		Type: Drug Guideline	Document reference: 0596	Manual Classification: Waikato DHB Drug Guidelines
Title: Calcium gluconate IV for Neonates			Effective date: 3 May 2022	
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BRIEF ADMINISTRATION GUIDE

For detailed information refer to The [Australasian Neonatal Medicines Formulary calcium gluconate](#) guideline

- Indications:**
- Hypocalcaemia (corrected calcium < 1.7 mmol/L)
 - Symptomatic hyperkalaemia or hypermagnesaemia
 - Exchange transfusion (if hypocalcaemic)

Route: IV, via CVAD (but not via UAC) unless using for cardiac resuscitation

Supplied as calcium gluconate 10% 10ml vial (calcium 0.22 mmol/mL or 8.9 mg/mL). The currently stocked brand is an unregistered medicine available under section 29.

- pH of calcium gluconate 6 to 8.2

Note: *Calcium chloride injection is also available in the hospital. Please ensure the prescriber has specified the salt form i.e. "gluconate" and the correct injection is administered – there is a threefold difference in elemental calcium between formulations*

Dose: **Doses are expressed in mmol of elemental calcium.**

Acute Hypocalcaemia, hyperkalaemia or magnesium toxicity (including cardiac resuscitation due to these)

0.15 mmol/kg (0.7 ml/kg undiluted calcium gluconate) as a single dose by slow IV injection if cardiac arrest and otherwise IV infusion. May be repeated as required.

Hypocalcaemia, Maintenance

0.15 mmol/kg/dose 4-6 hourly (by IV infusion)

Adjust according to response. Maximum 3 mmol/kg/day.

Exchange transfusion

0.23 mmol/kg/dose (1 ml/kg calcium gluconate). Repeat as necessary.

Preparation and administration

Compatible fluids: sodium chloride 0.9%, glucose 5%, glucose 10%, glucose 5% in sodium chloride


- Prepare immediately before use and visually inspected for discolouration, cloudiness or precipitation; do not use if present
- Administer via a central line (preferred) if available, or into a large vein if giving peripherally
- Do NOT administer via scalp vein, or small hand or foot vein
- Do NOT co-administer with parenteral nutrition or other medications unless there is known compatibility

Intermittent IV Infusion

- Draw up 4.5 mL (1 mmol elemental calcium) and add 5.5 mL of compatible fluid to make 10 mL of a **0.1 mmol/mL** solution.
- Administer prescribed dose by intravenous infusion over 10 to 60 minutes (1 hour preferred in non-urgent situations).

Direct IV Injection

- Administer prescribed dose undiluted by slow IV injection over 5 minutes in cardiac arrest.

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Monitoring

- Continuous ECG, blood pressure and heart rate monitoring
- IV site continuously during treatment for site reactions or signs of extravasation. If extravasation occurs, stop administration immediately and refer to the Extravasation Injury in NICU Procedure 1559.
- Adverse effects associated with rapid administration including vasodilation hypotension, bradycardia, arrhythmias and cardiac arrest.
- Serum calcium at frequent intervals to guide therapy and ensure normal serum calcium levels are not exceeded
- Magnesium and phosphate as clinically indicated

Storage and Stability

- Discard any unused portion of the ampoule solution remaining

Competency for administration

This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Waikato DHB Generic Medicine Management and IV certification (if administering IV). For CVAD administration Neonatal specific competency NCV/NAC is also required.

Guardrails

Calcium gluconate is Guardrail profiled on the CC pump for NICU, with the following limits:


Guardrails Drug Name	Calcium gluconate*
Concentration (mmol/mL)	
Standard	0.1
Minimum	0.04
Maximum	0.11
Dose rate (mmol/kg/hr)	
Default	0.15
Soft minimum	0.1
Soft maximum	0.9
Hard max	0.92

Associated Documents

- Waikato DHB Newborn Intensive Care guideline #3121 [Non-oliguric hyperkalaemia in Neonates](#)
- Waikato DHB Newborn Intensive Care guideline #1646 [Exchange and Reduction Transfusions in Neonates](#)
- Waikato DHB Newborn Intensive Care guideline #2903 [Calcium oral for Neonates](#)

References

- Australian Neonatal Medicines Formulary. Calcium gluconate drug guideline 2018, available from <https://www.seslhd.health.nsw.gov.au/royal-hospital-for-women/australasian-neonatal-medicines-formulary-anmf>
- New Zealand Formulary for Children (NZFC) v115. Calcium salts. https://nzfchildren.org.nz/nzf_5278
- Truven Health Analytics Inc. Pediatrics and Neofax®. Calcium gluconate monograph. <http://www.micromedexsolutions.com>.
- Lexicomp. Calcium gluconate: Pediatric drug information monograph. Uptodate <https://www.uptodate.com>.
- Phelps SJ, Hagemann TM, Lee KR, Thompson AJ. The Teddy Bear Book: Pediatric Injectable Drugs. 11th edition. American Society of Health-System Pharmacists; 2018.
- The Royal Children's Hospital Melbourne. Paediatric Injectable Guidelines. <https://pig.rch.org.au>.
- Auckland DHB Newborn Services. Calcium gluconate Drug Protocol. 2003. <http://www.starship.org.nz>

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- Canterbury DHB Neonatal Services. Calcium gluconate Drug Information sheet, available from <https://edu.cdhb.health.nz/Hospitals-Services/Health-Professionals/Neonatal-Clinical-Resources/Neonatal-Drug-Information-Sheets/Documents/Calcium-Gluconate.pdf>
- Australian Injectable Drugs Handbook 8th edition. The Society of Hospital Pharmacists of Australia, 2020.

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