



Clinical Practice Guidelines: Toxicology and toxinology/Beta blocker

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Date	January, 2020
Purpose	To ensure a consistent approach to the management of beta blocker poisoning.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
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Beta blockers are beta adrenergic receptor antagonists which are commonly prescribed for the management of cardiac arrhythmia, hypertension and following myocardial infarction.

Toxicity from accidental or intentional overdose is not uncommon, causing bradycardia that is associated with significant mortality.

Examples include:

- Propranolol
- Sotalol
- Atenolol
- Bisoprolol
- Carvedilol

Clinical features



Cardiovascular effects

- Bradycardia
- Heart block
- Hypotension
- Cardiogenic shock

Other effects

- Hypoglycaemia/hyperglycaemia
- Pulmonary oedema
- Seizures, coma (propranolol)



Risk assessment

- Propranolol and sotalol are particularly toxic in overdose due to their action on other channels.
 - Propranolol is a sodium channel blocker that crosses the blood-brain barrier. In overdose, in addition to its beta blocking effects, it causes seizures, coma and QRS widening due to sodium channel blockade.
 - Sotalol, in addition to its beta blocking effects, also blocks potassium channels which causes QT prolongation and can lead to Torsades de Pointes.
- Other beta blocking drugs are relatively less toxic in isolation; however, their effects can be compounded when taken as a co-ingestion with other cardiac drugs such as calcium channel blockers or digoxin, or if the patient has poor cardiac reserve (e.g. older adults or those with underlying heart disease).

+ Additional information

- Clinical features typically manifest within 4 hours following ingestion.
- Ingestions of greater than 2 g of propranolol are associated with serious toxicity.^[1]
- Glucagon was previously regarded as a specific antidote to beta blocker poisoning, however, it requires large doses and has only a transient effect. It is no longer recommended.

