



## Nursing Service Guidelines (General) Electrolyte Infusion Guidelines

**Title:** **ELECTROLYTE INFUSION GUIDELINES**  
**Responsibility:** Registered Nurse (RN)  
**Purpose:** To provide the RN with infusion guidelines of electrolytes for safe administration that prevents complications.  
**Specific Notes:** 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 <sub>4</sub> )	Potassium (K)
<b>Standard Infusion rate</b>	<b>Gluconate or Chloride:</b> 1 gm over 60 min. <sup>1</sup>	<b>Peripheral:</b> 2 gm/hr <b>Central:</b> 2 gm/hr	<b>Central or Peripheral:</b> 15-30 mMol/6 hrs. <sup>3</sup>	<b>Peripheral:</b> 10 mEq/hr <sup>4</sup> <b>Central:</b> 20 mEq/hr <sup>4</sup>
<b>Maximum rate</b>	<b>Gluconate:</b> 1 gm over 5 min. <sup>1</sup> <b>Chloride:</b> 1 gm over 10 min. <sup>1</sup>	<b>Peripheral:</b> 2 gm/hr <b>Central:</b> 2 gm/hr <b>Emergency:</b> 1 gm/7 min. <sup>2</sup> (150 mg/min)	<b>Peripheral:</b> 15mmol/2 hrs <b>Central:</b> 15 mmol/hr. <sup>3</sup>	<b>Peripheral:</b> 10 mEq/hr <sup>4</sup> <b>Central:</b> 40 mEq/hr <sup>4</sup>
<b>Standard Concentration</b>	<b>Gluconate:</b> 1-2 gm/100 mL NS <b>Chloride:</b> 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	<b>Peripheral:</b> 10 mEq/100 mL <b>Central:</b> 20 mEq/50 mL
<b>Maximum Concentration</b>	<b>Gluconate:</b> 1 gm/50 ml D5W or NS <sup>1</sup> <b>Chloride:</b> 1 gm/50 ml D5W or NS <sup>1</sup>	1 gm in 10 ml D5W or NS <sup>2</sup>	<b>Peripheral:</b> 6mmol/100ml <b>Central:</b> 24 mmol/100ml	<b>Peripheral:</b> 10 mEq/50 mL <sup>4</sup> <b>Central:</b> 20 mEq/50 mL <sup>4</sup>

### ADULT NON-ICU ELECTROLYTE INFUSION GUIDELINES

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

### INJECTABLE ELECTROLYTE PRODUCTS 6

	Vial Concentration	Administration Tips
<b>Calcium (Ca)</b>	Chloride 1 gm/10 mL (10%) 1 mL = 27 mg Ca = 1.36 mEq Ca Gluconate 1 gm/10 mL (10%)	Do not administer calcium gluconate faster than 200mg/min.  Do not administer calcium chloride faster than 100mg/min except in emergency

	Vial Concentration	Administration Tips
	1 mL = 9.3 mg Ca = 0.46 mEq Ca	<p>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> <p>Rapid administration may cause bradycardia, hypotension and vasodilation. Infiltration of IV calcium may cause severe tissue necrosis and sloughing</p>
<b>Magnesium (Mg)</b>	<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
<b>Calcium (Ca)</b>	<ol style="list-style-type: none"> <li>1) Stop infusion until pain subsides</li> <li>2) Slowing the infusion rate upon restart</li> <li>3) Increasing the dilution</li> <li>4) Using a large bore vein</li> </ol>	2) Peripheral: Dilution to 2-10% <sup>1</sup>
<b>Magnesium (Mg)</b>	<ol style="list-style-type: none"> <li>1) Slowing the infusion rate</li> <li>2) Increasing the dilution</li> <li>3) Using a large bore vein</li> </ol>	

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<b>Phosphate (PO<sub>4</sub>)</b>	1) Slowing the infusion rate 2) Increasing the dilution 3) Using a large bore vein	
<b>Potassium (K)</b>	1) Slowing the infusion rate 2) Increasing the dilution 3) Using a large bore vein	

**Resources:** Pharmacy & Therapeutics Committee

**Approved:** 8/2009

**Reviewed:** 9/27/2012, 3/14, 2/17

**Revised:** 7/2017, 7/2020, 6/2023

**Reviewed by:** Nursing Service Policy and Standards Committee 7/17, 7/2020, 6/2023

**References:**

1. *Calcium Chloride/Gluconate*. [Lexicomp](#). Accessed 6/19/2020 from UpToDate.com
2. *Magnesium Sulfate Supplementation*. [Lexicomp](#). Accessed 6/19/2020 from UpToDate.com
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4. *Potassium Chloride*. [Lexicomp](#). Accessed 6/19/2020 from UpToDate.com
5. *Lexi-Comp Drug Information Handbook 2008-2009*; pp.250-251; 1269-1270.
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