

Lamotrigine overdose produces CNS depression. Overdose can be complicated by seizures and arrhythmias.

Toxicity

Toxic dose is poorly defined. Ingestion >20 mg/kg can be associated with moderate toxicity.

Death has been reported at doses of 4 grams

Lamotrigine blocks Na and Ca channels, inhibits dopamine, norepinephrine and serotonin reuptake and is a reversible MAOI

Clinical features:

- **CNS:** nystagmus, ataxia, vertigo, sedation, involuntary movements (hemiballismus, choreoathetosis, myoclonus), hyper-reflexia, intractable seizures
- **CVS:** hypotension, ↑QRS (Na⁺ channel blockade), refractory ventricular arrhythmias
- **Sudden cardiovascular collapse and death can occur with doses > 4 grams**
- **Serotonin toxicity:** may occur with co-ingestion of another serotonergic agent/s

Management: Good supportive care is the mainstay of management

Decontamination: **Activated charcoal 50 g** should be given to alert and co-operative patients who have ingested >20 mg/kg up to 2-hours post ingestion, and via a NG tube in all intubated patients.

Hypotension

- Treat initially with 20-30 mL/kg of crystalloid
- Fluid resistant hypotension should initially be managed using a norepinephrine infusion
- Further choice of inotrope(s) should be based on echocardiography findings
- Consider ECMO in cases with ongoing hypotension despite escalating doses of inotropes

Seizures - Benzodiazepines: Diazepam 5 mg IV every 5 minutes as necessary

Ventricular arrhythmias / Na⁺ channel blockade

- Often poorly responsive to NaHCO₃ therefore discuss all cases with a clinical toxicologist
- Maintain serum K⁺, Mg²⁺ and Ca²⁺ concentrations in normal range
- Avoid beta-blockers and amiodarone

Serotonin Toxicity – *(see separate serotonin toxicity guideline)*

Enhanced elimination

- **Multi-dose activated charcoal (MDAC)** may increase lamotrigine clearance (see MDAC guideline)
- **Extracorporeal elimination:** haemodialysis may increase lamotrigine clearance

Possible indications: Ingested dose > 4 grams PLUS QRS prolongation or CVS instability, arrhythmias, hypotension poorly responsive to medical Rx, intractable seizures

Disposition: Discharge pending mental health assessment if asymptomatic at 6 hours post ingestion