

# GLUCAGON (GLUCAGEN)

<b>DRUG CLASSIFICATION</b>	Glucoregulatory Peptide Hormone Beta-Adrenergic Blocker Antagonist Glycogenolytic / Antihypoglycemic Agent Antidote in Beta-Blocker / Calcium-Channel-Blocker Toxicity
<b>MECHANISM OF ACTION</b>	As an antihypoglycemic agent, Glucagon binds to specific G-protein coupled receptor, activating adenylate cyclase enzyme in the myocardium, increasing concentration of myocardial intracellular cyclic AMP, leading to activation of Hepatic Glycogenolysis and Gluconeogenesis, resulting in increased BGL and ketones. As an antidote for Beta- and Calcium-Channel Blocker toxicity, the increased production of myocardial intracellular cyclic AMP activates a non-adrenergic pathway, allowing glucagon to bypass beta-receptors to exert positive inotropic and chronotropic effects, improving cardiac contractility and AV conduction. Glucagon cannot reverse conduction disturbances caused by some beta blockers with membrane stabilizing activity such as propranolol.
<b>CLINICAL INDICATIONS</b>	Symptomatic Hypoglycemia BGL $\leq$ 69 mg/dL (No IV Access Available) Known or Suspected Beta-Blocker or Calcium-Channel Blocker Toxicity
<b>STANDARD CONTRAINDICATIONS</b>	Hypersensitivity to Glucagon, Lactose, or Relative Components Known or suspected condition associated with Pheochromocytoma. Patients who have been diagnosed with or suspected of having an Insulinoma
<b>POTENTIAL ADVERSE EFFECTS</b>	Abdominal Pain / Nausea / Vomiting / Hyperglycemia / Hypoglycemia / Pallor / Hypokalemia / Dizziness / Headache / Tachycardia / Hypertension / Hypotension / Rash / Urticaria / Rhinorrhea
<b>GENERAL RISKS &amp; PRECAUTION</b>	<b>1)</b> A sufficient amount of preexisting hepatic glycogen stores are required for Glucagon therapy to be effective. <b>2)</b> Be advised that supplemental Glucagon administration will almost always inevitably deplete the patient's preexisting glycogen stores. <b>3)</b> Use caution in presence of adrenal insufficiency due to risk of insufficient hepatic glycogen stores. <b>4)</b> Use caution in patients with prolonged hypoglycemia as they may not respond to glucagon. <b>5)</b> Be advised that concurrent anticholinergic agents may potentially enhance the adverse and / or toxic effects of Glucagon. <b>6)</b> It is safer to assume hypoglycemia than hyperglycemia if doubt exists; always reassess BGL after Glucagon therapy. <b>7)</b> Patients with prolonged hypoglycemia or those who are malnourished may not respond to glucagon.
<b>PROTOCOL INDEX</b>	Diabetic-Adult (AM-2) Pediatric Diabetic (PM-2) Overdose / Toxic Ingestion (TE-7)

## MEDICATION ADMINISTRATION

### ADULT

### PEDIATRIC

#### Symptomatic Hypoglycemia (Parenteral Access is Unavailable)

1 – 2 mg [IM]

Repeat every 15 minutes as needed to keep BGL > 60 mg / dL.

#### Suspected Beta Blocker or Calcium Channel Blocker Toxicity

2 – 4 mg [IV/IO/IM]

Repeat in 15 minutes if needed.

#### Symptomatic Hypoglycemia (Parenteral Access is Unavailable)

0.1 mg / kg [IM]; (Maximum Single Dose: 1 mg)

Repeat every 15 minutes as needed to keep BGL > 60 mg / dL.

#### Suspected Beta Blocker or Calcium Channel Blocker Toxicity

0.1 mg / kg [IV/IO/IM]

Repeat in 15 minutes if needed.