

Acute lithium overdose is generally benign in lithium naïve individuals. Significant neurotoxicity rarely develops, providing renal function is adequate.

Toxicity / Risk Assessment

1. Acute ingestions in lithium naïve individuals:

- Less than 25 grams: usually minor GI symptoms including nausea, vomiting, abdominal pain and diarrhoea
- Neurological features (see below) rarely develop unless there is renal impairment, untreated dehydration or Na⁺ depletion. If neurological toxicity develops, it may be delayed up to 24 hours

2. Acute ingestions in patients on therapeutic lithium:

- Risk of neurotoxicity is dose related and more likely with:
 - Acute / chronic renal impairment
 - Significant fluid depletion or Na⁺ depletion.
 - Lithium induced nephrogenic diabetic insipidus

Neurological features of lithium toxicity:

Mild: hyperreflexia, tremor (*tremor may be present at therapeutic concentrations*)

Severe: ataxia, confusion, somnolence, myoclonus, seizures, coma

Other features of lithium toxicity:

Cardiac conduction abnormalities

Management

Good supportive care is the mainstay of management

Decontamination: Activated charcoal is **not** effective

- Whole bowel irrigation may be indicated within 4 hours in large ingestions (> 50 g) of slow-release/enteric-coated preparations (discuss with Clinical Toxicologist)
- Replace fluid loss with intravenous crystalloid
- Cease any nephrotoxic medications (ACEIs, NSAIDs, diuretics) and optimize renal function
- Monitor electrolytes and fluid status
- **Serum lithium concentrations do not correlate well with clinical toxicity in acute ingestions**, and may rise to > 5 mmol/L. Serial serum concentrations (performed 4-6 hourly) are useful to confirm exposure and to monitor progress

Haemodialysis should be considered if: (discuss with Clinical Toxicologist)

- Neurological features (coma, seizures, confusion) or dysrhythmias **regardless** of lithium concentration
- Persistently high or rising serum lithium concentration >5 mmol/L
- Lithium concentration > 4 mmol/L with renal impairment (eGFR < 45)
- Continue until lithium concentration < 1 mmol/L

Disposition

- Continuous cardiac monitoring is not required in absence of co-ingestants and a normal ECG
- Discharge pending mental health assessment if patients have no neurological toxicity and a decreasing lithium concentration (with most recent concentration <1.5 mmol/L)