

NURSING SERVICES GUIDELINE GENERAL

Guideline: Electrolyte infusion



Policy Number Superseded:

Responsibility: Registered Nurse (RN)

Effective Date:
February 2026

Purpose of Guideline: To provide the RN with infusion guidelines of electrolytes for safe administration that prevents complications.

Initial Effective Date:
August 2009

The adult electrolyte infusion guidelines serve as suggested rates for intravenous electrolyte infusions. Endorsed by the pharmacy and therapeutics committee, the guidelines include recommendations for patients in both ICU and non-ICU settings. Rates faster or slower than those suggested may be indicated in specific patient situations, under the direct supervision of a physician.

ADULT ICU ELECTROLYTE INFUSION GUIDELINES

	Calcium (Ca)	Magnesium (Mg)	Phosphate (PO ₄)	Potassium (K)
Standard Infusion rate	Gluconate or Chloride: 1 gm over 60 min. ¹	Peripheral: 2 gm/hr Central: 2 gm/hr	Central or Peripheral: 15-30 mMol/6 hrs. ³	Peripheral: 10 mEq/hr ⁴ Central: 20 mEq/hr ⁴
Maximum rate	Gluconate: 1 gm over 5 min. ¹	Peripheral: 2 gm/hr Central: 2 gm/hr	Peripheral: 15mmol/2 hrs Central: 15 mmol/hr. ³	Peripheral: 10 mEq/hr ⁴ Central: 40 mEq/hr ⁴

Guideline:
Electrolyte infusion

	Calcium (Ca)	Magnesium (Mg)	Phosphate (PO ₄)	Potassium (K)
	Chloride: 1 gm over 10 min. ¹	Emergency: 1 gm/7 min. ² (150 mg/min)		
Standard Concentration	Gluconate: 1-2 gm/100 mL NS Chloride: 1-2 gm/100 mL D5W	1 gm/100 mL D5W 2 gm/50 ml SW *for central line administration only	3-30 mmol/250 mL D5W	Peripheral: 10 mEq/100 mL Central: 20 mEq/50 mL
Maximum Concentration	Gluconate: 1 gm/50 ml D5W or NS ¹ Chloride: 1 gm/50 ml D5W or NS ¹	1 gm in 10 ml D5W or NS ²	Peripheral: 6mmol/100ml Central: 24 mmol/100ml	Peripheral: 10 mEq/50 mL ⁴ Central: 20 mEq/50 mL ⁴

ADULT NON-ICU ELECTROLYTE INFUSION GUIDELINES

	Calcium (Ca)	Magnesium (Mg)	Phosphate (PO₄)	Potassium (K)
Standard Infusion rate	Gluconate or Chloride: 1 gm over 60 min. ¹	1 gm/hr ²	Central or Peripheral: 15 mMol/6 hrs. ³	Peripheral: 10 mEq/hr ⁴ Central: 10-20 mEq/hr ⁴
Maximum rate	Gluconate or Chloride: 1 gm/10 min. ¹	2 gm/hr ² *via central line only; patient must have cardiac monitoring	Peripheral: 15mmol/2 hrs Central: 15 mmol/hr. *must be in cardiac monitored bed	Peripheral: 10 mEq/hr ⁴ Central: 20 mEq/hr ⁴
Maximum Intravenous Dose		20 gm/24 hrs ² Eclampsia: 40 gm/24 hrs ²		
Standard Concentration	Gluconate: 1gm/100 mL NS Chloride: 1gm/100 mL D5W	1 gm/100 mL D5W 2 gm/50 ml SW *for central line administration only	3-15 mMol/250 mL D5W	Peripheral: 10 mEq/100 mL Central: 20 mEq/50 mL
Maximum Concentration	Gluconate: 1gm in 50 mL D5W or NS ¹	1 gm in 10 mL D5W or NS ²¹	Peripheral: 6mmol/100ml Central: 24 mmol/100ml	Peripheral: 10 mEq/50 mL ⁴ Central: 20 mEq/50 mL ⁴

	Calcium (Ca)	Magnesium (Mg)	Phosphate (PO ₄)	Potassium (K)
	<p>Chloride: 1gm in 50 mL D5W or NS ¹</p>			

INJECTABLE ELECTROLYTE PRODUCTS 6

	Vial Concentration	Administration Tips
Calcium (Ca)	<p>Chloride 1 gm/10 mL (10%) 1 mL = 27 mg Ca = 1.36 mEq Ca</p> <p>Gluconate 1 gm/10 mL (10%) 1 mL = 9.3 mg Ca = 0.46 mEq Ca</p>	<p>Rapid calcium administration should be reserved for emergencies or severe symptoms or hypocalcemia. May cause bradycardia, hypotension and vasodilation. Infiltration of IV calcium may cause severe tissue necrosis and sloughing.</p> <p>Do not administer calcium gluconate faster than 200mg/min.</p> <p>Do not administer calcium chloride faster than 100mg/min except in emergency situations.</p> <p>Gluconate salt is less irritating, yet contains less Ca per mL than chloride salt.</p> <p>Administer via central line if possible to help minimize irritation.</p> <p>Calcium chloride cannot be given IM or SC because severe tissue necrosis may occur.</p>

	Vial Concentration	Administration Tips
Magnesium (Mg)	<p>Sulfate 1 gm/2 mL (50%)</p> <p>1 gm = 8.12 mEq Mg</p>	<p>Rapid magnesium infusion should be reserved for emergencies or severe symptoms of hypomagnesemia. Retention of magnesium is improved with slower infusion.</p> <p>Must dilute with 3 to 8ml of NS for a 10-20% solution prior to IV infusion of any kind</p> <p>Administration of higher doses requires ECG monitoring; cases involving potentially lethal ventricular arrhythmias may require higher doses under close medical supervision</p> <p>Administration guidelines differ when used in obstetrical patients for tocolysis</p>

TREATMENT OF PHLEBITIS

	Method of Choice for IV irritation (pain)	Dose and Administration
Calcium (Ca)	<ol style="list-style-type: none"> 1) Stop infusion until pain subsides 2) Slowing the infusion rate upon restart 3) Increasing the dilution 4) Using a large bore vein 	<ol style="list-style-type: none"> 2) Peripheral: Dilution to 2-10% ¹
Magnesium (Mg)	<ol style="list-style-type: none"> 1) Slowing the infusion rate 2) Increasing the dilution 3) Using a large bore vein 	
Phosphate (PO₄)	<ol style="list-style-type: none"> 1) Slowing the infusion rate 2) Increasing the dilution 3) Using a large bore vein 	

Potassium (K)	1) Slowing the infusion rate 2) Increasing the dilution 3) Using a large bore vein	
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References:

Calcium Chloride/Gluconate. [Lexicomp](#). Accessed 2/6/2026 from UpToDate.com

Magnesium Sulfate Supplementation. [Lexicomp](#). Accessed 2/6/2026 from UpToDate.com

Potassium/Sodium Phosphate. [Lexicomp](#). Accessed 2/6/2026 from UpToDate.com

Potassium Chloride. [Lexicomp](#). Accessed 2/6/2026 from UpToDate.com

Electrolytes. Global RPh. Accessed 2/6/2026 from www.globalrph.com

Resources: Pharmacy & Therapeutics Committee

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Review/Revision Completed by:

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