SHARED CARE GUIDELINES
FOR THE PRESCRIBING AND MONITORING OF LITHIUM

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Target audience:	General Practitioners, Secondary Care Mental Health Practitioners

General Statements

- Lithium should be initiated in secondary mental health services
- The patient booklet, alert card and record book developed by the NPSA will be made available to all service users on lithium and their use supported by healthcare professionals involved in providing care. Service users will also be invited to utilise the NHS Health Monitoring for Lithium@ app developed by South West London and St George's NHS Trust for iOS and Android devices
- Service users prescribed lithium should receive supplies from secondary mental health services until a shared care arrangement is agreed with their GP. This includes service users discharged from inpatient settings who have been newly initiated on lithium
- A service user's clinical condition must be stabilised before requesting shared care. Once the service user is stabilised on lithium, they should be considered for shared care between mental health services and the GP. This will normally occur following the first 3-month monitoring check
- Prescribing and monitoring tasks for service users prescribed lithium must stay together. A reliable system for assessing monitoring results must be in place if prescribing. Prior to issuing a

prescription, prescribers must check that blood tests are monitored regularly and that it is safe to issue a prescription. Where it is not possible to assess monitoring, arrangements for blood tests should be made as soon as possible

- Regular checks on lithium levels, renal function and thyroid function are essential for safe prescribing
- Whoever initiates tests for monitoring lithium therapy is responsible for acting on increases in lithium blood levels, levels outside normal/target ranges or results that indicate deteriorating renal or thyroid function
- Prescribers must have a system for checking, identifying and dealing with medicines that might adversely interact with lithium therapy. Combinations with angiotensin converting enzyme (ACE) inhibitors, angiotensin-2 receptor antagonist ("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 service users on lithium therapy about the target level / range, dosage, monitoring results and changes to concurrent medication
- Pharmacists must check that blood results are being monitored regularly and that it is safe to dispense lithium
- Service users prescribed lithium should not be discharged from secondary mental health services. In exceptional circumstances an individual agreement for discharge may be considered in response to a service user who expressly indicates that they do not want to remain within secondary mental health services. However, discharge should only be considered if lithium treatment is stable and service users are 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. Service users who have been discharged from secondary mental health services should only be referred back to secondary care if their lithium therapy becomes unstable (see triggers for referral on page 12)
- Secondary mental health services have a responsibility to provide advice to primary care on the management of service users treated with lithium
- Regardless of shared care arrangements in place, secondary mental health services have a responsibility to check monitoring results of all lithium service users when admitted or seen as outpatients
- Prescribing and monitoring responsibility of service users 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 service users, consideration should be given to a higher frequency of specialist review

*Service users are regarded as stabilised for the purpose of transfer of lithium prescribing once they have shown a response to medication 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 blood levels completed.

Background

Lithium augmentation of an antidepressant is recommended by NICE in service users with depression who have failed to respond to sequential trials of two or more antidepressants in adequate doses for adequate periods of time. Lithium is used in the prophylaxis and treatment of bipolar disorder where it 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.

Lithium can be very effective for acute episodes of mental illness, following which it is often continued. Likewise, in prophylaxis, but longer periods of treatment may be required to establish its benefits. Not all patients respond to lithium, so the benefits and risks of continuation should be regularly and individually assessed. Lithium treatment should not be stopped suddenly, as this can cause relapse.

The benefits and many of the adverse effects of lithium relate to its plasma concentration. Lithium has a narrow therapeutic window of between 0.4 and 0.8 mmol/L for most indications, although a narrower range may be specified for individual patients. Higher target plasma levels (0.8–1 mmol/litre) 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.**

Lithium's narrow therapeutic/toxic ratio; long term use is associated with hypothyroidism and renal damage. Lithium should therefore not be prescribed unless responsibilities and arrangements for regular monitoring of serum-lithium concentrations and other routine testing have been established.

The plasma concentration of lithium is a function of absorption, distribution, and elimination. In salt form, lithium is readily absorbed from the gastrointestinal tract, but the rate and extent of absorption may differ between formulations. Levels fluctuate during distribution, so measurements are made 12 hours post-dose for monitoring purposes. Lithium is almost exclusively eliminated by the kidneys.

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. Excluding excessive ingestion, toxicity most commonly arises due to a reduced elimination of lithium. Elimination is sensitive to sodium handling, so low-salt diets, dehydration, certain drug interactions and medical conditions such as Addison's disease are risk factors. Lithium toxicity can itself impair renal function, so rapid escalations in plasma levels may occur. Patients, carers, and clinicians should be familiar with the features of lithium toxicity, the common causes, and how to seek appropriate help.
With long-term use, lithium can have adverse effects on the kidneys, the thyroid, and the parathyroid glands. Routine monitoring of function is therefore required.
Lithium should always be prescribed by brand and form. 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.

Lithium is licensed for:

1. The management of acute manic or hypomanic episodes.
2. The management of episodes of recurrent depressive disorders where treatment with other antidepressants has been unsuccessful.
3. Prophylaxis against bipolar affective disorders.
4. Control of aggressive behaviour or intentional self-harm.

ǂ Off-label indications. (Please note licensed indications vary by manufacturer).

Locally agreed off-label use

To be agreed and completed locally (include supporting information)

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.

Extra care is required when prescribing lithium for: -

- the elderly
- service users with reduced renal function (eGFR < 60ml/min)
- pregnant women
- women of childbearing age

- service users who have high risk factors for physical illness e.g. hypertension, diabetes, obesity, smoking, urine outflow problems
- service users taking NSAIDs, ACE-inhibitors, angiotensin-2 antagonists, or diuretics
- service users with learning difficulties

Service users prescribed lithium must have a medication alert activated on the GP's clinical system.

Contraindications and cautions

Please note: This does not replace the Summary of Product Characteristics (SPC) and should be read in conjunction with it.

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
- 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

Please see SPC for comprehensive information.

Pre-treatment screening

Screening for risk of renal disease and cardiovascular disease is essential prior to prescribing Lithium.

Baseline checks - **Monitoring at baseline and during initiation is the responsibility of the specialist.** Only once lithium therapy is optimised on the chosen formulation with no anticipated further changes expected in immediate future will prescribing and monitoring be transferred. Recent and relevant investigation results must be documented in the corresponding letter from specialist	❖ Weight ❖ Height ❖ BMI ❖ BP ❖ Urea, Electrolytes ❖ Calcium ❖ Serum Creatinine ❖ eGFR ❖ TFTs ❖ ECG if CV disease or risk factors ❖ FBC

Additional baseline investigations (bipolar disorder):	❖ Cardiovascular status including pulse and blood pressure (BP) ❖ Metabolic status including fasting blood glucose, HbA_{1c} and blood lipid profile. ❖ Liver function tests (LFTs).

Concurrent medication must be checked for interactions (see section on interactions with other drugs).

Service User Information

The patient booklet, alert card and record book developed by the NPSA will be made available to all service users initiated on lithium. Service user details, essential information on the service user's therapy and contacts must be completed when issuing the lithium therapy packs to service users.

At the start of lithium therapy and throughout treatment service users must receive on-going verbal and written information about minimising the risks of toxicity. This should cover:

- The importance of having regular blood tests
- The signs and symptoms of toxicity; why they might occur and what to do
- The importance of maintaining an adequate fluid intake (e.g. during bouts of diarrhoea and vomiting or during hot weather)
- To avoid big changes in salt levels in the diet
- Emphasising good compliance i.e. 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 keeping to the same brand of lithium
- Women of childbearing age should be advised to use reliable contraception. Should there be a concern over them being pregnant they should immediately seek professional advice about continuing treatment
- The importance of using the record book and taking it whenever they visit their GP, clinic, or hospital and when a new prescription is requested or collecting a prescription.

Confirmation that the service user has received written information, verbal advice and the necessary details have been transferred to the booklet, alert card and record book must be noted in SystemOne the service user's healthcare record.

Patient record book

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

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 blood level range or dose (details in the booklet and alert card must also be amended)

The NPSA Lithium Therapy patient packs containing an information booklet, lithium alert card and record book are available from the NAViGO pharmacist.

Additional Written Information to be provided to the Service user

- Lithium Service user information leaflet (PIL) - can be accessed through http://www.choiceandmedication.org/navigo/
- Also see Appendix 3 (Pg. 22)

Initiation and on-going monitoring

Plasma lithium levels.

Bloods should be taken 12 hours after the last dose was taken.

Practice tip: the time interval between last dose and blood sampling should be consistent; note time interval between time of last dose and time of blood sample. For once daily dosing with modified-release preparations the plasma level can be expected to fall by 0.2mmols/L between 12 and 24 hours post dose.

Monitor more frequently if any complicating factors (e.g. impaired renal function, cardiovascular disease, elderly) or potential for drug interactions or clinical deterioration or abnormal results, abnormal thyroid function, or a change in sodium intake.

Record all results in record book.

The blood level range and indication should be defined and recorded for each service user.

Baseline investigations, initial monitoring, and ongoing monitoring to be undertaken by specialist **Note -** •Transfer of monitoring and prescribing to primary care is normally after the patient's dose has been optimised and with 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.	**Monitoring at baseline and during initiation is the responsibility of the specialist.** Only once lithium therapy is optimised on the chosen formulation with no anticipated further changes expected in the immediate future will prescribing and monitoring be transferred. Recent and relevant investigation results must be documented in the corresponding letter from specialist. Usual starting dose for doses for all preparations are adjusted according to patient response and serum lithium concentration. Most patients are prescribed lithium in tablet form (lithium carbonate). Doses may initially be divided throughout the day, but once-daily administration is preferred when serum-lithium concentration is stabilised to target range (specified by specialist team). In practice, the typical starting dose is 400 mg once daily, adjusted according to patient response and 12-hour plasma levels. 12-hour plasma lithium levels one week after initiation and one week after any change in dose or formulation. Typically, this means levels will be monitored weekly until the desired level and clinical effect is achieved. Lower starting doses (such as 200 mg once daily) are preferable in the elderly and/or cases in which caution is required. In some scenarios, such as acute mania, a higher starting dose (loading) may be preferable. The BNF outlines the typical starting doses by indication and brand. **Lithium citrate** is absorbed at a different rate and to a different extent (bioavailability) compared to tablet forms. Extra care must be taken when prescribing lithium in liquid form, as some offer different strengths (mg/ml) under the same brand name (Li-liquid®) and some brand names (Priadel®) are used for the liquid and tablet forms. Switches between tablet and liquid formulations should be overseen by specialist services as dose conversions require the calculation of milligram equivalence between lithium carbonate and lithium citrate. **The loading period must be prescribed by the initiating specialist.**	
Ongoing monitoring requirements to be undertaken by primary care. See further guidance on management of adverse effects/ responding to monitoring results	**Monitoring – all indications**	**Frequency**
	Plasma lithium level taken 12 hours post-dose. Record results in patient's NPSA purple lithium pack, NHS Health	**At least every 12 weeks.** More frequent monitoring may be advised by the specialist team in some circumstances (e.g. elderly,

	Monitor for Lithium app, or other suitable recording mechanism. It is advisable to document the actual time interval between the last dose and the blood sample	renal impairment, concurrent interacting medicines) or if most recent 12-hour plasma lithium level is at the threshold of target range.
	U+Es (including calcium and eGFR) **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).
	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 by NICE (CG185 Bipolar disorder: assessment and management).
Adverse effects and managements **Any serious adverse reactions should be reported to the MHRA via the Yellow Card scheme** www.mhra.gov.uk/yellowcard	**Result**	**Action for GP**
	Above range	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** and contact specialist team for advice. If ≥2.0mmol/L - send patient to A&E and inform specialist team.
	Within range but patient has signs of toxicity	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 range but marked change since last level (and there has been no dose change)	Repeat level. Assess adherence, including discussion with patient and check of GP clinical systems. Offer advice on adherence if appropriate (e.g. daily routines, reminders). Ensure level was taken 12 hours after lithium dose.

		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 overly 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.
	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 (including 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 that 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. Consider measuring waist circumference for individualised monitoring.
	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.
Advice to patients and carers The specialist will counsel the patient with regard to the benefits	**The patient should be advised to report any of the following signs or symptoms to their GP without delay:**	

and risks of treatment and will provide the patient with any relevant information and advice, including patient information leaflets on individual medicines.	• Lithium toxicity (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) • Signs of hypothyroidism (e.g. fatigue, cold intolerance, weight gain, constipation, and depression), renal dysfunction (including polyuria and polydipsia), and benign intracranial hypertension (persistent headache and visual disturbance). **Additional advice for patients/ carers:** • 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. • Changes in hydration and sodium balance can affect plasma lithium levels. Patients should 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. • 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. • 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. 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). • Women 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 and that they should tell their doctor straight away if they become pregnant while taking lithium. Lithium should not be taken if breastfeeding. • 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 release prevention **At the start of treatment patients should be given suitable information on lithium and means to keep a record of their serum lithium levels, for example the NHS Health Monitor for Lithium app, or a purple lithium pack.** **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: https://www.sps.nhs.uk/wp-content/uploads/2018/02/2009-NRLS-0921-Lithium-patientet-2009.12.01-v1.pdf
Pregnancy, paternal exposure, and breast feeding. 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 GP and the specialist.	**All patients should be informed of the risks and benefits of taking this medicine during pregnancy and breastfeeding.** **Pregnancy:** Lithium should not be used during pregnancy, 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. If a patient becomes pregnant whilst on lithium, the specialist team should be informed immediately (but do not stop the lithium). **Women 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. **Breastfeeding:** Lithium is secreted in breast milk and there have been case reports of neonates showing signs of lithium toxicity. Lithium should be avoided during breastfeeding. **Paternal exposure:** Animal studies have reported spermatogenesis abnormalities that may lead to impairment of fertility- it is unknown if this risk applies to humans.

Monitoring Frequency	**Monitoring Indicators**
1 week after starting 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. Elderly are more sensitive to lithium levels and side effects so aim for lower range (min. 0.4mmol/L). If resistant initiate a trial period of 6 months at 0.81.0mmol/L. Monitor for signs of neurotoxicity, blurred vision, muscle weakness, tremor, slurred speech, and confusion. If target range above 1mmol/L lithium prescribing and monitoring **cannot** be transferred to the GP.
At 3 months	**Urinary albumin creatine ratio (ACR):** If normal no further regular ACR monitoring is required (unless eGFR <60ml/min, then re-check annually) If proteinuria (ACR >30mg/mmol) re-check annually. If heavy proteinuria (ACR >70mg/mmol) refer to nephrology: consider stopping lithium
Every 3 months * (once stable)	**Plasma lithium levels:** Monitor for signs of neurotoxicity, blurred vision, muscle weakness, tremors, slurred speech, and confusion. **Plasma lithium level taken 12 hours post-dose.** Record results in patient's NPSA purple lithium pack, NHS Health Monitor for Lithium app, or other suitable recording mechanism. It is advisable to document the actual time interval between the last dose and the blood sample.

Every 6 months	**Thyroid checks (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)** – 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 less than 60 ml/min, decreasing dose adjustment to maintain safe lithium level or increase in creatinine level) should prompt consideration of lithium review - **seek specialist advice**. If lithium discontinued due to concerns about lithium related decline in renal function continue to monitor renal function for at least one year. **Monitor weight and U&E's.** **Calcium** (tick bone profile box on path lab form). Long-term treatment associated with hyperparathyroidism and hypercalcaemia. Clinical consequences of raised serum calcium include renal stones, osteoporosis, dyspepsia, hypertension and renal impairment.
Every 12 months	**Health check** - weight or BMI, diet, nutritional status, and level of physical activity. -cardiovascular status, including pulse and blood pressure -metabolic status, including fasting blood glucose, glycosylated haemoglobin (HbA1c) and blood lipid profile -liver function -renal and thyroid function, and calcium levels, for people taking long-term lithium.

*****After one year of stable treatment, monitoring of lithium levels may be extended to 6-monthly in-service users who meet all of the following criteria:

- Age < 65 years;
- No concurrent medicines which interact with lithium;
- 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

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 Nephology

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 (< 140mm systolic and 90mm diastolic; lower in diabetes or ACR >30 mg/mmol) Stage 3B: measure haemoglobin annually Refer to nephrology and discuss discontinuation if: At stage 3B ACR >70 mg/mmol ACR >30 mg/mmol + haematuria 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.

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

Conditions requiring dose adjustment

Lower doses may be required in older or physically frail/ low body weight patients, in 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 be gradually reduced over a period of at least four weeks but preferably over a period of up to three months.

Pharmaceutical aspects

Formulation

Lithium is available as lithium carbonate (tablet formulations) and lithium citrate (liquid formulations). 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 Carbonate:

- Priadel® 200 mg and 400 mg prolonged-release tablets
- Camcolit® 400mg controlled release tablets
- Liskonum® 450mg controlled release tablets
- Lithium carbonate Essential Pharma: 250mg film-coated tablets (immediate release)

Lithium Citrate:

- Priadel® Liquid: 520mg/5 mL strength sugar-free, pineapple flavoured syrup
- Li-Liquid®: 509 mg/5mL and 1,018 mg/5mL strength cherry flavoured syrup

Always prescribe lithium by brand name. Switching preparation (either between brands of the same form or changing between tablets and liquid) 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:

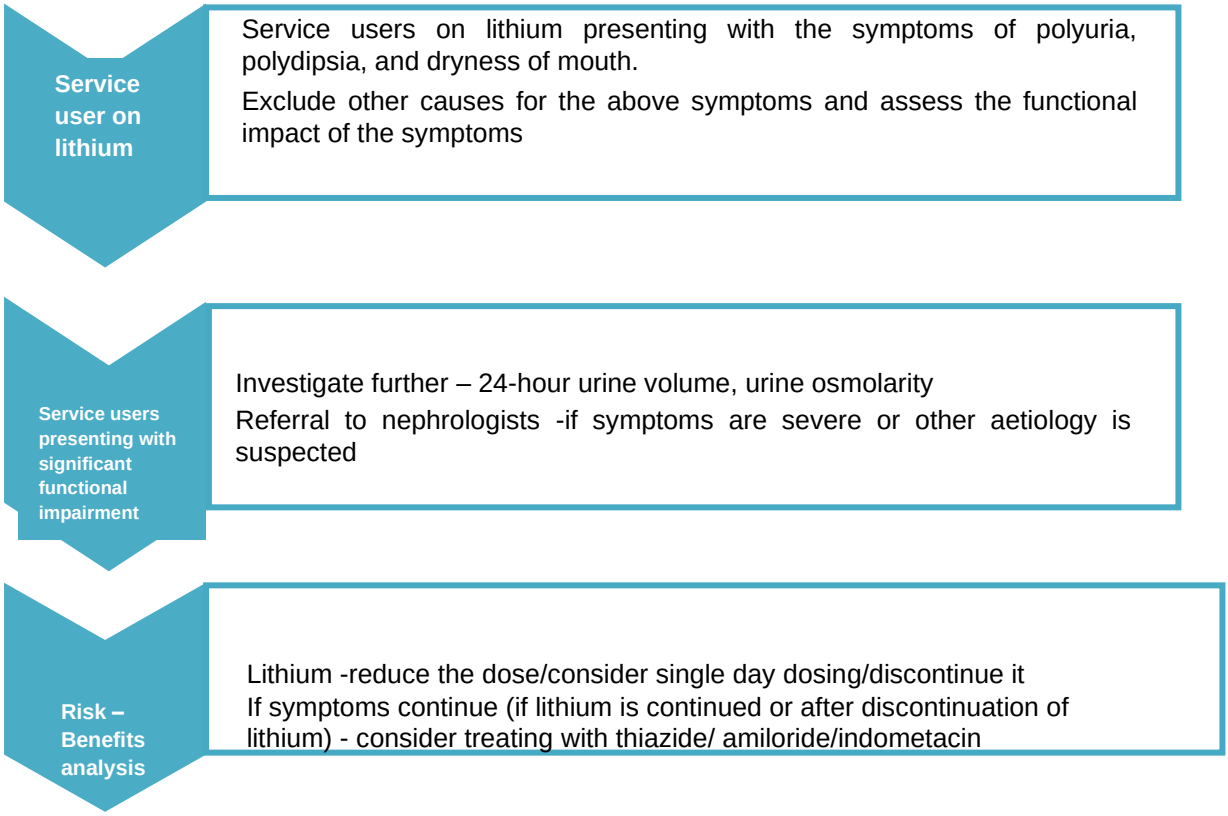
Consistency is paramount in lithium treatment and monitoring. Doses should be taken regularly, at the same time every day. Lithium carbonate tablets should not be crushed or chewed.

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, and 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.



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

Side effects - 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 of treatment)
  - fine hand tremor
- thirst
- polyuria (may occur more frequently with twice daily dosing)
- weight gain

Long term treatment has been associated with hyperparathyroidism and hypercalcaemia and it may be appropriate to monitor calcium levels if clinically indicated by the results of other tests.

Signs of toxicity
Toxic effects occur at any serum lithium level but particularly at levels > 1.5mmol/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.

Action if levels fall outside the optimum range or features of toxicity occur
Whoever initiates tests for plasma lithium levels is responsible for acting on abnormal lithium results. GPs should discuss treatment options with mental health services**.**

Lithium level	Action
< 0.4mmol/L	Repeat serum lithium level as soon as possible and adjust dose within 5 working days. Check compliance with treatment.
> 1mmol/L - <1.5mmol/L	**During normal working hours** Contact service user same day. Check on timing of dose prior to blood test and instruct to stop lithium. Contact a doctor in the mental health team for advice about reducing dose or stopping treatment depending on clinical symptoms. Repeat serum lithium level and adjust dose accordingly as advised by mental health team. **Out of hours** Contact service user immediately and instruct to stop lithium. Contact consultant on-call for advice.
> 1.5mmol/L or features of lithium toxicity	**During normal working hours** Contact service user immediately. Stop lithium immediately, check serum lithium levels, creatinine, urea and electrolytes. Contact a doctor in the mental health team for advice. **Out of hours** Contact service user immediately and instruct to stop lithium. Contact consultant on-call for advice.
> 2mmol/L	Regard as urgent. Attention required as indicated under Emergency Treatment of Poisoning – see current BNF; https://www.evidence.nhs.uk/formulary/bnf/current
Record all episodes of toxicity along with any remedial action.	
The local Pathology Lab has a policy that if any **service user has a new high lithium blood level** above 1.5mmol/L, these will be notified by phone.	

Interactions with other drugs

Because of lithium's relatively narrow therapeutic index, interactions with other drugs can be very important. Any drug that affects a service user's renal function will affect lithium levels. The most commonly encountered interactions are as follows:

In each case, excretion of lithium is reduced, resulting in an increase in plasma levels. Try to avoid combinations of these drugs especially. If they *must* be used, lithium levels must be monitored very carefully and more frequently

Drug Group	Magnitude of effect	Timescale	
ACE inhibitors Angiotensin 2 receptor antagonists may be associated with similar risk	Unpredictable Up to 4-fold increases in lithium	Develops over several weeks	7-fold increased risk of hospitalisation for lithium toxicity in the elderly
Thiazide diuretics	Unpredictable Up to 4-fold increases in lithium	Usually apparent in first 10 days	(If loop diuretics used any effect will be apparent in the first month)
NSAIDs	Unpredictable From 10% to > 4fold increases in lithium	Variable; few days to several months	NSAIDs are widely used on a PRN basis and can be bought without a prescription

Less commonly encountered interactions are possible with the following drugs; therefore, it is prudent to be aware and check lithium levels soon after starting treatment for:

Drug/Drug group	Interaction type
Diuretics*: loop diuretics safer than thiazides	Excretion of Lithium reduced; increased plasma concentration and risk of toxicity
Tricyclics*	Risk of toxicity
Antipsychotics: clozapine, haloperidol, phenothiazines, sulpiride, flupentixol, quetiapine, risperidone, 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	Increased risk of hypothyroidism, risk of ventricular arrhythmias
Antiepileptics: carbamazepine, phenytoin. Calcium channel blocker: diltiazem, verapamil. methyldopa	Possible neurotoxicity without increased lithium plasma concentration
Dapoxetine	Increased risk of serotonergic effects
SSRIs	Increased risk of CNS toxicity
Sodium containing antacids* Theophylline*	Lithium excretion increased – reduced plasma concentration

*Prudent to be aware and check lithium levels soon after starting or stopping treatment. Refer to current BNF for further information on interactions.

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.

Shared Care Responsibilities

Secondary care mental health services

- Initial comprehensive assessment and liaison with health professionals
- Pre-treatment screening – as per guidelines
- Service user information – as per guidelines
- Initiation and supply of medication during dose titration until the service user is stabilised on lithium and has had a 3-month monitoring check and until shared care is formally accepted by the service user's GP and primary care team
- Inform GP that lithium has been initiated
- Complete entries in the patient information booklet, record book and alert card as per guidelines
- Transfer of prescribing and monitoring will be via a formal request to the GP and primary care team on an individual service user basis via a letter
- The initial letter from the secondary care team should include drug name, dose form, strength, dose instructions, prescribed indication, optimum target range of lithium level* and a review schedule for the service user (* if target range above 1mmol/L lithium prescribing and monitoring **cannot** be transferred to the GP)
- Monitor clinical condition at each review, consider appropriateness of lithium therapy. Review will be at least annually and where possible will take place at the GP practice with the GP and relevant primary care healthcare staff. Information relating to the review to be forwarded to the GP and primary care team within 2 weeks of the appointment

- Notify the GP and primary care team if the service user does not present for review in the specialist clinic
- Provide a point of contact during working hours for any queries related to the prescribing and monitoring of lithium
- The secondary care team will retain responsibility for all aspects of treatment for service users prescribed lithium outside of the product licence
- Agree to take back prescribing and monitoring responsibility if lithium therapy unstable
- An annual clinical audit should be undertaken in line with the NPSA recommendations for Safer Lithium therapy.

General Practitioner and primary care team

- Acknowledge and accept secondary care team request for shared care within 4 weeks of receipt of shared care request
- Set up a code and recall system to identify service users prescribed lithium
- Complete entries in the patient information booklet, record book and alert card as per guidelines
- Review the results of monitoring and check that it is safe to issue repeat prescriptions.
- Undertake monitoring as per guidelines
- Ensuring blood testing occurs to check lithium levels as per guideline.
- Ensuring results are checked and abnormalities acted upon.
- Ensuring service users are aware of their blood testing requirements. Service users should be encouraged to know acceptable levels and their most recent results.
- Responsibilities for and provision of regular prescriptions for medication used within their licensed indication at dosage recommended by the secondary care team
- Review the results of monitoring
- Seek advice from the secondary care team regarding results outside accepted parameters or optimum target lithium blood level
- To be aware of potential side effects and to inform the secondary care team of suspected side effects
- To be aware of potential drug interactions with lithium and prescribe accordingly
- Stop issuing prescriptions if notified by the secondary care team
- Stop treatment and inform the secondary care team if the service user develops any signs of lithium toxicity
- An annual clinical audit should be undertaken in line with the NPSA recommendations for Safer Lithium therapy.

Pharmacists

- Pharmacists must check that blood results are being monitored regularly and that it is safe to dispense lithium
- Where it is not possible to assess monitoring, lithium therapy should not be withheld. The pharmacist responsible for dispensing a prescription should communicate to the prescriber that lithium medication has been provided without blood test data being available

Triggers for contacting secondary care mental health services

Service users on Shared Care Arrangements

- Lithium level outside the optimum target blood level or features of toxicity occur
- Lithium level above 0.8mmol/L (unless optimum target blood level specified is 0.8– 1.0mmol/L)
- Lithium level below 0.4mmol/L
- If trend in decreasing lithium dose to keep lithium blood level maintained (indication of impaired renal function)
- Deterioration of renal function o Monitoring trend in function is more useful than absolute value of test result
    - 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
- Service user becomes mentally unwell
- Non-compliance or suspected non-compliance with treatment or monitoring
    - Pregnancy or planning pregnancy
- Breast feeding
- Initiation of interacting medication
- Acute infection or other medical condition which may impact on lithium levels or renal function

Service users previously discharged with no planned review in secondary care

Referral of service users to Adult Mental Health Services will be via the single point of access; referral of service users to Older Peoples Services will be via the usual route.

GPs are requested to clearly state reason for review.

Lack of or concern over efficacy

- Intermittent or poor adherence with treatment
- Deterioration of mental state
- Tolerability or side effect problems
- Service user 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
- Monitoring trend in function is more useful than absolute value of test result
- 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.
- Service users without a diagnosis of bipolar disorder or refractory depression

Appendix 1

TRANSFER OF PRESCRIBING & MONITORING FOR LITHIUM THERAPY

INSERT CLINIC

ADDRESS:

REF: SystemOne 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: JOE BLOGG, DOB ADDRESS

Your service user has been attending **(INSERT NAME OF CLINIC)** and has been prescribed lithium *dose / frequency*. He/she has been stabilised on treatment. It is felt that he/she will benefit from continuing this medication under the terms of the attached shared care guideline. The treatment and risks of toxicity have been explained to the service user and the service user handheld lithium therapy patient pack (purple booklet) issued.

Please can you inform me of any changes made to other medication prescribed by yourselves? Especially when changes involve medicines that interact with lithium.

I have enclosed the **Routine Prescription / Monitoring Guidelines** for your information to ensure robust monitoring processes are in place. In addition to this, our Care Co-ordinator (**INSERT NAME)** will liaise with your practice nurse and arrange joint annual reviews.

Yours sincerely

Name

Consultant Psychiatrist

CC – Service user

TRANSFER OF PRESCRIBING & MONITORING FOR LITHIUM THERAPY

Private and Confidential

Service User Details: **NHS No.**	**Date of Request:** **Name of GP:** **Practice:**
Indication for prescribing lithium:	**Secondary care prescriber:**
Care co-ordinator:	**Contact No:**
Service user is stabilised on: Lithium Liquid / Tablets* *** Delete as appropriate**	**Brand:**
Dose and Frequency:	**Optimum target serum lithium level (mmol/L):**

Please contact the Care Co-ordinator, (INSERT NAME HERE) on (INSERT TEL. NUMBER HERE) or out of hours the Crisis Team on (INSERT TEL. NUMBER HERE) if you require advice or:

- Lithium level outside the optimum target serum level or features of toxicity occur
- Lithium level above 0.8mmol/L (unless optimum target serum level specified is 0.8–1.0 mmol/L) Lithium level below 0.4mmol/L
- Deterioration in renal function, i.e. consecutive results indicating reduction of renal function (increase in creatinine level or decreased e-GFR - less than 60ml/minute)
- Service user becomes mentally unwell
- Non-compliance or suspected non-compliance with treatment
- Pregnancy
- Breast feeding

Initiation of interacting medication

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

Service user given 28-day prescription on: INSERT DATE Next prescription due on: (INSERT DATE)

Fax back notification of acceptance to: [insert fax number]

Name:

Date:

GP / On behalf of GP

If the service user is not concordant with monitoring regulations, 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

Routine Prescription / Monitoring Guideline

Prescribing

- Do not prescribe more than 28 days of Lithium at a time.
- Ensure that up to date monitoring results are within therapeutic range before issuing further prescriptions. Please do not reauthorise repeat prescriptions for more than 3-4 months maximum.
- Prescribe Lithium by brand name.

Plasma lithium levels.

Bloods should be taken 12 hours after the last dose was taken.
Practice tip: the time interval between last dose and blood sampling should be consistent; note time interval between time of last dose and time of blood sample. For once daily dosing with modified-release preparations the plasma level can be expected to fall by 0.2mmols/L between 12 and 24 hours post dose.
Monitor more frequently if any complicating factors (e.g. impaired renal function, cardiovascular disease, elderly) or potential for drug interactions or deterioration in renal function or abnormal results.
The lithium blood level range and indication should be defined and recorded for each service user

Every 3 months	**Plasma Lithium levels**. Monitor for signs of neurotoxicity, blurred vision, muscle weakness, tremor, slurred speech, and confusion.
Every 6 months	**Thyroid checks (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)** – 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 less than 60 ml/min, decreasing dose adjustment to maintain safe lithium level or increase in creatinine level) should prompt consideration of lithium review. If lithium discontinued due to concerns about lithium related decline in renal function continue to monitor renal function for at least one year. **Monitor weight and U&E's.** **Calcium** (tick bone profile box on path lab form). Long-term treatment associated with hyperparathyroidism and hypercalcaemia. Clinical consequences of raised serum calcium include renal stones, osteoporosis, dyspepsia, hypertension, and renal impairment.
Every 12 months	**Health check** - weight or BMI, diet, nutritional status, and level of physical activity. -cardiovascular status, including pulse and blood pressure -metabolic status, including fasting blood glucose, glycosylated haemoglobin (HbA1c) and blood lipid profile -liver function -renal and thyroid function, and calcium levels, for people taking long-term lithium. 16

Appendix 2

ANNUAL LITHIUM REVIEW

DATE OF REVIEW:	
NAME:	
DOB:	
ADDRESS:	
Present:	

Diagnosis (inc. physical problems)

Current Medication

Mental State (mood, stressors, presentation, risks, social circumstances, observation)

Concordance

Routine Tests: Include weight and BMI

Untoward Incidents

Service User / Carer Perception

Prescribing Issues

Lithium Therapy Booklet **Up to date:**

Lithium level Target Range (mmol/L)

Appendix : 3

Lithium (pron. lith-e-umm)

What is lithium used for?

Lithium carbonate (also known as Camcolit®, Lithium Carbonate Essential Pharma®, Priadel® or Liskonum®) or lithium citrate is mainly used to help prevent the symptoms of bipolar mood disorder (e.g. depression or mania) returning. It can also be used to help the symptoms of mania, unipolar depression, aggression, and cluster headaches. It is made as tablets and as a
syrup. N.B. Camcolit®, Lithium Carbonate Essential Pharma® and Priadel® tablets are so similar that it probably doesn't matter which you take but stick to the same brand if you want.

What is the usual dose of lithium?

The usual dose of lithium is around 400-1000mg a day, but this will depend on the results of your blood tests.

How should I take lithium?

Swallow the tablets with at least half a glass of water whilst sitting or standing. This is to make sure that they reach the stomach and do not stick in your throat. For the liquid, carefully use a medicine spoon, dropper, or oral syringe. The liquid can be taken once a day, or twice a day (morning and evening).

When should I take lithium?

Lithium is best taken once a day at bedtime.

What are the alternatives to lithium?

There are many other medicines (e.g. valproate, carbamazepine, quetiapine, olanzapine), talking therapies and treatments for your symptoms. See our “Handy charts” for bipolar mood disorder, bipolar depression, mania, and depression to help you compare the medicines available. This will help you talk to your prescriber, nurse, pharmacist, or other healthcare professional.

How long will lithium take to work?

Generally, lithium may take several weeks to start to work, and the effect builds over the next few months.

How long will I need to keep taking lithium for?

If you are taking it for bipolar disorder, you should take it for at least two years (better at least three years). Many people do well taking it for many years or decades.

Is lithium addictive and can I stop taking it suddenly?

Lithium is not addictive, but
it is very unwise to stop taking lithium suddenly, even if you feel better. When the time comes, you should withdraw lithium by a gradual reduction in the dose over at least 4 weeks, if not 3 months. If you stop quicker, it will make your symptoms much more likely to return. Even just running out of tablets can make this happen so always have an emergency supply. Obviously if you have got a very high or toxic level you may need to stop taking lithium suddenly. You should discuss this fully with your prescriber, nurse, or pharmacist.
See our handy fact sheet on ‘Coming off medicines’.

What should I do if I forget to take a dose of lithium?

Take the missed dose as soon as you remember unless it is within about 10 hours of your next dose. If you remember after this just take the next dose as normal. Do not try to catch up by taking two doses at once as you may get more side-effects. If you have problems remembering your doses (as many people do) ask your pharmacist, doctor, or nurse about this. There are some special packs, boxes and devices that can be used to help you remember.

Can I drink alcohol while I am taking lithium?

If you drink alcohol while taking lithium it may make you feel sleepier. This is particularly important
if you need to drive or operate machinery and you must seek advice on this.

Will lithium affect my other medication?

Lithium has many important interactions with other medicines. The main ones include:

- The effects of lithium can be increased by ACE inhibitors (e.g. captopril, enalapril, lisinopril, ramipril), some diuretics or water tablets (e.g. bendroflumethiazide or hydrochlorothiazide)
- Lithium levels can be increased by NSAIDs (used for arthritis or pain, e.g. aspirin, ibuprofen, naproxen, diclofenac, mefenamic acid) or COX-2 inhibitors (used for pain or arthritis e.g. celecoxib, etoricoxib).
- Make sure you doctor, pharmacist or nurse knows about your lithium

Please see the Patient Information Leaflet (PIL) for the full possible list. Not all of these interactions happen in everyone. Some of these medicines can still be used together but you will need to follow your doctor's instructions carefully.

Can I drive or cycle while I am taking lithium?

You may feel a bit sleepy at first when taking it so be careful as it may slow down your reaction. Until this wears off, or you know how lithium affects you, do not drive or operate machinery.

Will I need any blood or other tests if I am taking lithium?

You will need regular blood tests while taking it. Once you are on a steady dose, you should have a blood test at least every **3** months to check your lithium blood or plasma levels. Ecery six months you should also have a blood test on your thyroid and kidney to make sure they are not being damaged by the lithium. If you have bipolar, schizophrenia or other long-term mental health problems, your physical health is also important. NHS guidance for GPs in 2018 ("Improving physical healthcare for people living with severe mental illness") recommends regular checks on your blood pressure, weight, blood glucose and body fats. This may be done by a hospital to start with, but your GP should then arrange for these checks **at least every year.** And then to do something if anything needs treating.

What about pregnancy?

You must get **expert help** if you want to be, or find you are, pregnant. Stopping lithium suddenly cab be dangerous. Your dose may need to be changed. See our fact sheets (a general one plus one just for lithium).

What sort of side-effects might I get if I am taking lithium?

The table shows some of the most common side effects and any you might need to act on. You must also see the maker's Patient Information Leaflet for the full list of possible side effects but do not be worried by this. Some people get no side effects at all. Some side effects are the brain getting used to a medicine and these usually wear off in a few days or weeks. Starting slower may help. If you think you might have a side effect to this medicine, you should ask your prescriber, pharmacist, or other healthcare professional.

Side effect	What happens	What to do about it
VERY COMMON (more than about 1 in 10 people might get these)		
Tremor	Fine shaking of the hands	This is not dangerous. If it annoys you, your doctor may be able give you something for it (e.g. propranolol). If it gets worse and spreads to your legs or jaw, see your doctor straight away.
Stomach upset	This includes feeling and being sick and getting diarrhoea	If mild, see your pharmacist. If it lasts for more than a day, see your doctor.
Polyuria	Passing a lot of urine	Don't drink too much alcohol. Tell your doctor about it. Some blood and urine tests may be needed.
Metallic taste	Your mouth tastes as if has had metal or something bitter in it.	This should wear off after a few weeks. If it does not, mention this to your doctor next time you meet. A change in dose may help.
Polydipsia	Feeling very thirsty. Your	Drink water or low-calorie drinks in moderation.
	mouth is dry and there may be a metallic taste.	Suck sugar-free gum or boiled sweets. You should have regular tests to make sure your kidneys are working well (see blood tests above).
COMMON (fewer than about 1 in 10 people might get these)		
Fluid retention (oedema)	Puffy legs, eating and drinking more and putting on weight.	A diet full of vegetables, cereal and fruit may help prevent weight gain. Seek help from dietician
Hypothyroidism	Low thyroid activity – this makes you feel tired	This is generally mild and fairly easily treated, although if your thyroid level gets very low this can be serious. Tell your doctor – you may need thyroid replacement tablets.
RARE but important (can be serious if not dealt with)		
Kidney problems	Making more urine than usual	See your doctor in the next week and make sure you have a blood test to check your kidney.
Blurred vision	Things look out of focus	

Sleepiness	Feeling extra sleepy and sluggish	If this is unexpected, unusual, or worse than usual, your lithium level may be too high. Other symptoms of lithium toxicity can include hand tremor, diarrhoea, feeling or being sick, thirst, agitation, muscle weakness and strong reflexes. Do not take any more doses of lithium and take to your doctor.
Confusion	Your mind is all mixed up	
Palpitations	A fast heartbeat	

Supporting References

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