receives the same preparation each time a prescription is supplied. Therefore, lithium should always be prescribed using the brand name. The brand and formulation of lithium taken by the patient must be recorded in the patient record book and on the alert card. **Priadel** is the preferred brand in TEWV.Lack of clarity over which preparation is intended when prescribing can lead to the patient experiencing sub-therapeutic or toxic lithium levels.

Particular care should be taken if there is need to switch from a tablet to a liquid formulation as different lithium salts are used in each type of formulation - refer to the current BNF for available formulations and dose equivalence, and/or seek advice from pharmacy on dose conversion.

Adverse effects of lithium

- Side effects tend to be directly related to plasma levels. Common side effects at therapeutic doses include:
    - Mild gastrointestinal symptoms (usually short-term following initiation)
    - Fine hand tremor
    - Thirst
    - Polyuria (may occur more frequently with twice daily dosing)
    - Weight gain
- **Toxicity** - toxic effects may occur at any plasma lithium level but reliably occur at levels > 1.5 mmol/L. Signs are:
    - GI effects - increasing anorexia, nausea and diarrhoea
    - CNS effects - muscle weakness, drowsiness, ataxia, muscle twitching, tremor
- If features of lithium toxicity occur, stop lithium immediately, check plasma lithium levels, creatinine, urea and electrolytes and discuss with a doctor from mental health services – see table below

Interactions with other medicines

Because of lithium's narrow therapeutic index, interactions with other medicines can be highly clinically significant. Any drug that affects a patient's renal function will affect lithium levels.

The most potentially serious interactions are:

In each case, excretion of lithium is reduced, resulting in an increase in plasma levels. Try to **avoid** combinations of these drugs. If they *must* be used, lithium levels must be monitored more frequently (weekly x 1 month, then monthly until stable*)			
Medicine Group	**Magnitude of effect**	**Timescale**	**Note**
ACE inhibitors Angiotensin-2 receptor antagonists	• Unpredictable • Up to 4-fold increase in lithium levels	Develops over several weeks	7-fold increased risk of hospitalisation for lithium toxicity in the elderly
Thiazide diuretics	• Unpredictable • Up to 4-fold increase in lithium levels	Usually apparent in first 10 days	Loop diuretics are safer but caution still required. Any effect will be apparent in the first month
NSAIDs (inc.OTC anti-inflammatories)	• Unpredictable • From 10% to >4-fold increase in lithium levels	Variable; few days to several months	NSAIDs are widely used on a PRN basis – this is potentially more problematic

* at least two consecutive levels in target range at stable dose

Less significant interactions:

Medicine / group	**Effect of interaction**
* Loop diuretics & potassium-sparing diuretics (safer than thiazides)	Reduced excretion of lithium - increase in levels & risk of toxicity
Tricyclic antidepressants	Risk of toxicity
Antipsychotics - clozapine, flupentixol, haloperidol, phenothiazines, quetiapine, risperidone, sulpiride, zuclopenthixol	Increased risk of extrapyramidal side effects
Antipsychotics - clozapine, flupentixol, haloperidol, phenothiazines, risperidone, zuclopenthixol	Possible neurotoxicity
Antipsychotics - amisulpride	Increased risk of adverse effects of amisulpride
Antipsychotics - olanzapine	Possible risk of lithium toxicity
Amiodarone	Risk of ventricular arrhythmias Increased risk of hypothyroidism
Antiepileptics - carbamazepine, phenytoin,	Possible neurotoxicity (without increased lithium levels)
Calcium channel blockers - diltiazem, verapamil	
Methyldopa	
Dapoxetine	Increased risk of serotonergic effects
SSRIs	Increased risk of CNS toxicity
* Sodium containing antacids	Lithium excretion increased – reduced lithium levels
* Theophylline	

*** For these medicines, it is prudent to check lithium levels soon after starting or stopping treatment**

Refer to current BNF for further information on interactions

On-going monitoring

Plasma lithium levels:

- Blood should be consistently sampled 12 hours after the last dose was taken.
- The actual time interval between the last dose and blood sampling should be noted (and recorded in the electronic patient record if sampling performed by TEWV team) so that it can be taken into account when the result is received [for once daily dosing with modified-release preparations the plasma level can be expected to fall by 0.2 mmol / L between 12 and 24 hours post dose]
- Monitor levels more frequently (monthly) if there are any complicating factors (e.g. impaired renal function, cardiovascular disease, elderly, acute infection esp. if leading to dehydration) or potential for drug interactions or deterioration in renal function or abnormal results.
- Record all results (plus any discrepancy in sampling time) in the patient-held record book.
- The target level / range and indication should be defined and recorded for each patient

When?	***What?***
1 week after initiation or after a dose/formulation change or after introduction of interacting medication, & weekly until levels are stable*	**Plasma lithium levels:** • Aim for 0.6-0.8 mmol / L initially (12 hours post dose) • Elderly are more sensitive to lithium and side effects so aim for lower end of this range (min. 0.4 mmol / L) • If resistant initiate a trial period of 6 months at 0.8-1.0 mmol / L. • Monitor for signs of neurotoxicity, blurred vision, muscle weakness, tremor, slurred speech and confusion.
At 3 months	**Urinary albumin creatinine ratio** (ACR): • NORMAL - no further regular ACR monitoring required (unless eGFR <60 ml/min, then re-check annually) • PROTEINURIA (ACR >30 mg/mmol) – re-check annually • HEAVY PROTEINURIA (ACR >70 mg/mmol) – refer to nephrology; consider stopping lithium
Every 3 months ** (once stable*)	**Plasma lithium levels** – as above Monitor for signs of neurotoxicity, blurred vision, muscle weakness, tremor, slurred speech and confusion.
Every 6 months	**Thyroid function tests (TFTs)** – risk of hypothyroidism increased up to five-fold and is particularly high in women 40-59 years old. Consider thyroid replacement early. **Renal function (e-GFR)** – consider more frequent checks (3-monthly) in the elderly or established CKD. Monitoring trend in function is more useful than absolute value of test result. Consecutive results indicating reduction of renal function (especially if e-GFR is <60 ml/min, decreasing dose adjustment to maintain safe lithium level or increase in creatinine level) should prompt consideration of lithium review. *Nephrology advice for GP's or other health care workers that refer to the JCUH renal unit – Stees.renal@nhs.net* If lithium is discontinued due to concerns about lithium related decline in renal function, continue to monitor renal function for at least one year after lithium is stopped. **Urea & Electrolytes (U&Es)** **Calcium** (tick bone box on path lab form) - long-term treatment is associated with hyperparathyroidism and hypercalcaemia. Clinical consequences of raised serum calcium include renal stones, osteoporosis, dyspepsia, hypertension and renal impairment. **Weight / BMI**

* at least two consecutive levels in target range at stable dose
** After 1 year of stable treatment, monitoring of lithium levels may be extended to 6-monthly in patients who meet all of the following criteria:

- Age < 65 years;
- No concurrent medicines which interact with lithium (see table);
- No risk of impaired renal or thyroid function, raised calcium levels or other complications;
- Good symptom control;
- Good adherence to prescribed dosage;
- Last plasma lithium level <0.8 mmol / L *(therefore, by definition, all patients with a target level >0.8mmol / L must continue to be monitored every 3 months)*

Action in response to lithium levels

- Whoever initiates tests for plasma lithium levels is responsible for acting on levels which fall outside the patient's target range. GPs should always discuss treatment options with mental health services. However, the TEWV team should proactively advise GPs if abnormal levels are observed when routinely checking the lithium register
- Local pathology labs have agreed that all lithium levels **above 1 mmol/L** will be notified immediately by phone as follows:
    - During normal working hours – to the TEWV team or GP Practice sending the sample
    - Out of hours – to the relevant Crisis Team or the relevant Emergency Care Centre (further assistance may then be sought from the local Crisis Team).
- The grid below sets out recommended actions to take in response to reported lithium levels relative to the patient's target level:

		Reported lithium level						
		<0.4 mmol/L	0.4-0.6 mmol/L	0.6-0.8 mmol/L	0.8-1.0 mmol/L	1.0-1.2 mmol/L	1.2-1.5 mmol/L	>1.5 mmol/L
Target lithium level	0.4-0.6 mmol/L	*A*	*In target range*	*B*	*B*	*C*	*C*	*C*
	0.6-0.8 mmol/L	*A*	*A*	*In target range*	*B*	*C*	*C*	*C*
	0.8-1.0 mmol/L	*A*	*A*	*A*	*In target range*	*C*	*C*	*C*
	1.0-1.2 mmol/L	*A*	*A*	*A*	*A*	*In target range*	*C*	*C*

Actions (listed in suggested order, but adjust as necessary):

A	*Check blood sampling time (ideal 12-14 hours after last dose)*
	Check adherence to prescribed dose (non-compliance or overdose)
	Check recent trend in lithium levels
	Re-check levels (as soon as possible and/or after at least 5 days if dose adjusted or re-started)
	Refer to / seek advice from mental health team
	Adjust dose (if repeat levels out of range AND compliance / sampling time correct, OR deteriorating renal function)

B	*Check blood sampling time (ideal 12-14 hours after last dose)*
	Check adherence to prescribed dose (non-compliance or overdose)
	Check recent trend in lithium levels
	Check renal function / recent trend in renal function
	Re-check levels (as soon as possible and/or after at least 5 days if dose adjusted or re-started)
	Refer to / seek advice from mental health team
	Adjust dose (if repeat levels out of range AND compliance / sampling time correct, OR deteriorating renal function)

C	*Check for symptoms / signs of toxicity*
	Advise patient to attend A&E (if signs / symptoms of toxicity present)
	Advise patient to stop taking lithium
	Check blood sampling time (ideal 12-14 hours after last dose)
	Check adherence to prescribed dose (non-compliance or overdose)
	Check renal function / recent trend in renal function
	Refer to / seek advice from mental health team (out-of-hours consultant - 01642 838050)
	Adjust dose (if repeat levels out of range AND compliance / sampling time correct, OR deteriorating renal function)
	Re-check levels (as soon as possible and/or after at least 5 days if dose adjusted or re-started)

- All episodes of toxicity must be recorded in the patient record, together with details of any remedial action taken.

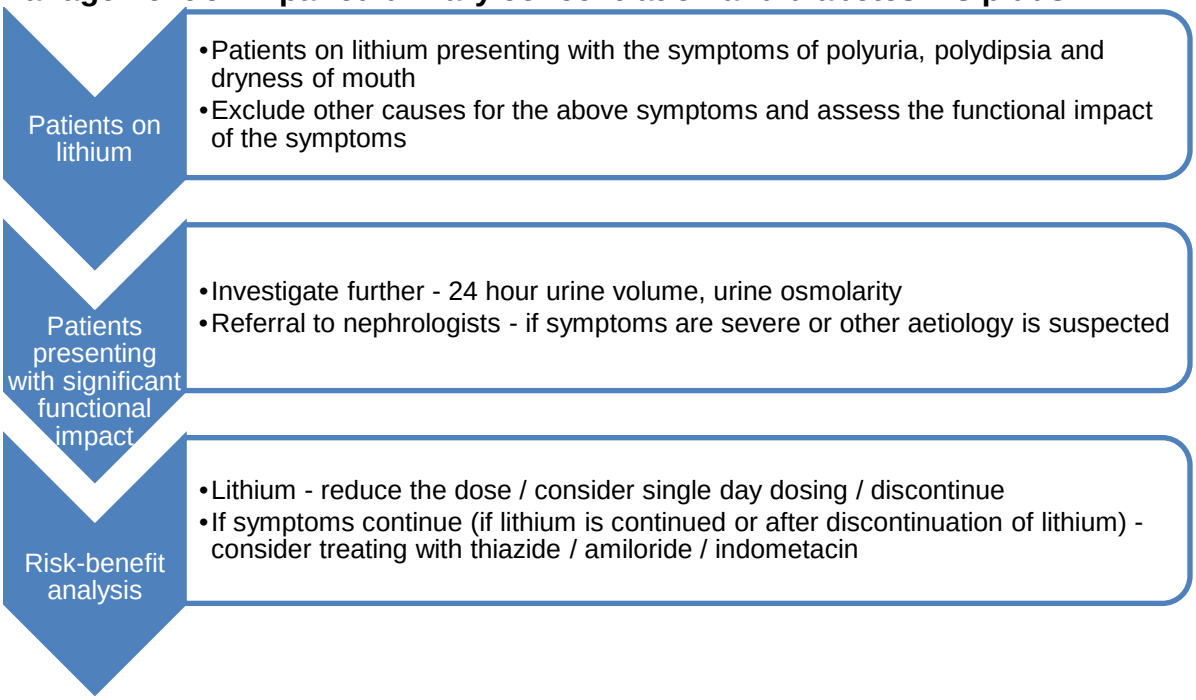
Renal monitoring in established lithium treatment

Stage of chronic kidney disease	eGFR	Proteinurea	Action
Normal kidney function Stage 1 Stage 2	> 60	3 months after starting lithium check urinary albumin creatinine ratio (ACR)	• Normal: no regular albumin creatinine ratio monitoring required • Proteinuria (ACR ≥30 mg/mmol): monitor albumin creatinine ratio annually • Heavy proteinuria (ACR ≥70 mg/mmol): **refer to nephrology**
Stage 3A Stage 3B	59 - 45 30 – 44	Check urinary albumin creatinine ratio (ACR). Confirm abnormal result with early morning sample. If proteinuria confirmed do reagent strip for haematuria	• Check eGFR every 3 months (plot graph of eGFR or reciprocal creatinine in records) • Monitor ACR annually • Complete cardiovascular risk profile, consider antiplatelet drugs & cholesterol lowering therapy • Control BP (<140 mm systolic & 90 mm diastolic; lower in diabetes or ACR ≥30 mg/mmol) • Stage 3B: measure haemoglobin annually • **Refer to nephrology** and discuss discontinuation if: o At stage 3B o ACR ≥70 mg/mmol o ACR ≥30 mg/mmol + haematuria o Decline in GFR of ≥5ml/min over 1 year or ≥10ml/min in 5 years
Stage 4 Stage 5	15 – 29 < 15	As for stages 3A & 3B	**Refer to nephrology**. Lithium normally contraindicated

Ref: Lithium and chronic kidney disease: Mukesh Kripalani, James Shawcross, Joe Reilly, John Main, *BMJ 2009;339:b2452*

Nephrology advice for GP's or other health care workers that refer to the JCUH renal unit – Stees.renal@nhs.net

Management of impaired urinary concentration and diabetes insipidus



Ref: Management of the renal adverse effects of lithium: Sumeet Gupta, Mukesh Kripalani, Udayan Khastgir and Joe Reilly; APT 2013, 19:457-466

Shared Care Arrangements

Responsibilities of secondary care mental health services (TEWV)

- Initial comprehensive assessment and liaison with relevant health professionals
- Pre-treatment screening – as above *[template letter for obtaining information from GP]*
- Provision of patient information – as above – including issue and completion of entries in the patient information booklet, record book and alert card
- Inform GP that lithium has been initiated (prior to formal shared care request) *[template letter]*
- Prescription of lithium during dose titration until the patient is stabilised, has had a 3 month monitoring check and shared care has been formally accepted by the patient's GP / primary care team
- Transfer of prescribing and monitoring via a formal request to the GP and primary care team on an individual patient basis via a standard letter (appendix 1) - the letter should specify the indication, brand name, form, current dose, personal target level / range* and details of planned reviews
  (if target range above 1 mmol/L lithium prescribing and monitoring cannot be transferred to the GP)*
- Maintain oversight of patient monitoring via the weekly update of the Trust lithium register *[template letter to GP re. overdue monitoring] [template letter to patient re. overdue monitoring]*
- Provide a point of contact during working hours for any queries related to the prescribing and monitoring of lithium
- Review patient at least annually – at each review, monitor clinical condition, review monitoring tests and consider appropriateness of lithium therapy. Record the review in Paris and provide a comprehensive report of the review to the GP using the standard pro-forma (appendix 2).
- Notify the GP and primary care team if the patient does not present for specialist reviews [*template letter*]
- Accept return of prescribing and monitoring responsibility if lithium therapy or clinical condition becomes unstable
- Notify the GP and primary care team if lithium therapy is discontinued *[template letter]*

Responsibilities of the General Practitioner / primary care team

- Acknowledge and respond to the request for shared care within 4 weeks of receipt
- Add lithium to the patient's repeat prescription (even if not yet prescribing) so that interactions will be highlighted by the clinical system
- Avoid prescribing of interacting drugs whenever possible; if unavoidable, seek advice from secondary care on adjustments to lithium dose
- Set up a code and recall system to identify patients prescribed lithium
- Provide regular, repeat prescriptions for lithium at dosage recommended by the secondary care team
- Perform blood sampling and other monitoring tests according to this guideline. Notify the TEWV team if sample was taken outside the 12-14 hour post-dose window

- Review the results of monitoring tests and check that it is safe to issue repeat prescriptions.
- Seek advice from the secondary care team regarding lithium levels outside the personal target range and other tests outside normal range
- Complete entries in the patient-held record book and alert card as per guidelines
- Be aware of potential side effects and inform / seek advice of the secondary care team of suspected side effects
- Be aware of the signs of lithium toxicity and inform / seek advice of the secondary care team if the patient develops any signs of toxicity – advise patient to withhold lithium if cannot be discussed with secondary care team on same day.
- Stop issuing prescriptions if notified by the secondary care team
- Refer the patient back to specialist services for review if they become clinically unstable.

Responsibilities of the dispensing Pharmacist / GP practice

- Check that blood results are being monitored regularly and that it is safe to dispense lithium (following relevant SOPs where applicable)
- Where it is not possible to access monitoring results, lithium therapy should not be withheld. The staff responsible for dispensing a prescription should communicate to the prescriber that lithium medication has been provided without monitoring results being seen.

Triggers for contacting secondary care mental health services

Patients within shared care arrangements:

- Signs and symptoms of toxicity
- Lithium level outside the patient's personal target range
- Trend in decreasing lithium dose to keep lithium level within target range (indication of impaired renal function)
- Deterioration of renal function:
    - Downward trend in function is more indicative than absolute value of test result
    - Consecutive results indicating reduction of renal function (increase in creatinine level or decreased eGFR – less than 60ml/minute should prompt referral for consideration of lithium review)
- Patient becomes mentally unwell
- Non-compliance or suspected non-compliance with treatment or monitoring
- Pregnancy – actual or planned
- Breast feeding
- Initiation of interacting medication where this is unavoidable
- Acute infection or other medical condition which may impact on lithium levels or renal function

Patients previously discharged with no planned review in secondary care

Re-referral of patients to Adult Mental Health Services will be via the single point of access; re-referral of patients to Older Peoples Services will be via the usual route. GPs are requested to clearly state reason for required review:

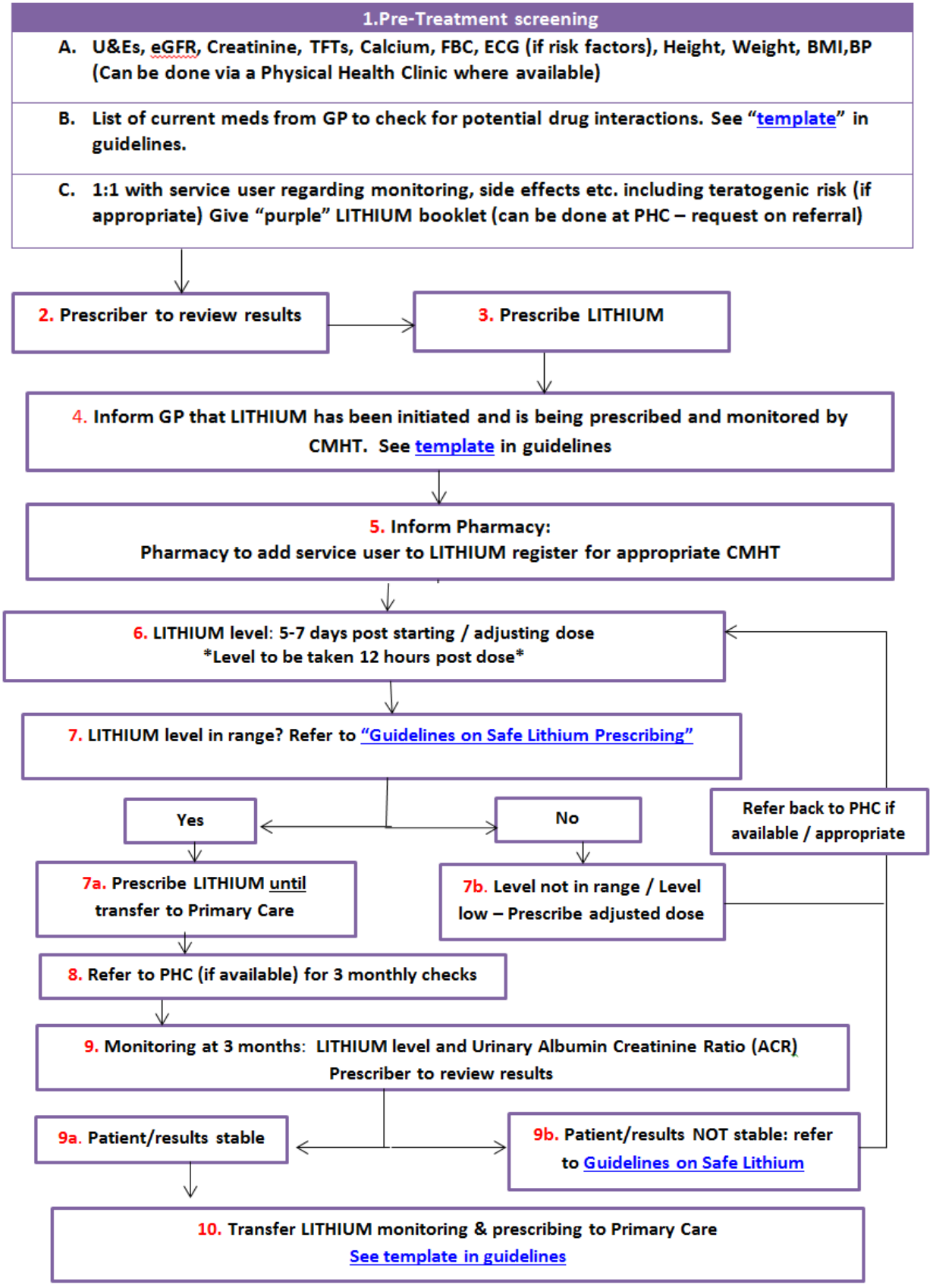
- Previously discharged outwith the circumstances described above
- Lack of or concern over efficacy
- Intermittent or poor adherence with treatment
- Deterioration of mental state
- Tolerability or side effect problems
- Patient request to discontinue treatment or review treatment
- New medical conditions (especially management of cardiovascular risk factors or rheumatoid disease as these may be treated with medicines that affect lithium levels)
- Deterioration of medical conditions (as above)
- Deterioration of renal function (including multiple dose reduction to maintain lithium levels within target range)
- Patients without a diagnosis of bipolar disorder or refractory depression

Appendix 1 – Initiation flowchart

Initiating LITHIUM flow-chart

Please use this flow chart in conjunction with "Guidelines on Safe Lithium Prescribing & Shared Care" (includes "templates").

NOTE: IF THE SERVICE USER TRANSFERS TEAM DURING THIS PROCESS, PLEASE LET THE RECEIVING TEAM KNOW WHICH POINT IN THE PROCESS THEY HAVE REACHED



Appendix 2 – Transfer request letter

REQUEST TO TRANSFER LITHIUM PRESCRIBING & MONITORING

INSERT CLINIC ADDRESS

PARIS ID: ……
NHS NO: …… Tel No:
Fax no:

Date of Clinic:
Date Typed:

The contents of this letter are confidential and may not be disclosed without the consent of the writer

GP ADDRESS

Dear Dr

RE (*name, DOB)*
(address)

The above patient has been attending our clinic and has been initiated on lithium therapy which is now stabilised. All aspects of treatment with lithium have been explained to the patient and a patient-held lithium therapy pack (purple booklet) has been completed and issued.

We feel it is now appropriate to transfer prescribing and monitoring responsibility to you in line with the agreed shared care arrangements.

Details of the patient's lithium treatment are attached, together with a summary of the shared care prescribing and monitoring requirements.

I would be grateful if you could sign and fax back this sheet as confirmation of your acceptance of shared care for this patient

We will conduct a thorough review of this patient at least annually and provide you with a report of each review. In the meantime, please do not hesitate to contact us if you need any advice or support.

Yours sincerely

Name
TEWV Prescriber

CC – Patient

TRANSFER OF PRESCRIBING & MONITORING FOR LITHIUM THERAPY

PRIVATE & CONFIDENTIAL

Information helpline (0191 4415778) for advice on managing patients on lithium

Patient name: ……

NHS number: ……

Date of request: ……

GP Name: ……

Practice: ……

Care co-ordinator:	TEWV prescriber:
Contact no.:	Contact no.:
Indication for lithium	Date of next review:
Brand:	Form: liquid / tablets (Delete as appropriate)
Dose:	Plasma level target range: mmol / L
Required monitoring frequency (lithium levels): weekly / monthly / 3-monthly (Delete as appropriate)	

Monitoring results (most recent)	Date	Result	Date next due
Plasma lithium level			
Weight / BMI			
U&Es			
e-GFR			
TFTs			
Calcium			
ECG if applicable			
FBC if applicable			

Patient given 28 day prescription on:
Next prescription due on:

Please contact us on the telephone number above or, if out of hours, the Crisis Team on ……(insert tel. number) if you require advice due to:

- Signs and symptoms of toxicity
- Lithium level outside the patient's personal target range
- Trend in decreasing lithium dose to keep lithium level within target range (indication of impaired renal function)
- Deterioration of renal function
  - o Downward trend in function is more indicative than absolute value of test result
  - o Consecutive results indicating reduction of renal function (increase in creatinine level or decreased e-GFR – less than 60ml/minute should prompt referral for consideration of lithium review
- Patient becomes mentally unwell
- Non-compliance or suspected non-compliance with treatment or monitoring
- Pregnancy – actual or planned
- Breast feeding
- Initiation of interacting medication where this is unavoidable
- Acute infection or other medical condition which may impact on lithium levels or renal function

Please fax back confirmation of acceptance to : [insert fax number]

Signed:…… Name:…… Date:……
GP / On behalf of GP

If the patient is not concordant with monitoring requirements, please inform the Care Co-ordinator as above, who will instigate an emergency medical review. Do not continue to prescribe lithium in such circumstances

TRANSFER OF PRESCRIBING & MONITORING FOR LITHIUM THERAPY

Prescription / Monitoring Guidelines

Prescribing:

- Prescribed lithium by brand name (as advised by TEWV team)
- Do not prescribe more than 28 days' supply on each prescription
- Ensure that monitoring requirements are up-to-date and within range before issuing each prescription. Please do not reauthorise repeat prescriptions for more than 3-4 months.

Monitoring - plasma lithium levels.

- Blood should be consistently sampled 12 hours after the last dose was taken.
- The actual time interval between the last dose and blood sampling should be noted so that it can be taken into account when the result is received [for once daily dosing with modified-release preparations the plasma level can be expected to fall by 0.2 mmol / L between 12 and 24 hours post dose]
- Monitor levels more frequently (monthly) if there are any complicating factors (e.g. impaired renal function, cardiovascular disease, elderly, acute infection esp. if leading to dehydration) or potential for drug interactions or deterioration in renal function or abnormal results.
- Record all results (plus any discrepancy in sampling time) in the patient-held record book.
- The target level / range and indication should be defined and recorded for each patient

Every 3 months (unless advised otherwise by secondary care team)	**Plasma lithium levels** – as above Monitor for signs of neurotoxicity, blurred vision, muscle weakness, tremor, slurred speech and confusion.
Every 6 months (unless advised otherwise by secondary care team)	**Thyroid function tests (TFTs)** – risk of hypothyroidism increased up to five-fold and is particularly high in women 40-59 years old. Consider thyroid replacement early. **Renal function (e-GFR)** – consider more frequent checks in the elderly or established CKD. Monitoring trend in function is more useful than absolute value of test result. Consecutive results indicating reduction of renal function (especially if e-GFR is <60 ml/min, decreasing dose adjustment to maintain safe lithium level or increase in creatinine level) should prompt consideration of lithium review. *Nephrology advice for GP's or other health care workers that refer to the JCUH renal unit – stees.renal@nhs.net* If lithium is discontinued due to concerns about lithium related decline in renal function, continue to monitor renal function for at least one year after lithium is stopped. **Urea & Electrolytes (U&Es)** **Calcium** (tick bone box on path lab form) - long-term treatment is associated with hyperparathyroidism and hypercalcaemia. Clinical consequences of raised serum calcium include renal stones, osteoporosis, dyspepsia, hypertension and renal impairment. **Weight / BMI**

Appendix 3 – Secondary care review template

LITHIUM REVIEW

Patient name:	DoB:
Date of review:	Specify if (please tick): 3 month review ☐ 6 month review ☐ Annual review ☐
Current responses to treatment:	
Current blood results	
Previous blood result	
All current medication and dose	
Side effect profile (consider any drug interactions)	
Physical health checks – BMI: Weight: BP: Pulse: ECG (if required).	Lying: Standing**:**
Patient & Carer perceptions	
Have they brought the Booklet?	Yes ☐ No ☐
Is Booklet up to date?	Yes ☐ No ☐
Plan/Outcome	