**Toxicity / Risk Assessment**

**Verapamil and Diltiazem:**
- Cause direct cardiotoxicity and vasodilatation
- **Ingestion of 2-3x of usual dose** → serious toxicity
- Ingestion > 10 tablets can be life threatening

*Standard release: symptoms occur within 1-2 hours*

*Modified-release: symptoms may be delayed up to 12 hours*

† risk with age/co-morbidities/co-ingestion of other cardiac medication

**Clinical features:**
- CVS: ↓HR, 1°AVB, ↓BP; may progress to refractory shock and death
- Metabolic: ↑glucose, lactic acidosis
- GI: nausea, vomiting, ileus

**Management**

**CCB overdose is potentially life-threatening – consult a Clinical Toxicologist early**

**Decontamination: Activated Charcoal 50 g**: alert patient <1 hour post OD of standard release preparation

Consider AC in well, haemodynamically stable patients post modified release preparation ingestion

Whole bowel irrigation (WBI) may be appropriate in selected cases *(Discuss with Clinical Toxicologist)*

**Hypotension** *(Graduated approach. Early echocardiogram may guide treatment)*

**Fluid:** initially load with 10-20 mL/kg IV crystalloid, further IV fluids may lead to pulmonary oedema

**Calcium:** 40 mL Ca²⁺ gluconate (4 grams, 8.8 mmol) bolus IV over 5-15 minutes

- Repeat boluses x 3 in 1st 60 minutes; infusion to maintain ionized Ca²⁺ concentration ~2.0 mmol/L

**High Dose Insulin-Euglycaemia Therapy (HIET): HIET is most effective if commenced early**

- 50 mL of 50% dextrose as slow IV bolus FOLLOWED BY an initial infusion of 100 mL 10% dextrose / hour
- 1 unit/kg IV actrapid bolus FOLLOWED BY 1 unit/kg/hour actrapid infusion.
- Titrate to effect up to 5 units actrapid/kg/hour over first hour. Closely monitor serum glucose and K⁺

**Atropine:** in case of ↓HR, 0.6 mg IV boluses q5 minutely up to 3 doses (child 0.02 mg/kg boluses)

**Catecholamine infusion:** commence only WITH or AFTER HIET. Choice of agent guided by echo/PICCO

- Epinephrine reasonable first line agent if bradycardia. Norepinephrine for vasoplegia

**Cardiac pacing:** can be used to bypass AV block, set rates > 60/minute. Capture may be difficult

**Mechanical:** consider early IABP or ECLS when there is poor response to other measures

**Methylene blue/Lipid Emulsion:** may be indicated in refractory shock. *(Discuss with Clinical Toxicologist)*

Discharge if no signs of toxicity > 4 hours post OD standard release or > 18 hours post OD modified release