

Alert	Multiple forms of calcium exist with varying amounts of elemental calcium expressed in varying units. Therefore careful attention is required in prescription and administration of calcium to avoid over- or under-dosing. Conversion factor for elemental Ca: 1 mg = 0.025 mmol = 0.05 mEq. Do not give calcium solutions and sodium bicarbonate simultaneously by the same route to avoid precipitation. Do not mix with any medication that contains phosphates, carbonates, sulfates or tartrates. Separate doses of the following by at least 2 hours: phosphate, iron, thyroxine and phenytoin. CalSource Effervescent tablets were discontinued in 2019.
Indication	Oral calcium supplement to prevent / treat calcium deficiency. Asymptomatic hypocalcaemia.
Action	Calcium is essential for the functional integrity of the nervous, muscular, skeletal and cardiac systems and for clotting function.
Drug type	Mineral.
Trade name	Caltrate 600mg, Cal-600 tablets: Calcium carbonate 1500mg (contains elemental calcium 600mg) AUSPMAN 100mg/mL calcium carbonate suspension [1mmol/mL(40 mg/mL) of elemental calcium] If required: Calcium Gluconate Injection (Phebra) (calcium 0.22 mmol/mL). Calcium Chloride Injection (Phebra) 10% (calcium 0.68 mmol/mL). CalSource Effervescent tablets were discontinued in 2019, but SAS product (Calcium (SAS) (Sandoz Fortissimum) 1 g Effervescent tablet) is available.
Presentation	Caltrate 600, Cal-600: Calcium carbonate 1500mg (contains elemental calcium 600mg) AUSPMAN 40mg/mL (1mmol elemental calcium/mL) calcium (carbonate) suspension If required: Calcium gluconate 10% 10 mL vial contains 0.22 mmol/mL of elemental calcium. Calcium chloride 10% 10 mL vial contains 0.68 mmol/mL of elemental calcium.
Dose	Dose can vary. Estimate the calcium intake from all sources before prescribing oral calcium. Recommended total daily intake of elemental calcium from all sources: 120–200 mg/kg/day (3–5 mmol/kg/day). Usual starting oral calcium dose: 20 mg/kg/day (0.5 mmol/kg/day). Can increase up to 80 mg/kg/day (2.0 mmol/kg/day). Divide the daily dose into 2-4 doses mixed with feeds (Do not mix with Phosphate – See Drug Interactions).
Dose – Special scenarios	Not applicable.
Maximum dose	Oral – 5.5 mmol/kg
Total cumulative dose	
Route	Oral
Preparation	AUSPMAN suspension – no further dilution necessary Caltrate, Cal-600: Calcium carbonate 1500mg (contains elemental calcium 600mg) Crush and dissolve one tablet in 30 mL of water. This will give a solution containing 0.5 mmol/mL (20mg/mL). The relevant dose should be calculated and withdrawn by oral syringe immediately on complete dispersion of tablet (so as not to let dispersed liquid settle). Any remaining liquid should be discarded. Please refer to Appendix A. Calcium Effervescent tablet: Dissolve one calcium 1000 mg effervescent tablet in 10 mL of sterile water to make a 2.5 mmol/mL solution.
Administration	Administer with feeds. If required, calcium IV vials may be given orally (must be diluted at least 1:4 with sterile water).
Monitoring	Monitor calcium, phosphate and magnesium. Measurement of ionised calcium preferred over total calcium. Correct hypomagnesaemia if present.

Contraindications	Caution in patients with renal or cardiac impairment																																												
Precautions	Do not mix with any medication that contains phosphates, carbonates, sulfates or tartrates.																																												
Drug interactions	Do not mix with any medication that contains phosphates, carbonates, sulfates or tartrates. Separate doses of the following by at least 2 hours: Phosphate, iron, ²¹ thyroxine and phenytoin. Digoxin (serious risk of arrhythmia and cardiovascular collapse), thiazide diuretics (increased risk of hypercalcaemia), ketoconazole (decreased ketoconazole effect).																																												
Adverse reactions	Nephrolithiasis with long term use. Gastric irritation, diarrhoea and NEC have occurred during oral therapy with hyperosmolar preparations (must dilute with water)																																												
Compatibility																																													
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Stability	Oral solution: Discard remaining after use. Calcium gluconate is a supersaturated solution and may precipitate in the vial at room temperature. Inspect the vial before use.																																												
Storage	Caltrate 600mg tablets: Store below 25°C. Cal-600 tablets: Store below 25°C. AUSPMAN suspension: Store below 25°C. Calcium Gluconate Injection (Phebra) : Store below 30°C. Do not refrigerate. Calcium Chloride Injection (Phebra): Store below 25°C.																																												
Excipients	Caltrate tablets: Excipients not listed. Cal-600 tablets: Excipients not listed. AUSPMAN suspension: Hydroxybenzoate. Calcium Gluconate Injection (Phebra) (calcium 0.22 mmol/mL): Excipients not listed.. Calcium Chloride Injection (Phebra) 10%: Sodium hydroxide and/or hydrochloric acid may be used for pH adjustment.																																												
Special comments	<p>Hypocalcaemia defined as a serum total calcium concentration below 1.875 mol/L [7.5 mg/dL] or ionized calcium less than 1.2 mmol/L.[1]</p> <p>Blood gas machines measure ionised calcium directly and are more accurate than the main pathology laboratory which calculates the ionised calcium from a complex formula. Corrected calcium is calculated (when albumin < 40 or > 45) by the formula: $\text{Measured Ca (mmol/L)} + (40 - \text{albumin (g/L)}) \times 0.025$</p> <p>Calcium salt equivalents of elemental calcium</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>Salt</i></th> <th colspan="3" style="text-align: left;"><i>Elemental Ca</i></th> </tr> </thead> <tbody> <tr> <td>Calcium chloride 10% 1 mL</td> <td>1.36 mEq</td> <td>27.3 mg</td> <td>0.68 mmol</td> </tr> <tr> <td>Calcium gluconate 10% 1 mL</td> <td>0.46 mEq</td> <td>9.3 mg</td> <td>0.23 mmol</td> </tr> <tr> <td><i>Salt 1g</i></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Calcium Acetate</td> <td>12.6 mEq</td> <td>253 mg</td> <td>6.30 mmol</td> </tr> <tr> <td>Calcium Carbonate</td> <td>19.9 mEq</td> <td>400 mg</td> <td>9.96 mmol</td> </tr> <tr> <td>Calcium Citrate</td> <td>10.5 mEq</td> <td>211 mg</td> <td>5.26 mmol</td> </tr> <tr> <td>Calcium Chloride</td> <td>13.6 mEq</td> <td>273 mg</td> <td>6.80 mmol</td> </tr> <tr> <td>Calcium Glubionate</td> <td>3.29 mEq</td> <td>66 mg</td> <td>1.64 mmol</td> </tr> <tr> <td>Calcium Gluceptate</td> <td>4.08 mEq</td> <td>82 mg</td> <td>2.04 mmol</td> </tr> <tr> <td>Calcium Gluconate</td> <td>4.65 mEq</td> <td>93 mg</td> <td>2.32 mmol</td> </tr> </tbody> </table>	<i>Salt</i>	<i>Elemental Ca</i>			Calcium chloride 10% 1 mL	1.36 mEq	27.3 mg	0.68 mmol	Calcium gluconate 10% 1 mL	0.46 mEq	9.3 mg	0.23 mmol	<i>Salt 1g</i>				Calcium Acetate	12.6 mEq	253 mg	6.30 mmol	Calcium Carbonate	19.9 mEq	400 mg	9.96 mmol	Calcium Citrate	10.5 mEq	211 mg	5.26 mmol	Calcium Chloride	13.6 mEq	273 mg	6.80 mmol	Calcium Glubionate	3.29 mEq	66 mg	1.64 mmol	Calcium Gluceptate	4.08 mEq	82 mg	2.04 mmol	Calcium Gluconate	4.65 mEq	93 mg	2.32 mmol
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VERSION/NUMBER	DATE
Original	16/09/2016
Revised	
1.1	22/06/2017
1.2	19/04/2018
1.3	27/06/2019
Current 2.0	16/01/2020
REVIEW	16/01/2025

Original version Date: 24/8/2016	Author: NMF Consensus Group
Current Version number: 1.4	Version Date: 12/01/2020
Risk Rating: Medium	Due for Review: 12/01/2025
Approval by: As per Local policy	Approval Date:

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APPENDIX A
ORAL Calcium preparation

Calcium is widely available as Caltrate® OR Cal-600®. Both contain 600mg **elemental** calcium. The tablet can be dissolved in freshly boiled but cooled water. Ensure you check the expiry date on the bottle.

1. Using a tablet crusher, finely crush one tablet.



2. In a 30 mL measuring cup, mix the crushed tablet with 30 mL of freshly boiled but cooled water. This will result in a solution containing 20mg elemental calcium per 1 mL. Note that the solution will be cloudy and the tablet may not fully dissolve.



3. Immediately draw up the required dose in an oral syringe and administer to the baby with feeds (do not give at the same time as phosphate, separate by at least 2 hours). The dose will be prescribed by the doctor, depending on the baby's need. A guide of the different doses (mg) and amount (mL) of solution to give is in the table below.

Dose	Amount of solution (mL)
10 mg (0.25 mmol)	0.5
15 mg (0.38 mmol)	0.75
20 mg (0.5 mmol)	1
25 mg (0.63 mmol)	1.25
30 mg (0.75 mmol)	1.5

4. Discard the remainder of the solution. Always use a new tablet for each dose.

