Beta Blockers (BB)

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

Toxicity / Risk Assessment

Onset of effects usually occurs within 1-2 hours

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

Ingestion ***>2 g Propranolol*** *is likely to cause significant toxicity, usually within 6 hours*

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

No medical treatment required if patient is well AND has normal ECG 6 hours post ingestion (12 hours if MR preparation ingested)

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 ↓BP in graduated, but aggressive manner. Early echocardiogram may guide Rx

Activated charcoal: offer up to 2 hours post ingestion (4 hours if MR preparation)

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: 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 (serial assessment with bedside Echocardiogram can help assess response to treatment)

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

If no response to epinephrine and fluid, commence HIET (high-dose insulin euglycaemic therapy) if evidence of pump failure. OR if vasoplegia, commence noradrenaline +/- vasopressin but seek expert 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: *See separate QT prolongation guideline*

Observation: deliberate self-harm or >2 x daily dose – cardiac monitor for at least 6 hours (12 hours if MR)