

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

#### Adult Acute Bronchospasm

- 0.3 mg Epinephrine (1 mg/1 mL)
  - May be repeated once in 5 minutes with no change.

#### Adult Cardiac Arrest

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

#### Adult Symptomatic Bradycardia

- 5-40 mcg/min.
  - Mix Epinephrine (1 mg/1 mL) 10 mg (10 mL) into a 500 mL bag of NS to yield a concentration of 20 mcg/mL and attach a 60 gtt. (micro) set to run at desired dose. Start at 1 drop every 4 seconds and titrate to effect. Max dose of 40 mcg/minute.

#### Adult Profound Hypotension

- 5-40 mcg/min.
  - Mix Epinephrine (1 mg/1 mL) 10 mg (10 mL) into a 500 mL bag of NS to yield a concentration of 20 mcg/mL and attach a 60 gtt. (micro) set to run at desired dose. Start at 1 drop every 4 seconds and titrate to effect. Max dose of 40 mcg/minute.

## **Pediatric**

### Pediatric Anaphylaxis – Severe Allergic Reactions

- 0.01 mg/kg (0.01 mL/kg) IM from (1 mg/1 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 Bronchospasm

- 0.01 mg/kg (0.01 mL/kg) IM from (1 mg/1 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 mg/1 mL) mixed in 3 mL of NS into nebulizer barrel.

### Pediatric Cardiac Arrest/Bradycardia

- Dilute 1 mg of Epinephrine of 1 mg/1 mL with 9 mL of NS and administer at 0.01 mg/kg (0.1 mL/kg) IV/IO every 3-5 minutes as needed.

### Pediatric Profound Hypotension

- 0.1 – 0.5 mcg/kg/min.
  - Mix Epinephrine (1 mg/1 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.