# Sodium Valproate (VPA, valproic acid)

**In large overdoses, VPA causes coma and multi-organ failure. Haemodialysis is indicated for life-threatening toxicity.**

## Toxicity / Risk Assessment

*Large overdoses may result in delayed onset of toxicity.*

*Patients may present asymptomatic. Peak serum conc. may occur up to 16 hours post ingestion.*

*Toxicity may last days post massive overdose.*

Predicted toxicity by ingested dose:

< 200 mg/kg: mild sedation

200-1000 mg/kg: dose-dependent CNS depression

> 1000 mg/kg: coma likely requiring intubation, cerebral oedema, multi-organ failure and death

**Clinical features:**

- CNS: ↓conscious state, ataxia, coma, seizures, cerebral oedema
- GI: nausea, vomiting, abdominal pain, hepatotoxicity, pancreatitis
- CVS: ↑HR, hypotension, ↑QT interval
- Metabolic: ↑ $Na^+$, ↑ lactate, ↑ ammonia, ↓ $Ca^{2+}$, ↓ glucose, metabolic acidosis
- Haematology: myelosuppression – leukopaenia and thrombocytopaenia

**Management:** Airway protection as required. Call clinical toxicologist for all ingestions 500mg/kg

**Decontamination**

**Activated charcoal 50 g** (Paediatric 1g/kg) within 4 hours of ingestion >200 mg/kg, OR at any time if the patient requires intubation (via NGT or orogastric tube).

Consider **Whole Bowel Irrigation** if ingestion >1000 mg/kg, (*discuss with clinical toxicologist)*

**Investigations** - Check VPA serum concentration 4-6 hourly until decreasing and in therapeutic level

**Enhanced elimination** (*please discuss with clinical toxicologist*)

**Intermittent haemodialysis** is the preferred ECTR modality.

Indications: - Serum VPA concentration > 6000 µmol/L (850 mg/L) OR

- Severe toxicity including CVS instability/cerebral oedema/ metabolic acidosis pH <7.1

*Endpoint: clinical improvement AND serum VPA concentration < 700 µmol/L (100 mg/L)

**Carnitine** (*Discuss with clinical toxicologist* and *see separate Carnitine guideline*)

- Consider carnitine in patients with any of the following:

*Severe metabolic acidosis (pH <7.1), $NH_3$ > 100 µmol/L, cerebral oedema, hepatotoxicity*

- Dose: 100 mg/kg IV loading dose (max 6 g) followed by 50 mg/kg IV 8 hourly (max 3 g per dose)

**Meropenem:** 1g intravenous 8 hourly may have a role in ingestion > 1000 mg/kg or patients with severe toxicity (*discuss with clinical toxicologist*)

**Disposition:**

>200 mg/kg: observe for at least 8 hours + decreasing VPA concentrations + VPA <3500 µmol/L (500 mg/L)

>500 mg/kg: observe for at least 12 hours + decreasing VPA concentrations + VPA <3500 µmol/L (500 mg/L)