Kent and Medway
NHS and Social Care Partnership Trust

Lithium Policy

Prescribing, Administration and Monitoring

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DOCUMENT TRACKING SHEET

Lithium Policy

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0.1	Draft	31.7.2019	D&T for review	
1.0	Final	29.10.2019	Trust Wide Patient Safety and Mortality Review Group	Ratified

REFERENCES

BNF
The Maudsley, Prescribing Guidelines in Psychiatry 13th Ed
NICE CG185 Bipolar Disorder: The assessment and management of bipolar disorder in adults, children and young people in primary and secondary care. April 2018 https://www.nice.org.uk/guidance/cg185

RELATED POLICIES/PROCEDURES/protocols/forms/leaflets

Medicines Management Policy	KMPT.CliG.008
Physical Health and Examination Policy	KMPT.CliG.026
Venepuncture Policy	KMPT.CliG.079
CPA Policy	KMPT.CliG.001
Consent to Treatment Policy	KMPT.CliG.049
DNA Policy	KMPT.CliG.014
Medical Devices Policy	KMPT.CliG.036
Standard Universal Precautions Policy	KMPT.CliG.089
Infection Prevention and Control Policy	KMPT.CliG.005

SUMMARY OF CHANGES

Date	Author	Page	Changes (brief summary)

CONTENTS

1 INTRODUCTION

1.1 Lithium salts are effective prophylactic treatment for Bipolar Affective Disorder. It is also indicated in treatment of certain types of depression. In effective dose and within the therapeutic range it is an effective medication. Doses below the therapeutic levels can be ineffective and doses above therapeutic levels can lead to serious side effects and toxicity. Lithium toxicity can be life threatening.

1.2 Standardisation of the practice of prescribing, administering and monitoring lithium will ensure safe and effective delivery of pharmacological management.

2 WHO DOES THIS POLICY APPLY TO?

2.1 This policy applies to all the clinicians of the Trust.

3 PURPOSE

3.1 This policy provides guidance to staff on prescribing, administering and monitoring of Lithium therapy. It also gives the necessary tools for effective compliance with the therapy.

4 DUTIES

4.1 The trust board is accountable for:

4.1.1 Delegating responsibility to the trust wide Clinical Governance group to ensure that the lithium policy is in force, current and reviewed regularly

4.2 The Drugs and Therapeutics group is responsible for:

4.2.1 Development and monitoring of the lithium policy to reflect current practice within the Trust.

4.3 Chief Executive:

4.3.1 Has overall responsibility for the safe and secure handling of medicines.

4.4 Medical Director:

4.4.1 Is executive lead for medicines management

4.4.2 Is responsible for reporting to the Trust Board on performance in relation to medicines management.

4.5 Chief Pharmacist:

4.5.1 Is accountable for establishing and maintaining a safe and secure system for medicines management throughout the Trust

4.5.2 Is responsible for reporting to Trust wide Clinical Governance Group in relation to medicines management.

4.6 Clinical Directors/Leads and Service Directors/Leads

4.6.1 Are responsible for ensuring that their staff are aware.

5 INDICATIONS OF LITHIUM

5.1 Treatment and prophylaxis of mania

5.2 Treatment and prophylaxis of bipolar disorder

5.3 Treatment and prophylaxis of recurrent depression

5.4 Treatment or prophylaxis of aggressive or self-harming behaviour.

6 LITHIUM INITIATION PROTOCOL

6.1 Prior to starting lithium, informed consent should be obtained from the patient according to the Trust Consent to Treatment Policy.

6.2 Advise the person that poor adherence or rapid discontinuation may increase the risk of relapse.

6.3 The following Tests and Measurements must be carried out and recorded before initiation of Lithium Therapy either in the community or hospital:

- Renal Function Test (RFT), Urea and Electrolytes (U&E's) including creatinine (or eGFR or creatinine clearance)
- Thyroid Function Test (TFT)
- Serum calcium level
- Full Blood Count
- Fasting blood glucose, glycosylated haemoglobin (HbA1c) and blood lipid profile
- Weight, BMI and waist circumference
- ECG to be done for people with cardiovascular disease or risk factors for it

6.4 Ensure the person is given a lithium booklet

6.5 Establish a shared-care arrangement with the person's GP for prescribing lithium and monitoring adverse effects.

6.6 Measure plasma lithium levels 1 week after starting lithium and 1 week after every dose change, and weekly until the levels are stable. Aim to maintain plasma lithium level between 0.6 and 0.8 mmol per litre in people being prescribed lithium for the first time.

6.7 Consider maintaining plasma lithium levels at 0.8–1.0 mmol per litre for a trial period of at least 6 months for people who:

- Have had a relapse while taking lithium in the past or
- Are taking lithium and have subthreshold symptoms with functional impairment.

6.8 Advise people taking lithium to:

- Seek medical attention if they develop diarrhoea or vomiting or become acutely ill for any reason
- Ensure they maintain their fluid intake, particularly after sweating (for example, after exercise, in hot climates or if they have a fever), if they are immobile for long periods or if they develop a chest infection or pneumonia
- Talk to their doctor as soon as possible if they become pregnant or are planning a pregnancy.

6.9 Warn people taking lithium not to take over-the-counter non-steroidal anti-inflammatory drugs and avoid prescribing these drugs for people with bipolar disorder if possible; if they are prescribed, this should be on a regular (not p.r.n.) basis and the person should be monitored monthly until a stable lithium level is reached and then every 3 months.

7 MONITORING OF LITHIUM THERAPY

7.1 Serum lithium level should be measured 12 hours post dose every 3 months.

7.2 At one year NICE recommends lithium levels can be done 6 monthly except for the following groups:

- 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.

7.3 Monitor lithium dose and plasma lithium levels more frequently if urea levels and creatinine levels become elevated, or eGFR falls over 2 or more tests, and assess the rate of deterioration of renal function. For further information refer to NICE's guidance on chronic kidney disease and acute kidney injury.

7.4 The following tests/measures should be conducted every 6 months during maintenance treatment:

- Renal function tests (e-GFR), serum calcium and thyroid function tests
- Weight or BMI

7.5 The following tests/measures should be conducted every year during maintenance treatment:

- Fasting blood glucose, glycosylated haemoglobin (HbA1c) and blood lipid profile
- ECG for people with cardiovascular disease or risk factors for it.

7.6 All patients prescribed Lithium must have a six monthly review with the medical team. It could be CPA review or medical review.

7.7 When discussing whether to continue lithium, take into account clinical efficacy, other risk factors for renal impairment and cardiovascular disease, and degree of renal impairment; if needed seek advice from a renal specialist and a clinician with expertise in managing bipolar disorder.

7.8 Monitor the person at every appointment for side-effects including dry mouth/ metallic taste, increased thirst, passing more urine, dizziness, tremor, diarrhoea and nausea. The symptoms of neurotoxicity which need to be monitored include paraesthesia, ataxia, severe tremor, difficulty in speaking or slurring of words and cognitive impairment, which can occur at therapeutic levels of lithium.

7.9 All clients on Lithium therapy should be issued with Lithium Treatment Monitor booklet.

7.10 The issue of Lithium Record Book, Lithium Therapy - important information for patients booklet to patients must be recorded in their patient record.

8 STRATEGY FOR MONITORING LITHIUM THERAPY

8.1 A 'key person' will be identified by the senior staff within each of the mental health teams to monitor all patients prescribed lithium. This Key Person may be a CPN or other appropriate professional. If required they will be trained to carry out the monitoring. The manager of the Team must ensure that the key person has the appropriate skills and knowledge to follow this protocol, and should arrange training to cover any areas of required learning.

8.2 The key person will keep a record of all blood tests carried out. If the key person is a qualified professional, they will also monitor timely access to blood test results. If not then clear communication must be given to the care co-ordinator and consultant / independent prescriber responsible for the patient, stating that blood tests have been carried out.

8.3 Key person will maintain a spread sheet containing all the vital details of the clients to monitor the Lithium Therapy.

8.4 Key person will aim to coordinate the blood test and physical health monitoring with every CPA review meeting if the client is on CPA care pathway.

8.5 Key person will liaise with local laboratory to establish a clear line of communication in case of abnormal results relating to Lithium therapy. (For example blood levels of Lithium exceeding 1.0 mmol / L, abnormal kidney function tests, abnormal thyroid function tests).

8.6 Key person will be expected to carry out annual audit / service evaluation projects with support from more senior staff where needed.

8.7 They will have supervision with identified senior practitioner of the team. They may access the consultant psychiatrist / independent prescriber for any further support or medication related training needs

8.8 If they need medical input regarding a Lithium client they can contact the respective consultant of the client or his / her medical team / independent prescriber.

8.9 In case of abnormal blood tests, key person (if a qualified professional) will inform the respective consultant / independent prescriber and care coordinator by e-mail with a read request. They will also try to inform the consultant in person where it is possible. Such e-mail can be stored in a separate folder in their mailbox for future audits. Where the key person is not a qualified professional, it will be the responsibility of the care co-ordinator and consultant to ensure that test results are followed up and actioned upon where necessary.

8.10 In case of high Lithium blood levels they should contact the respective consultant / independent prescriber by phone or in person in addition to sending an e-mail. If it is not possible they should contact another medical team member so that immediate action can be taken.

9 DISCONTINUING LITHIUM

9.1 The discontinuation could be planned or urgent termination. Reasons for discontinuation of Lithium could include:

- Patients unable to tolerate lithium even at therapeutic serum levels
- If there is significant renal impairment
- If lithium therapy proves clinically ineffective
- Persistent non-compliance or erratic compliance with monitoring
- Toxicity
- Patient choice e.g. due to adverse effects of excessive weight gain.

9.2 If lithium prescription is stopped for any reason, the person monitoring the lithium blood levels should be informed as soon as reasonably possible by the prescriber.

9.3 Be aware that discontinuation of lithium therapy in bipolar prophylaxis can lead to relapse. The discontinuation should be gradual and manage with additional support.

9.4 If stopping lithium, reduce the dose gradually over at least 4 weeks, and preferably up to 3 months, even if the person has started taking another anti-manic drug.

9.5 During dose reduction and for 3 months after lithium treatment is stopped, monitor the person closely for early signs of mania and depression.

10 PROTOCOL FOR LITHIUM MONITORING FOR INPATIENTS

10.1 Lithium levels are normally checked 12 hours after the last dose unless strong suspicion of toxicity. Inpatients who are on Lithium often have poor fluid intake and hence closer monitoring is required than in the community

10.2 Lithium levels are increased by:

- Dehydration (due to reduced fluid intake, excess loss by sweating, vomiting or diarrhoea)

- Kidney disease
- ACE inhibitors, diuretics and NSAID's.
- Frequent lithium levels are required when patients have infections such as UTI.

10.3 If a new patient is on Lithium, then Duty doctor who completed initial clerking should send or handover to send Lithium levels 12 hours after the last dose. Ward nurse to remind this if the duty doctor has forgotten this. The bottles should be marked as 'Urgent' since Lithium levels are done in batches. Lithium levels are sent in yellow top bottles.

10.4 All patients on Lithium should be on fluid intake chart.

10.5 Test results to be promptly chased up. If the results are within normal range (0.4-0.8 mmol/L) – patient should have Weekly Lithium levels. Decision to reduce the frequency of Lithium monitoring should only be done by a consultant psychiatrist.

- >1.0 mmol/L - stop Lithium and seek advice.
- < 0.4 mmol/L - seek advice regarding increasing Lithium dose.

10.6 All staff to look out for clinical signs of Lithium toxicity (severe tremors, unsteadiness, diarrhoea, drowsiness, blurred vision, confusion, lack of coordination). This should be discussed in nursing handover at each shift and recorded in handover sheet.

10.7 The information that patient is on Lithium should be included in MEWS chart so that HCA's can look out for signs of toxicity during observation.

10.8 If there is a suspicion about lithium toxicity then call duty doctor to check Lithium levels.

10.9 Pharmacist should attach Lithium booklet to medication chart of patients on lithium. All patients and their family should have information leaflets about Lithium and its toxicity.

10.10 When patients are transferred to different ward/hospital information that they are on Lithium and its monitoring requirement should be handed over.

10.11 The same protocol would apply to patients newly started on Lithium except that initial Lithium levels are done 4- 7 days after the start. Monitoring requirement should be clearly stated in discharge summary.

10.12 Ward should liaise with patient's GP or district nurses regarding blood test appointment following discharge from hospital.

11 CLIENTS MOVING BETWEEN DIFFERENT TEAMS

11.1 There should be handover of client lithium related details from key person of one to the key person of other team.

11.2 When the client is admitted to the in-patient services, blood Lithium and other relevant investigations should be carried out as required at appropriate interval though out the in-patient stay.

11.3 When the client is admitted to the non-psychiatric in-patient facility, the respective Liaison psychiatry or medical team should be informed of the Client Lithium therapy details.

12 GUIDELINES FOR DISCHARGING CLIENTS ON LITHIUM THEAPAPY TO PRIMARY CARE

12.1 For all patients prescribed Lithium who are discharged to primary care, the following information must be communicated to their GP:

- Refer to Trust Lithium Shared care protocol.
- Discharge letter to convey details of Tests and monitoring required, together with Shared Care document, Care Plan and Risk assessment
- Copy of NPSA Patient Safety Alert 2009/PSA005- Safer lithium therapy – supporting information Dec 2009
- Information on patient lithium record booklet and lithium alert card

13 LITHIUM IN PREGNANCY

13.1 Refer to the latest NICE guidance Bipolar Disorder CG38, managing Bipolar disorder in pregnant women.
http://www.nice.org.uk/nicemedia/pdf/CG38niceguideline.pdf

13.2 Refer the patient to KMPT MIMHS

13.1 Risks to Consider

- Foetal heart defects (risk raised from 8 in 1000 to around 60 in 1000).
- Ebstein's anomaly (risk raised from 1 in 20,000 to 10 in 20,000).
- High levels in breast milk.

13.3 Actions to Take

- Do not routinely prescribe, particularly in the first trimester of pregnancy or during breastfeeding.
- Advise a woman who is taking lithium and is planning a pregnancy, and who is well and not at high risk of relapse, to stop the drug.

13.4 If a woman who is taking lithium becomes pregnant:

- If the pregnancy is confirmed in the first trimester, and the woman is well and not at high risk of relapse, stop the drug gradually over 4 weeks; explain that this may not remove the risk of cardiac defects in the foetus

13.5 If she is not well or is at high risk of relapse, consider:

- Switching gradually to an antipsychotic, or
- Stopping lithium and restarting it in the second trimester if the woman is not planning to breastfeed and her symptoms have responded better to

lithium than to other drugs in the past, or continuing with lithium if she is at high risk of relapse.

13.5 If a woman continues taking lithium during pregnancy:

- Check serum levels every 4 weeks, then weekly from the 36th week, and less than 24 hours after childbirth
- Adjust the dose to keep serum levels towards the lower end of the therapeutic range
- Make sure she maintains adequate fluid intake.
- Women taking lithium should deliver in hospital and be monitored during labour by the obstetric team.
- Monitoring should include fluid balance, because of the risk of dehydration and lithium toxicity (in prolonged labour, it may be appropriate to check serum lithium levels).
- https://www.nice.org.uk/guidance/cg192

13.6 Breastfeeding

- Breastfeeding is not advised if taking lithium, women who wish to breast feed and are at significant risk without mood stabilising medication should be offered an alternative relevant alternatives.
- https://www.nice.org.uk/guidance/cg192

14 PATIENT INFORMATION

14.1 The Trust patient information leaflet should be provided. Staff will ensure that patient information in relation to this policy is readily available in accessible formats. This will also be available to relatives, carers and advocates.

15 IMPLEMENTATION INCLUDING TRAINING AND AWARENESS

15.1 Managers will ensure that all relevant staff receive the appropriate training and are aware of the policy and procedure to be followed. Training will be available for patient and carers

15.2 All issues relation to the safety of a patient on lithium should be reported using the Trust incident reporting policy.

16 STAKEHOLDER, CARER AND USER INVOLVEMENT

16.1 Members of Drugs and Therapeutics Group - development, consultation and approval

16.2 Members of Trust Wide Patient Safety Group – consultation and ratification

16.3 Implementation by Global e mail/Team Brief/Medicines Management Newsletter

16.4 Changes to be notified by Policy manage via Team Brief, Staff zone Medicines management Newsletter.

17 EQUALITY IMPACT ASSESSMENT SUMMARY

17.1 The Equality Act 2010 places a statutory duty on public bodies to have due regard in the exercise of their functions. The duty also requires public bodies to consider how the decisions they make, and the services they deliver, affect people who share equality protected characteristics and those who do not. In KMPT the culture of Equality Impact Assessment will be pursued in order to provide assurance that the Trust has carefully considered any potential negative outcomes that can occur before implementation. The Trust will monitor the implementation of the various functions/policies and refresh them in a timely manner in order to incorporate any positive changes.

18 HUMAN RIGHTS

18.1 The Human Rights Act 1998 sets out fundamental provisions with respect to the protection of individual human rights. These include maintaining dignity, ensuring confidentiality and protecting individuals from abuse of various kinds. Employees and volunteers of the Trust must ensure that the trust does not breach the human rights of any individual the trust comes into contact with.

19 MONITORING COMPLIANCE WITH AND EFFECTIVENESS OF THIS DOCUMENT

19.1 An audit will be undertaken on an annual basis using the Trust Standards and a report submitted to the Clinical Effectiveness and Outcomes Group and Trust Wide Patient Safety Group.

What will be monitored	***How will it be monitored***	***Who will monitor***	***Frequency***	***Evidence to demonstrate monitoring***	***Action to be taken in event of non compliance***
Prescribing of Lithium Therapy	Audit of sample of prescription	Lead Consultant Lead clinician	Annual	Completed audits Completed Audit action plans	Identified training if required
Monitoring of Lithium therapy	Annual / six monthly audits	Lead consultant/ pharmacist/ team manager	Six monthly	Audit Report	Identified training if required

20 EXCEPTIONS

20.1 There are no exceptions.

APPENDIX A: MANAGING LITHIUM DRUG INTERACTIONS OR DRUG-DISEASE INTERACTION

Drug	Interaction effects	Risk Reduction measures
ACE inhibitors e.g., enalapril, lisinopril Angiotensin II antagonists e.g., losartan, candesartan, valsartan	• Lithium toxicity due to sodium depletion. • Concurrent use with caution and close monitoring. • With Angiotensin II antagonists case reports of increase in lithium plasma level.	• Lithium plasma level can increase over several weeks. • Monitor closely for signs of lithium toxicity and consider taking lithium plasma level more regularly i.e. 1 monthly rather then 3 monthly • May need to reduce lithium dose. • With Angiotensin II antagonists increase monitoring especially during the first couple of months.
Analgesics (NSAIDs) e.g., ibuprofen, diclofenac	• Excretion of lithium reduced.	• Avoid concomitant use. • Note: low dose aspirin 75mg does not affect lithium plasma levels significantly.
Anti-arrhythmics e.g., amiodarone	• Increased risk of QT prolongation.	• Avoid concomitant use. • Manufacturer contraindicates combined use.
Domperidone	• Lithium is associated with QT prolongation or torsade de pointes. • Dangerous QT prolongation may occur if it is given with domperidone.	• Contraindicated. Consider an alternative antiemetic.
Hydroxyzine/ mizolastine	• Antihistamines such as hydroxyzine and mizolastine, and lithium are associated with a small increased risk of QT prolongation. • Concurrent use may increase the risk.	• Consider an alternative antihistamine.
Methyldopa	• Neurotoxicity may occur without increasing lithium plasma concentration.	• Avoid concomitant use if possible .
Thiazide Diuretics e.g., bendroflumethiazide	• Increase lithium plasma levels, therefore increased risk of lithium toxicity. • This is a well-established and potentially serious interaction.	• Avoid if possible. Other diuretics may be safer such as loop diuretics. • Consider a lithium dose reduction and monitor lithium plasma levels more regularly .
Alcohol	• Increased tremor/shakiness with chronic alcohol use.	• Alcohol should be avoided in the first month or two after starting lithium. After this alcohol can be drunk in moderation e.g. 1 to 2 units three time a week but ideally advise patient to reduce intake of alcohol as much as possible. This is because lithium and alcohol combination may increase risk of drowsiness.
Antibiotics e.g., metronidazole, tetracycline,	• Reduced lithium excretion leading to increased lithium plasma levels.	• Ensure service user is aware of the symptoms of lithium toxicity and report them immediately if they occur.
Anticonvulsants e.g., valproate, carbamazepine, phenytoin	• Increased neurotoxicity of both drugs at therapeutic doses. • Valproate may aggravate tremor.	• If neurotoxicity develops, stop lithium.

Antidepressants e.g., mirtazapine, SSRIs, TCAs and venlafaxine	• Synergistic antidepressant effect in treatment resistant service users may increase lithium tremor. • Increase lithium plasma level, possible neurotoxicity and serotonergic effects.	• Monitor carefully for signs of neurotoxicity.
Antipsychotics	• Increased neurotoxicity possible at therapeutic doses in rare cases. • Increased risk of QT prolongation.	• Monitor for risk of QT prolongation. • Monitor for signs of neurotoxicity.
Calcium channel blockers e.g., diltiazem, verapamil	• Increased risk of neurotoxicity with symptoms such as ataxia, confusion and somnolence.	• Monitor for signs of neurotoxicity.
Sodium bicarbonate containing antacids e.g., Gaviscon®	• Excretion of lithium increased by sodium bicarbonate therefore, reduced lithium plasma levels.	• Change to an alternative antacid with lower sodium content.
Theophylline/ aminophylline	• Increased excretion of lithium. Reduced lithium plasma level. Depressive and/ or manic relapse may occur if the lithium dose is not adjusted.	• Monitor lithium plasma levels if theophylline is stopped, started or altered.

Drug-Disease Interaction

- If renal impairment exists, avoid use of lithium (if possible) or reduce dose and closely monitor serum-lithium concentration.
- Cardiac disease and conditions with sodium imbalance (e.g., Addison's disease) will require dose reduction or discontinuation. Similarly, in severe diarrhoea and/or vomiting and in concurrent infection (especially if sweating profusely).
- Psoriasis: risk of exacerbation.
- Addison's disease or other conditions with a sodium imbalance and in severely debilitated or dehydrated service users and in severely debilitated or dehydrated service users.
- Avoid in untreated hypothyroidism.
- Use with caution in service users with myasthenia gravis because exacerbation of this disorder has been reported.
- Previous Neuroleptic Malignant Syndrome (NMS) with lithium as reintroduction has led to recurrences of NMS.