South Australian Neonatal Medication Guidelines

Calcium gluconate

931 mg/10 mL injection
(2.2 mmol/10 mL elemental calcium)

Note:
This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

This is a High Risk Medication ⚠
An overdose can be rapidly fatal.

For information on oral calcium, see calcium carbonate (oral) guideline

Synonyms

Calcium gluconate monohydrate

Dose and Indications

Doses should be expressed in millimole (mmol) of elemental calcium. An ampoule of calcium gluconate 931 mg in 10 mL is equivalent to 0.22 mmol elemental calcium per 1 mL.

Correcting Acute Symptomatic Hypocalcaemia

Intravenous

0.22 mmol/kg to 0.44 mmol/kg elemental calcium as a single dose

Maintenance Treatment for Hypocalcaemia

Use oral treatment with calcium carbonate where possible (see calcium carbonate (oral) guideline).

Intravenous

0.11 mmol/kg elemental calcium per dose, 4 times a day

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Exchange Transfusion

Intravenous

0.22 mmol/kg elemental calcium may be used if hypocalcaemia is documented

For the above indications, these are initial doses only and should be adjusted according to calcium and phosphate levels.

Severe Hyperkalaemia with electrocardiogram (ECG) changes

Intravenous

0.11 mmol/kg of calcium gluconate 10% per dose

Preparation and Administration

Intravenous

The intravenous preparation is formulated as calcium gluconate 931 mg in 10 mL (equivalent to 0.22 mmol elemental calcium per 1 mL).

Calcium gluconate may precipitate in the vial. Inspect the vial before using and discard if it is cloudy or contains particles.

Dilute 5 mL of the 0.22 mmol/mL elemental calcium solution with 5 mL of compatible fluid (to a total of 10 mL). The resulting solution contains 0.11 mmol/mL

Dose	0.11 mmol	0.22 mmol	0.33 mmol	0.44 mmol	0.55 mmol	0.66 mmol
Volume	1 mL	2 mL	3 mL	4 mL	5 mL	6 mL

Infuse over one hour using a **central line where possible.** If more than one dose required via a peripheral line for correction, strongly consider central access.

For rapid administration in severe hyperkalaemia with ECG changes, give as a slow push over 2 to 5 minutes.

Do not administer by intra-muscular or subcutaneous route as tissue necrosis may occur.

Compatible Fluids

Glucose 5%, glucose 10%, sodium chloride 0.9%

Adverse Effects

Side effects specifically associated with intravenous administration include calcium deposition (extravasation), skin necrosis (extravasation), and irritation.

Peripheral vasodilation, bradycardia, cardiac asystole, hypotension and arrhythmia are related to rapid intravenous administration.

Infrequent

Hypercalcaemia, alkalosis, hypophosphataemia

Rare

Renal calculi

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Monitoring

- Cardiac monitoring during administration. The electrocardiogram (ECG) should be monitored for evidence of hypercalcaemia, bradycardia and other arrhythmias (stop infusion if heart rate is less than 100 beats per minute).
- Monitor serum calcium, ionised calcium and phosphate.
- Observe injection site closely for extravasation.
- Observe IV tubing for precipitates.

Practice Points

- Intramuscular magnesium sulphate may be preferable for the treatment of transient late neonatal hypocalcaemia.
- Do not add to any solution containing bicarbonate, sulphate or phosphate.
- Calcium gluconate should not be co-infused with Parenteral Nutrition Solution (PNS), due to the potential formation of calcium phosphate precipitants, which may not be visible (refer to your pharmacy department for more information).
- Calcium gluconate is incompatible with a range of medications, forming insoluble precipitates when mixed; please check with your local pharmacy department for specific advice.
- Improves ECG manifestations of hyperkalaemia without changing plasma potassium level.
- Rapid intravenous injection may cause sinus bradycardia.
- Use with CAUTION in patients with renal or cardiac impairment.
- Highly irritant - avoid extravasation by administering slowly into a central vein.
- Calcium gluconate in glass vials should not be used for repeated or prolonged treatment due to high aluminium content.

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Document Ownership & History

Developed by: SA Maternal, Neonatal & Gynaecology Community of Practice
Contact: Health.NeoMed@sa.gov.au
Endorsed by: Safety and Quality, Clinical Support and Improvement, SA Health
Next review due: 15/11/2023
ISBN number: 978-1-76083-649-8
CGQS reference: **NMG014**
Policy history: Is this a new policy (V1)? **N**
Does this policy amend or update and existing policy? **Y**
If so, which version? **V 4.1**
Does this policy replace another policy with a different title? **N**
If so, which policy (title)?

Approval Date	Version	Who approved New/Revised Version	Reason for Change
18/10/2023	V4.2	Domain Custodian, Clinical Governance, Safety and Quality	Additional comment: If more than one dose required via a peripheral line for correction, strongly consider central access.
2/3/2023	V4.1	Domain Custodian, Clinical Governance, Safety and Quality	Minor update of product presentation
15/11/2018	V4.0	SA Health Safety and Quality Strategic Governance Committee	Formally reviewed in line with 5 year scheduled timeline for review.
09/03/2018	V3.1	SA Health Safety and Quality Strategic Governance Committee	Review date extended to 5 years following risk assessment. New template
12/08/2014	V3	SA Health Safety and Quality Strategic Governance Committee	Update
17/06/2014	V2	SA Health Safety and Quality Strategic Governance Committee	Removal of strength from the title
06/08/2013	V1	SA Maternal & Neonatal Clinical Network	Original SA Maternal & Neonatal Clinical Network approved version