



## Drug Therapy Protocols: Sodium bicarbonate 8.4%

<b>Policy code</b>	DTP_SOB_0924
<b>Date</b>	September, 2024
<b>Purpose</b>	To ensure a consistent procedural approach to sodium bicarbonate 8.4% administration.
<b>Scope</b>	Applies to all Queensland Ambulance Service (QAS) clinical staff.
<b>Health care setting</b>	Pre-hospital assessment and treatment.
<b>Population</b>	Applies to all ages unless specifically mentioned.
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# Sodium bicarbonate 8.4%

September, 2024

## Drug class

Alkalisating agent<sup>[1,2]</sup>

## Pharmacology

Sodium bicarbonate 8.4% is a hypertonic solution that acts as a buffer. Excess hydrogen ions react with bicarbonate resulting in the formation of carbon dioxide and water. This action assists in restoring plasma pH to within normal ranges.<sup>[1,2]</sup>

## Metabolism

Metabolised to CO<sub>2</sub> and H<sub>2</sub>O.<sup>[1]</sup>

## Indications<sup>[1-5]</sup>

- **Cardiac arrest:**
  - secondary to **suspected hyperkalaemia** (e.g. chronic renal failure)
  - secondary to **propranolol overdose**
- **Cardiac arrest** secondary to **tricyclic antidepressant (TCA)**
- Significant injury with potential for **crush syndrome**
- **TCA poisoning** (with QRS > 0.14 AND terminal R wave in aVR)
- **Sodium channel blockade due to non-TCA poisoning** (with QRS > 0.14 AND terminal R wave in aVR)
- **Suspected hyperkalaemia** (with QRS widening AND/OR AV dissociation)

## Contraindications

- Nil

## Precautions

- Nil

## Side effects

- Cerebral oedema
- Congestive heart failure

## Presentation

- Vial, 100 mL *sodium bicarbonate 8.4%*

## Onset (IV)

Immediate

## Duration (IV)

Variable

## Half-life


Variable

## Schedule

- Unscheduled.

### Routes of administration

Intravenous injection (IV) 





Intraosseous injection (IO) 

### Special notes

- Ambulance officers must only administer medications for the listed indications and dosing range. Any consideration for treatment outside the listed scope of practice requires mandatory approval via the *QAS Clinical Consultation and Advice Line*.
- Care must be taken to avoid extravasation into tissues as necrosis may occur.
- Sodium bicarbonate 8.4% administration is not indicated in the newly born pre-hospital resuscitation.
- The Phebra branded sodium bicarbonate vials are unable to be spiked with QAS supplied Alaris® giving sets. All medication must be withdrawn and administered using a 50 mL syringe and 19 G drawing up needle.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% before and following each medication administration.
- All parenteral medications must be prepared in an aseptic manner. The rubber stopper of all vials must be disinfected with an appropriate antimicrobial swab and allowed to dry prior to piercing.

## Adult dosages<sup>[1-5]</sup>



- **Cardiac arrest**
  - secondary to **suspected hyperkalaemia** (e.g. chronic renal failure)
  - secondary to **propranolol overdose**
- Significant injury with potential for **crush syndrome**
- **Suspected hyperkalaemia** (with QRS widening AND/OR AV dissociation)
- **Sodium channel blockade due to non-TCA poisoning** (with QRS > 0.14 AND terminal R wave in aVR)

	IV	<b>100 mL</b> <b>Single dose only.</b>
	IO	<b>100 mL</b> <b>Single dose only.</b>
<ul style="list-style-type: none"> <li>• <b>Cardiac arrest</b> secondary to tricyclic antidepressant (TCA)</li> <li>• <b>TCA poisoning</b> (with QRS &gt; 0.14 AND terminal R wave in aVR)</li> </ul>		
	IV	<b>100 mL</b> Repeated every <b>5 minutes.</b> <b>Total maximum dose 300 mL.</b>
	IO	<b>100 mL</b> Repeated every <b>5 minutes.</b> <b>Total maximum dose 300 mL.</b>



## Paediatric dosages<sup>[1-5]</sup>

- **Cardiac arrest**
  - secondary to **suspected hyperkalaemia** (e.g. chronic renal failure)
  - secondary to **propranolol overdose**
  - secondary to **tricyclic antidepressant** (TCA)
- Significant injury with potential for **crush syndrome**
- **Suspected hyperkalaemia** (with QRS widening AND/OR AV dissociation)
- **Sodium channel blockade due to non-TCA poisoning** (with QRS > 0.14 AND terminal R wave in aVR)

	<b>IV</b>	<b>1 mL/kg</b> <b>Single dose only, not to exceed 100 mL</b>
	<b>IO</b>	<b>1 mL/kg</b> <b>Single dose only, not to exceed 100 mL</b>

