



# Clinical Practice Guidelines: Toxicology and toxinology/Calcium channel blocker

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<b>Date</b>	July, 2022
<b>Purpose</b>	To ensure a consistent approach to the management of calcium channel blocker poisoning.
<b>Scope</b>	Applies to Queensland Ambulance Service (QAS) clinical staff.
<b>Health care setting</b>	Pre-hospital assessment and treatment.
<b>Population</b>	Applies to all ages unless stated otherwise.
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# Calcium channel blocker

July, 2022

**Calcium channel blockers (CCBs)** are commonly prescribed medications used in the treatment of hypertension, angina pectoris and cardiac arrhythmia.<sup>[1]</sup> In overdose they can cause severe cardiovascular toxicity.

## Examples:

- Verapamil
- Diltiazem
- Amlodipine
- Nifedipine
- Felodipine
- Lercanidipine

Most CCBs in therapeutic doses act to decrease blood pressure through vasodilation. In overdose this can lead to hypotension and vasodilatory shock.

Verapamil and diltiazem are particularly toxic as they also act on calcium channels in the heart to slow the heart rate and decrease myocardial contractility. In overdose they can cause bradycardia and cardiogenic shock.

Many CCBs are available as slow release preparations. Therefore, there can be a delay of many hours from time of ingestion before the onset of toxicity.

Calcium can ameliorate toxicity and is part of the treatment approach to severe poisoning.<sup>[2]</sup>

## Clinical features



### Cardiovascular effects

- Bradycardia
- Heart block
- Hypotension
- Cardiogenic shock

### Systemic effects

- Seizures
- Coma
- Hyperglycaemia
- Metabolic acidosis



## Risk assessment

- CCB toxicity is potentially life-threatening, particularly if verapamil or diltiazem is taken which are more cardio selective.
- Older persons and those with underlying cardiovascular disease are more at risk of severe toxicity.
- Co-ingestion of other cardiac medication such as ACE inhibitors, beta blockers or digoxin can cause severe toxicity.<sup>[3,4]</sup>



