

Class

Electrolyte

Pharmacologic Properties

Calcium is a cation that essential for neurotransmission, bone formation, enzymatic reactions and muscle (including cardiac) contraction. In the myocardium, it increases the force of contraction and augments cardiac output. Calcium also has a stabilizing effect on myocardial membranes when dangerously high potassium levels make the heart at risk for fibrillation.

Indications

- Hyperkalemia with associated ECG disturbances [Protocol 9, Protocol 9P](#).
- Hypocalcemia (known)
- Calcium channel blocker toxicity with hemodynamic compromise [Protocol 9, Protocol 9P, Protocol 15, Protocol 15P](#).
- Cardiac arrest with Asystole [Protocol 9, Protocol 9P](#).
- Magnesium (MgSO₄) toxicity [Medication 22](#).
- Cardiac arrest secondary to Hydrofluoric Acid (HF) exposure [Protocol 25](#).

Contraindications

- Cardiac arrest not associated with one of the above
- Digoxin toxicity (assumed if on Digoxin and unknown levels)
- Hypercalcemia

Precautions

- Cautious use in patients receiving Digoxin - do not administer to patients with suspected Digoxin toxicity or overdose
- Do not mix with sodium bicarbonate - it will form an insoluble precipitate (calcium carbonate)

Side Effects/Adverse Reactions

- Bradycardia (usually caused by rapid administration)
- Arrhythmias - especially in patients on digoxin
- Sclerosis of veins (if IV infiltrates)

Dosage and Administration

Adult

Adult Cardiac Arrest

- 1000 mg slow IV/IO bolus.
 - If patient is taking digitalis, administer 250 mg slow IV/IO bolus.
 - May repeat once in 10 minutes if no response (Maximum total dose 2 grams).

Hyperkalemia and Calcium Channel Blocker Overdose

- 500 – 1000 mg slow IV/IO bolus.

Adult Cardiac Arrest secondary to Hydrofluoric Acid (HF) Exposure

- 1000 mg slow IV/IO bolus.

Pediatric

- 20 mg/kg (0.2 mL/kg) slow IV/IO bolus.
 - May repeat once in 10 minutes if no response (Maximum total dose 2 grams).