

Class

Sympathomimetic

Pharmacologic Properties

Epinephrine is a sympathomimetic which stimulates both Alpha- and Beta-adrenergic receptors. Its effects are to increase systemic vascular resistance, arterial blood pressure, coronary and cerebral blood flow, heart rate and contractility. The alpha-adrenergic effect increases vascular resistance and coronary blood flow, which may make the fibrillating myocardium more susceptible to counter-shock. The beta adrenergic effect increases heart rate and cardiac output, and induces bronchodilation.

Indications

- Anaphylaxis and acute allergic reactions associated with severe systemic symptoms (BP < 90 mmHg, stridor, severe respiratory distress) in adults and pediatrics [Protocol 17](#), [Protocol 17P](#).
- Severe bronchospasms associated with asthma or COPD exacerbation [Protocol 8](#).
- Symptomatic bradycardia [Protocol 9](#), [Protocol 9P](#).
- Profound hypotension [Protocol 35](#).

Contraindications

- Known hypersensitivity

Precautions

- Presence of hypertension
- Epinephrine 1:1,000 (1 mg/mL) cannot be given intravenously in non-cardiac arrest patients
- Epinephrine is inactivated by alkaline solutions and should not be mixed with Sodium Bicarbonate

Side Effects/Adverse Reactions

- Anxiety, Headache, Cerebral hemorrhage, Tachycardia, Ventricular dysrhythmias, Hypertension, Angina, Nausea and vomiting

Dosage and Administration

Adult

Adult Anaphylaxis – Severe allergic Reactions

- 0.3 mg IM from 1 mg/mL
 - May be repeated once in 5 minutes with no change.
- Epinephrine Auto-Injector (EpiPen) 0.3 mg IM [Procedure 18](#).

Adult Acute Bronchospasms

- 0.3 mg 1:1,000 (1 mg/mL) IM
 - May be repeated once in 5 minutes with no change.

Adult Cardiac Arrest

- 1 mg (1 mL) 1:1,000
 - Using a 10 mL syringe, draw up 1 mL of 1:1,000 (1 mg/mL) and dilute with 9 mL of NS to yield a concentration of 1:10,000 (1 mg/10 mL).

Adult Symptomatic Bradycardia

- 2 – 10 mcg/min.
 - Mix Epinephrine 1:1,000 (1 mg/mL) 5 mg (5 mL) into a 500 mL bag of NS to yield a concentration of 10 mcg/mL and attach a 60 gtt. (micro) set to run at desired dose.

Adult Profound Hypotension

- 0.1 – 0.5 mcg/kg/min.
 - Mix Epinephrine 1:1,000 (1 mg/mL) 5 mg (5 mL) into a 500 mL bag of NS to yield a concentration of 10 mcg/mL and attach a 60 gtt. (micro) set to run at desired dose.

Pediatric

Pediatric Anaphylaxis – Severe Allergic Reactions

- 0.01 mg/kg (0.01 mL/kg) IM from 1:1,000 (1 mg/mL) (Maximum single dose of 0.3 mg)
 - May be repeated once in 5 minutes with no change.
- Pediatric Epinephrine Auto-Injector (EpiPen, Jr.) 0.15 mg IM [Procedure 18](#).

Pediatric Acute Bronchospasms

- 0.01 mg/kg (0.01 mL/kg) IM from 1:1,000 (1 mg/mL) (Maximum single dose of 0.3 mg)
 - May be repeated once in 5 minutes with no change.

Pediatric Croup

- 3 mg (3 mL) from concentration of 1:1,000 (1 mg/mL) mixed in 3 mL of NS into nebulizer barrel.

Pediatric Cardiac Arrest/Bradycardia

- 0.01 mg/kg (0.01 mL/kg) of 1:1,000 (1 mg/mL) IV/IO and dilute with 5 mL of NS every 3-5 minutes as needed.

Pediatric Profound Hypotension

- 0.1 – 0.5 mcg/kg/min.
 - Mix Epinephrine 1:1,000 (1 mg/mL) 5 mg (5 mL) into a 500 mL bag of NS to yield a concentration of 10 mcg/mL and attach a 60 gtt (micro) set to run at desired dose.