

BURTON CRITICAL CARE DRUG MONOGRAPH

CALCIUM	
CLASS	Electrolyte supplementation
INDICATION	<p style="text-align: center;">Hypocalcaemia</p> <p style="text-align: center;">Use separate citrate haemodialysis calcium guidelines for patients on RRT</p> <p style="text-align: center;">ACUTE SEVERE HYPERKALAEMIA (K+ > 6.5mmol or in the presence of ECG changes)</p>
DOSE	<p style="text-align: center;"><i>Use in conjunction with UHDB Hypocalcaemia guidelines</i> https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=3041</p> <p>Mild hypocalcaemia (Asymptomatic and >1.9mmol/L adjusted Calcium) 10% Calcium gluconate - 10mL slow iv bolus over 5 minutes or dilute in 50mL sodium chloride 0.9% over 30 minutes</p> <p>Severe hypocalcaemia (<= 1.9mmol/L adjusted Calcium or symptomatic at level below reference range) LOADING: 10% Calcium gluconate – 20mL over 10mins</p> <p>MAINTENANCE: 22.5mmol (100mL) of 10% calcium gluconate in 1000mL sodium chloride 0.9% over 10 - 20hrs (50-100mL/hr)</p> <p style="text-align: center;"><u>Severe hypocalcaemia in fluid restricted patients</u> 2 x 50mL syringes of neat 10% calcium gluconate at 10mL/hr Duration :10hrs Total Dose: 22.5mmol in 100mL</p> <p style="text-align: center;"><u>Severe hypocalcaemia IV CENTRAL ONLY</u> 20mL (20mmol) of calcium <u>chloride</u> (1mmol/ml) injection neat at 5mL/hr</p> <p style="text-align: center;">ACUTE SEVERE HYPERKALAEMIA Please refer to UHDB hyperkalaemia guideline https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=1269</p>
PRESENTATION	<p>Calcium gluconate 10% injection, 10mL amp (2.25mmol Ca²⁺)</p> <p>Calcium chloride 1mmol/mL injection (14.7%) – 5 or 10mL amp</p> <p>Note: Calcium chloride 10% in 10ml (approx. 6.8mmol Ca²⁺) pre-filled-syringe/Mini-Jets are kept in resuscitation boxes and used as rapid IV bolus as per British Resuscitation algorithms</p>
pH	6- 8.2 (calcium gluconate)
ROUTE	<p style="text-align: center;">Calcium gluconate</p> <p style="text-align: center;">IV CENTRAL (preferred for neat injection) or PERIPHERAL</p> <p>Calcium Chloride - IV CENTRAL ONLY for neat infusion, can be given peripherally when diluted at least x 4 times its volume with sodium chloride 0.9%</p>
PREPARATION/ ADMINISTRATION	<p>Calcium gluconate – see dose and administration above</p> <p>Calcium chloride 1mmol/ml injection –see above for fluid restricted patients</p>

CAUTION	Respiratory acidosis / respiratory failure
SIDE EFFECTS	Too rapid infusion may lead to cardiac arrhythmias or arrest, hypotension and vasomotor collapse, flushing and sweating Other S/E: Bradycardia, hypertension and chalky taste
MONITORING	Patients with cardiac arrhythmias or on digoxin therapy need continuous ECG monitoring during iv calcium replacement

Reference:

1. UHDB Hypocalcaemia guidelines <https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=3041> Accessed Dec 2023
2. UHDB Hyperkalaemia guideline <https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-retrieve-file.pl?id=1a6733eaef25c7032bba3eb10ad9caaf> Accessed Dec 2023
3. Calcium gluconate Injection BP. EMC Medicines SPC <https://www.medicines.org.uk/emc/product/6264/smpc> Accessed Dec 2023
4. Calcium Chloride Infusion 10% w/v. EMC Medicines SPC <https://www.medicines.org.uk/emc/product/4126/smpc> Accessed May 2019
5. Calcium chloride Injection 10mmol/10mL EMC Medicines SPC <https://www.medicines.org.uk/emc/product/4126/smpc> Accessed May 2019
6. UKCPA: Minimum Infusion volumes for fluid restricted critically ill patients 4th Edition Dec 2012 <https://www.scottishintensivecare.org.uk/uploads/2014-07-24-19-56-30-Minimuminfusionvolumesinl-40262.pdf> Accessed May 2019

Documentation Controls

Development of Guideline:	Pharmacist – Critical Care
Consultation with:	Pharmacy -EPMA
Approved by:	Adult Drug Monograph process Written/Reviewed: Zain Ali, Critical Care Pharmacist Checked James Hooley, Medicines Safety Pharmacist Dec 2023
Review Date	Dec 2026
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