

Consider chronic lithium poisoning in patients treated therapeutically with lithium who present with neurological symptoms or signs

See 'Lithium(Li)- Acute Ingestion' guideline if patient is on chronic lithium therapy and presents after an acute ingestion

## Toxicity / Risk Assessment

Neurotoxicity is the predominant feature and it does NOT correlate well with serum lithium concentration

### Increased risk of neurotoxicity with:

- Acute / chronic renal impairment
- Significant fluid or Na<sup>+</sup> depletion
- Drugs causing ↓GFR: ACE inhibitors, NSAIDs, thiazides
- Elderly, nephrogenic diabetic insipidus (NDI), thyroid dysfunction, hyperparathyroidism (↑ Ca 2+)

### Clinical features:

Tremor in isolation is not a feature of toxicity

**CNS:** confusion/stupor, hyperreflexia, hypertonia, ataxia, myoclonus, seizures

**CVS:** non-specific T wave inversion, bradycardia, ↑ QT

**Metabolic:** hyperthermia, ↑/↓Na<sup>+</sup>, ↑Ca<sup>2+</sup>

**Endocrine:** NDI, thyroid dysfunction

### Long-term complications:

- Cerebellar dysfunction, cognitive impairment

## Management

Treat underlying cause (e.g. sepsis/renal failure), strict fluid/electrolyte management and enhance lithium elimination.

- Replace fluid loss with crystalloid – Normal Saline is preferred because of ↑Na<sup>+</sup> content
- Cease any renal toxic medications (ACEIs, NSAIDs, diuretics)
- Optimize renal function, aim for urine output 1-2 mL/kg/hour
- Monitor electrolytes and fluid status (strict input and output)
- Monitor lithium concentrations 6 to 8 hourly

### Indications for Haemodialysis: (Discuss with clinical toxicologist)

- **Any** patient with severe toxicity (coma, seizures, arrhythmia) **regardless** of lithium concentration
- Lithium concentration >4.0 mmol/L with renal impairment
- Lithium concentration >5.0 mmol/L
- Consider if raised lithium concentration and confusion with no other cause
- Endpoint: lithium concentration < 1.0 mmol/L and clinical improvement apparent
- Measure lithium concentration 6 hours after dialysis to monitor for rebound

## Disposition

- All patients with chronic toxicity are likely to require management >24 hours
- Patients with severe neurological features require admission to an HDU/ICU with access to haemodialysis