Beta Blockers (BB)

Propranolol and sotalol overdose are more likely to produce life-threatening cardiovascular toxicity compared to other beta-blockers.

Toxicity / Risk Assessment

Ingestion ***>2 g Propranolol*** *or* ***> 1g Sotalol*** *is likely to cause significant toxicity*

Onset of effects usually occurs within 1-2 hours

Onset of effects for ***Metoprolol MR*** *may be delayed*

Likelihood of toxicity increases with*: underlying CVS disease, elderly, co-ingestion of other –ve inotropes/ chronotropes*

Clinical features:

- CVS: ↓HR and ↓BP. ↑PR interval on ECG may be first sign of CVS toxicity. Increasing AV block progressing to complete heart block, CVS collapse, pulmonary oedema
  - ***Sotalol:*** ↑QT, ↓HR, Torsades des Pointes (TdP)
  - ***Propranolol:*** ↑QRS, ventricular arrhythmias, delirium, coma, seizures (usually within first 2 hours)
- Other: ↓glucose, ↑K^+

Management - Treat hypotension using graduated approach. Early echocardiogram may guide Rx

Bradycardia

Atropine: 0.6 mg (0.02 mg/kg children, up to 0.6 mg) IV bolus and repeat 15 minutely up to 1.8 mg

Epinephrine (adrenaline): 10-20 mcg bolus (child 0.1 mcg/kg) q2-3 min until adequate perfusion

(Isoprenaline: is an alternative chronotrope but can exacerbate hypotension)

Electrical pacing is the definitive treatment if pharmacological chronotropy fails

Hypotension Treat hypotension using graduated approach. Early echocardiogram may guide Rx

Fluid: Initially load with 10-20 mL/kg IV crystalloid. Further IV fluid may lead to pulmonary oedema

Epinephrine (adrenaline): titrate infusion to achieve MAP 65 mmHg

If inadequate response to epinephrine and fluid with evidence of pump failure: consider HIET (High-dose Insulin Euglycaemic Therapy) OR if evidence of vasoplegia, commence noradrenaline +/- vasopressin. Seek advice from a Clinical Toxicologist.

Refractory Hypotension: (refractory to epinephrine, fluid, HIET, other inotropes/vasopressors)

Mechanical: consider early Extra-Corporeal Life Support (ECLS) interventions

Wide QRS and Na^+ channel blockade (Propranolol):

Role of $NaHCO_3$ is unclear, discuss with Clinical Toxicologist if QRS > 120 ms

Seizures:

Correct hypoglycaemia and administer benzodiazepine (diazepam 5mg IV 5 minutely as necessary)

↑QT Interval + TdP (Sotalol): *See separate QT prolongation guideline*

Disposition: Discharge pending mental health assessment if asymptomatic + normal ECG 6 hours post ingestion (12 hours if MR preparation)