Safety Guidance: Lithium on Admission to an Acute Hospital Ward

Key Points – Summary

For all patients admitted to an acute hospital who are taking lithium therapy:

- **REVIEW** the information recorded in the patient's purple "Lithium Therapy" record book, relating to prescribed brand, dose, formulation and monitoring.
- **CHECK** serum lithium levels and renal function on admission 12 hour post dose. The typical lithium therapeutic range is 0.4-1.0mmol/l**.**
- **PRESCRIBE** the brand and formulation of lithium taken by the patient on admission
- **CONSIDER** drugs that increase the serum concentration of lithium – these include ACE inhibitors, angiotensin II receptor antagonists, NSAIDs, diuretics and methyldopa
- **AVOID** prescribing NSAIDS or thiazide diuretics on admission
- **REPEAT** all tests for serum lithium levels if toxicity is suspected at any stage during admission.
- **MONITOR** serum lithium levels on a weekly basis following any changes to the prescribed lithium dose.
- **ADMINISTER** the specified manufacturer's brand of lithium whenever possible.

Issue

The purpose of this "Safety Guidance" is to highlight key issues to be considered when patients taking lithium are admitted to an acute hospital. Lithium is a high risk drug requiring regular monitoring and dose adjustment to maintain levels within a therapeutic range. Details of safety concerns associated with the prescribing, administration and monitoring of lithium are outlined in the NPSA alert (NPSA Alert 2009/PSA005 Safer lithium therapy)

Assessment on Admission and Prescribing of Lithium Therapy

For all patients admitted to an acute hospital who are taking lithium therapy:

REVIEW the information recorded in their purple "Lithium Therapy" record book, relating to prescribed brand, dose formulation and monitoring. If this is not available confirm dose and brand with patient, carer, GP or community pharmacy. Inpatient lithium levels can be added to discharge letter and in the purple "Lithium Therapy" record book on discharge to support transfer back into primary care.

CHECK serum lithium levels and renal function on admission. The typical lithium therapeutic range is 0.4-1.0mmol/l. Lithium levels can fluctuate unpredictably during the course of many physical illnesses. It is therefore vital to be alert for symptoms suggestive of lithium toxicity. If a patient has a toxic level, the lithium needs to stop. Please take advice from their mental health team – the patient's mental health may relapse quickly if the lithium is just stopped without an alternative being prescribed.

If renal function has changed recently ask whether this has been discussed with the patient or whether the dose was altered. It is known that lithium can have an effect on renal function, which necessitates the need for a review by the mental health team if there is deterioration in renal function. Since lithium is primarily excreted via the renal route, significant accumulation of lithium may occur in patients with renal insufficiency. Prolonged treatment with lithium may also cause hypothyroidism, which should also be borne in mind when reviewing the patient.

Signs of lithium toxicity

NOTE - toxicity can occur when serum lithium levels are within the normal therapeutic range - this can occur particularly in patients with an acute physical illness. A common cause is following a period of diarrhoea or dehydration. Signs of lithium toxicity include:

Blurred vision	Muscle weakness	Drowsiness
Coarse tremor	Dysarthria (slurred speech)	Confusion
Convulsions	Nausea/ vomiting	ECG changes

Ataxia (unsteady gait, problems with balance, falling over)

Prescribing Lithium Therapy

PRESCRIBE the brand (Priadel®, Liskonum®, Essential Pharma, Camcolit® or Li-Liquid®) and formulation (liquid, tablets or MR tablets) of lithium taken by the patient on admission. Different preparations may vary widely in bioavailability therefore changes in brand / formulation can result in changes in serum lithium levels potentially resulting in lithium toxicity.

	The safest way to ensure continuity of brand is usually to use the patient's own medication Information specifying the brand and formulation must be • Recorded on the ePMA system or paper drug chart for in-patient administration, on discharge, on FP10 prescriptions and where these are referenced in any letters and medical notes. • Included in the Medicines Reconciliation / Medication History Section of the medical notes . If there has been a period of poor compliance/missed doses with lithium guidance should be sought from the patient's mental health team as to what dose to restart the patient on. This may be dependent upon the number of doses missed, the dose usually taken and individual patient factors such as the mental health of the patient. **CONSIDER** drugs that increase the serum concentration of lithium – these include ACE inhibitors, angiotensin II receptor antagonists, NSAIDs, diuretics and methyldopa **AVOID** prescribing NSAIDS or thiazide diuretics on admission
Monitoring of Serum Lithium Levels and Action in Response to Elevated Serum Lithium Levels	**Monitoring of Serum Lithium Levels** • Blood samples for reviewing serum lithium levels should be taken 12 hours post dose • If blood samples are taken out-with these times, this should be stated clearly on the blood request form. **Action in Response to Elevated Serum Lithium Levels** ***Lithium level above 1.5mmol/L or patient displaying features of lithium toxicity*** *(see above)* ➢ **STOP LITHIUM IMMEDIATELY** ➢ Review the patient **immediately.** ➢ Re-check lithium level, serum creatinine, urea and electrolytes. ➢ Seek advice from a member of the mental health team (contact details below) for advice about reducing the dose or stopping treatment depending on clinical symptoms ***Lithium level greater than 1mmol/L AND less than or equal to 1.5mmol/L, but with no signs of toxicity*** ➢ Review the patient **the same day** that results are available. ➢ If there is an explanation for the high level e.g. dehydration, timing of level, interacting medicines, brand change, correct where possible ➢ Re-check lithium levels, serum creatinine, urea and electrolytes. ➢ Seek advice from a member of the mental health team (contact details below) for advice about reducing dose or stopping treatment. **REPEAT** U and Es and serum lithium level if toxicity is suspected at any stage during admission. **MONITOR** serum lithium levels on a weekly basis following any changes to the prescribed lithium dose.
Action for Nurses & Midwives	**ADMINISTER** the specified manufacturer's brand of lithium whenever possible. If no particular brand or formulation is specified, then the nurse should make every effort to clarify the brand and formulation before administration. Record the time of administration every day so that the exact time between the last dose and blood sampling for checking levels in known.
Action for Pharmacy Staff	• Prior to making a supply of lithium the pharmacist must check the serum lithium level recorded on the path-lab system or in the clinical notes. The pharmacist must make a decision to supply / withhold issue of lithium based on this serum lithium level. • If a decision to withhold supply is made, the pharmacist must contact the prescriber and may recommend that further advice is obtained from a member of the mental health team (contact details below) • Pharmacy staff must try to ascertain the most appropriate brand to supply prior to making a supply. The brand of medication should be included in the Medicines Reconciliation / Medication History Section of the medical notes where pharmacy is supporting this process. Where available target range may also be recorded in Medication History section. • If Pharmacy receives a temporary stock order request for lithium where the brand is not specified,

	the ward will be contacted to clarify the specific brand and formulation required. If clarity cannot be provided in a reasonable time then a minimal quantity of lithium will be supplied to ensure continuity of administration until the actual brand can be clarified.
Contact Details	Direct contact details of the mental health clinical team responsible for the care of the patient may be recorded in the patient's lithium record book. If these details are not recorded the TEWV Lithium register team contact details are listed below: Tel: 01642 837680 **Emails to TEAWVNT.Lithiumregisters@nhs.net** *(The lithium register team will not be able to respond directly to clinical queries but will sign post directly to the clinical team responsible for looking after the patient or a pharmacist who can advise.)*
Further Information	For further information please see Tees, Esk and Wear Valleys NHS Foundation Trust - Guidelines on Safe Lithium Prescribing and Shared Care.