NHS Greater Glasgow & Clyde
Mental Health Services

Lithium Ward Bundle

Lithium is a useful drug, particularly in the maintenance treatment of bipolar affective disorder, recurrent depression and self-injurious behaviour. It is widely used, and most patients prescribed lithium are in the community. It has a narrow therapeutic index, with a high potential for toxicity and therefore careful monitoring is required for safe use. Consequently, if lithium treatment is not managed properly there is a potential risk of significant harm.

At times of crises and occasionally to start treatment lithium patients come into hospital. This document provides a bundle of interventions which if implemented in wards will enhance patient safety with lithium treatment. This bundle is intended to support wards to comply with the Good Practice Standards- using lithium safely.

The document consists of the following elements

1. Key Lithium Facts – to provide staff with a basic understanding of lithium treatment.
2. Principles of safe lithium treatment – to support the development of appropriate care plans.
3. Multi-disciplinary team (MDT) check list for patients prescribed lithium – to ensure the bundle and standards are applied to all lithium patients.
4. Clinical Factors to consider before administering a dose of Lithium – to identify and prevent potential or actual lithium toxicity.
5. Common lithium drug interactions
6. Information sources
7. Sample care plans

How to use this bundle

When a patient is started on lithium in a ward or is admitted to a ward already taking lithium the bundle should be activated and monitored within the multi-disciplinary team. The following steps should be followed

- Access the bundle via the following link
- Print off the Key Lithium Facts document and issue it to junior medical staff and all trained nurses in the ward.
- Begin the development of a lithium nursing care plan.
- Ensure the lithium MDT checklist is put in place at the next MDT meeting.
- Ensure all nurses adopt the clinical factors to consider before administering a dose of Lithium
- Provide the patient with appropriate education following the lithium patient information standards

Bundle Measures

The following measures will be audited for every in-patient prescribed lithium;

1. When a patient is prescribed lithium all staff are issued with the key facts document (record %)
2. All patients prescribed lithium have a care plan based on the lithium safety principles (record %)
3. The MDT checklist is reviewed at each MDT meeting (record %)
4. There is evidence that the clinical factors prior to administration are considered before each dose (record %)

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Lithium Key Facts

1. Lithium is a very useful drug used to stabilise mood, manage treatment resistant depression and help self-injurious behaviour.

2. Lithium brands are not interchangeable. Medicines reconciliation should identify the brand of lithium the patient is taking. Patients should remain on the same brand. When prescribing on HEPMA ensure the correct brand name is selected e.g. LITHIUM CARBONATE (PRIADEL)

3. Lithium has a narrow therapeutic index i.e. the dose required for a therapeutic effect is often not much lower than the dose that will cause a toxic effect. The risk of lithium toxicity is increased by reduced kidney excretion of the drug causing increased blood serum levels. This can be caused by a variety of factors;
   - Dehydration
   - Deterioration of kidney function
   - Infections
   - Co-administration of interacting medications e.g. diuretics, or anti-inflammatory analgesics (ibuprofen, naproxen, celecoxib)

   If toxicity is suspected take a level immediately and withhold the dose until level confirmed.

4. Serum blood levels of lithium should be checked;
   - on admission to a ward, including transfers from other wards and hospitals
   - 5- 7 days after a dose change has been prescribed
   - If patients become physically unwell
   - In stable patients on a 3 monthly basis
   - If there is any suspicion of toxicity a level should be taken immediately, regardless of when the last dose was taken

   This should be a trough level taken 12 hours after the last dose. Renal function, thyroid function, calcium levels and weight should be checked every 6 months (Good Practice Standards- using lithium safely). ECG should be checked annually if clinically indicated

5. Serum Lithium concentrations above 1.0mmol/L may have potentially serious adverse effects and levels over 1.5mmol/litre may be fatal and require immediate medical treatment. Early clinical features of toxicity are non-specific and may include apathy and restlessness which may be confused with a patient's underlying mental state. Other symptoms include;
   - Vomiting/diarrhoea
   - Loss of appetite
   - Confusion, slurred speech, abnormal drowsiness/sluggishness
   - Severe tremor or twitching
   - Muscle weakness
   - Blurred vision, ringing in the ear
   - Dizziness/loss of balance, clumsiness

For more information contact a senior clinician or clinical pharmacist.

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Principles of Safe Lithium Treatment

The safe use of Lithium is an identified care need for patients receiving this treatment. All patients using lithium should have a person centred care plan for this.

This document identifies the principles which support safe lithium care. It lists elements which should be used to support safe care within the multi-disciplinary team and may be used to inform the creation of care plans (an example of a care plan is included as an appendix).

1. Staff knowledge & education
   - All relevant MDT staff, working with the patient should have a basic knowledge of lithium. All staff should know the Key Facts about lithium (included in Lithium Bundle) and read the Choice & Medication patient information leaflet on Lithium. A lithium training presentation is available from Pharmacy.

2. Preventing & managing toxicity
   - Nursing (registered and unregistered) should inform the nurse in charge should there be any concerns that a patient is lithium toxic. If there is any suspicion of toxicity inform medical staff.
   - Staff should be aware of the increased risk of toxicity if the patient becomes dehydrated for any reason. Care plans should contain guidance on how to assess and manage dehydration.
   - Ensure that the relevant clinical factors are considered before administering lithium.

3. Routine monitoring
   - The monitoring recommendations contained in the Key Facts document and the Good Practice Standards- using lithium safely document must be followed. Care plans should contain details of the monitoring schedule for each patient.
   - Ward staff must have a system of recording and reporting to the Nurse in charge and medical staff lithium levels received over the telephone. This should include proactive follow up of pending results. All staff must be aware of the importance of communicating this information.

4. Communication
   - Sharing information and good communication is essential for safe lithium treatment. This is particularly important in the following situation
     - within MDT e.g. high levels
     - ward and hospital transfers
     - primary care on discharge from hospital
   - The information to be shared includes
     - Lithium brand and dose
     - Last lithium level results
     - Target lithium levels
     - Dates of next routine monitoring

5. Patient & carer education
   - Patients and carers should not be discharged without being fully aware of the risks associated with lithium and how to manage those risks.

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MDT Lithium Checklist

This checklist is designed to support the safe use of lithium treatment and should be considered at every MDT for patients prescribed lithium. All patients prescribed lithium must have the following warning added to their EMIS and HEPMA record 'On lithium treatment- check for drug interactions with any change to medication'.

Action items:

1. **For new prescriptions, pre-treatment baseline checks complete** – all baseline pre-treatment checks have been done to support safe lithium prescribing e.g. ECG (when clinically indicated), U&Es, renal function, thyroid function, bone profile, weight.

2. **For established patients, Medicines Reconciliation –** the correct dose and formulation has been identified on admission and has been appropriately prescribed taking into account compliance, drug interactions, recent lithium level and current physical health.

3. **Lithium is correctly prescribed –** the appropriate starting dose (usually 200-400mg) is prescribed on the in-patient prescription sheet. When prescribing on HEPMA ensure the correct brand name is selected e.g. LITHIUM CARBONATE (PRIADEL)

4. **Potential drug interactions –** any existing drugs with significant potential for interaction are reviewed e.g. NSAIDs including COX-2 inhibitors, ACE inhibitors, Diuretics.

5. **Education –** appropriate education and appropriate written information on lithium is available for patients, carers and staff.

6. **Lithium level monitoring –** an initial lithium level is taken (as a 12-hour trough) 5 -7 days after starting lithium and a plan for on-going monitoring has been established. This will include appropriate monitoring after any dose change or where there is a suspicion of toxicity or a worsening in the patient's physical health.

7. **Lithium care planning –** the use of lithium has been identified as a need within the care plan.

8. **Side effect monitoring –** a systematic approach to lithium side effect monitoring has been established and monitored through the care plan and reported to the MDT. The side effect check list in the Good Practice Standards-using lithium safely is recommended.

9. **Lithium Clinical Factors are considered –** system in place to identify and implement actions to prevent or treat emerging lithium toxicity. Indicate in the additional comments section of the prescription recording sheet that the factors are considered before the administration of each dose.

10. **Physical health care –** all relevant physical health monitoring for lithium patients described in the Mental Health Services Physical Health Policy is undertaken.

11. **Discharge/transfer plan in place –** a clear and well communicated plan is in place to ensure relevant information is shared with all relevant parties when a patient on lithium is discharged from hospital or transferred to another care setting. Consider whether the environment the patient is returning to will be able to safely support lithium treatment. Provide education as appropriate.

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Clinical Factors to consider before administering a dose of Lithium

The onset of lithium toxicity can be insidious and therefore nursing staff need to be vigilant for the signs and symptoms of potential toxicity before administering lithium to a patient.

The factors to consider

In the last 24 hours the patient has experienced:

- Increasing gastrointestinal disturbances (vomiting, diarrhoea etc.)
- Inadequate fluid intake (infection, hot weather, alcohol use)
- Muscle weakness/lack of co-ordination
- Muscle twitches
- Slurring of words
- Severe tremor
- Blurred vision
- Confusion
- Unusual drowsiness

If there are concerns, contact the duty doctor for further advice.

Has the patient been prescribed any new medicines?

The following list details some of the common drugs with interactions that are associated with causing lithium toxicity. It is not a comprehensive list so please refer to the current BNF or to pharmacy for more information if you are concerned about a possible interaction.

- Thiazide or related diuretics e.g. bendroflumethiazide
- Non-steroidal anti-inflammatory drugs (NSAIDs/COX-2 inhibitors) e.g. ibuprofen, diclofenac, naproxen, celecoxib
- Angiotensin Converting Enzyme (ACE) inhibitors e.g. enalapril, lisinopril, ramipril
- Angiotensin- II receptor antagonists e.g. candesartan, losartan
- Loop diuretics e.g. furosemide
- Potassium-sparing diuretics & Aldosterone antagonists e.g. spironolactone
- Metronidazole

There is a potential increased risk of neurotoxic effects from other psychotropic drugs although the combination of lithium with other psychotropic drugs is common.

If the patient has been prescribed any new medicine from this list, contact the duty doctor or pharmacy for further advice. The new medicine should be withheld until clarification is given that both medicines are to be used in combination and additional monitoring is being put in place.

Useful Resources

Good Practice Standards- using lithium safely
Lithium patient information standards
www.choiceandmedication.org/nhs24/
http://www.medicines.org.uk/emc/

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Appendix 1- **Sample Care Plan**

Please note this sample care plan has been included for illustrative purposes only. An individualised care plan will be prepared for each patient.

Name		CHI No.	

Identified need

Mary has been on lithium treatment for several years however recently stopped taking this at home and has been admitted to hospital following deterioration in her mood. Mary is ambivalent about taking her prescribed lithium.

Date	Intervention	Frequency Of Intervention	Sign and Print Name & Designation
	Lithium prescribed as ------- by medical team and will be reviewed weekly at the MDT.	One week	
	Initial lithium levels received and within normal range. Lithium levels to be repeated on ----- (5 days after commenced).	5 days	
	Staff to deliver psycho-education to Mary to support Mary's concordance with prescribed medication. Pharmacy to be contacted to provide additional information for Mary on the use of lithium	One week	
	Mary to be aware of the potential side effects of lithium toxicity and encouraged to report to staff any symptoms she may experience.	One week	
	Staff to monitor for lithium toxicity and communicate any side effects to medical staff with holding administration of lithium if concerns raised.	One week	
	Routine lithium levels checked every three months. Bloods taken 12 hours after the last dose is taken.	One week	
	Staff to record blood results (written or receive over the phone) and all physical healthcare monitoring in the case notes. These will be reviewed urgently if required or routinely at each MDT.	One week	
	On discharge relevant primary care and community mental health services to be updated on lithium care as required.	One week	

Patient/Carer's view/understanding of needs & interventions

Mary is unsure why she needs to take lithium at this time however is agree able to do so.

Mary's mother is her identified carer and is keen for Mary to be re-commenced on Lithium as she believes this has kept Mary well for a long time.

Staff Signature: ……..…… Date: ……

Patient/Carer Signature: ……... Date: ……