

AUTHORIZED BY: CPC Quality of Care Committee

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CATEGORY: ACP Medications

TITLE: **CALCIUM GLUCONATE 10%**

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- Other Names:**
- N/A
- Classifications:**
- Salt, Electrolyte
- Pharmacodynamics:**
- Calcium Gluconate is used as a cardio protective agent in hyperkalemia. Though it does not have an effect on potassium levels in the blood, it reduces the excitability of cardiomyocytes thus lowering the likelihood of developing cardiac arrhythmias.
- Onset:**
- 5 minutes
- Peak:**
- 30 minutes
- Duration:**
- 2 hours
- Indications:**
- Suspected hyperkalemia in patients at high risk, including: currently on dialysis  
**OR**  
history of end-stage renal disease (ESRD)  
**OR**  
other reason to be highly suspicious of hyperkalemia  
- (i.e. prolonged crush injury)  
**AND**  
one of the following clinical situations:  
Cardiac Arrest  
**OR**  
pre-arrest  
- (i.e. hypotension, altered level of consciousness, symptomatic bradycardia) with 12-lead ECG suggestive of hyperkalemia [i.e. wide and often bizarre QRS (>120 ms) with peaked T waves, loss of p waves and/or may have sine wave appearance]
- Contraindications:**
- Patients on Digoxin as use in these patients may precipitate arrhythmias (i.e. stone heart).
- Precautions:**
- **PUSH SLOW**: Rapid intravenous injection of calcium salts may cause vasodilation, decreased blood pressure, bradycardia, cardiac arrhythmias, syncope and cardiac arrest.
  - Patients may complain of tingling sensations, a sense of oppression or heat waves and a calcium or chalky taste following the intravenous administration of calcium gluconate.
- Adverse Reactions:**
- Parenteral calcium may cause flushing, nausea, vomiting, drowsiness, sweating and hypotension. Vasomotor collapse may ensue if IV injection is too rapid.

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- Drug Interaction:**
- The inotropic and toxic effects of cardiac glycosides (i.e. Digoxin, Lanoxin) and calcium are synergistic and arrhythmias may occur if these drugs are given together (particularly when calcium is given IV).
  - IV Calcium Gluconate precipitates when paired with carbonates, bicarbonates, sulfates and tartrates in addition to IV solutions containing various drugs (i.e. Dopamine).
- Special Considerations:**
- The solution should not be used if precipitate is noted.
  - Store at room temperature (15 to 30°C). Protect from freezing. Do not use if solution is unclear.
  - Discard unused portion.
  - If appropriate, refer to the Symptomatic Bradycardia, Tachydysrhythmia, or Cardiac Arrest Medical Directives for further management of these patients.
  - Caution that Calcium Gluconate should only be administered in an IV/IO that is running well and that Calcium Gluconate and Sodium Bicarbonate should not be mixed or given in the same IV without flushing well.
- Preparations:**
- 1 gram in 10 milliliters (1G/10 ml) = 100mg/ml
- References:**
- Compendium of Pharmaceuticals and Specialties 2013
  - Ontario Provincial ALS Patient Care Standards, Version 4.5
  - 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science, Part 12: Cardiac Arrest in Special Situations.

**NOTE:** *The information contained herein does not supersede or negate the MoHLTC Provincial Medical Directives and should only serve as general information about the medication itself. For medication dosages, please refer to the current version of the Ontario Provincial ALS Patient Care Standards.*