This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

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Drug Name: **Epinephrine**

Trade Name: **Adrenalin, Epi**

REVISED: **November 1, 2021**

Class:

- Adrenergic Catecholamine
- Sympathomimetic

Mechanism of Action:

- β1—increases contractility (positive inotrope), AV conduction (positive dromotrope), and automaticity
- β2--bronchodilation, skeletal muscle vasodilation
- α--peripheral vasoconstriction, fight or flight response
- Small doses, beta effects dominate--vasodilation
- Large doses, alpha effects dominate--vasoconstriction, increases systemic vascular resistance and blood pressure

Indications:

- Hypersensitivity reactions (anaphylaxis)
- Acute bronchospasm associated with asthma or COPD (refractory to first-line agents)
- Asystole, VF, pulseless VT, PEA
- Croup & epiglottitis

Contraindications:

- None in cardiac arrest or severe anaphylaxis
- Hypersensitivity

Precautions:

- HTN
- Ischemic heart disease
- Cerebrovascular insufficiency
- Pulmonary edema
- Pregnancy (C)
- Geriatrics
- Protect from light
- Deactivated/precipitates with alkaline solutions (NaHCO3)
- Increases myocardial oxygen demand

Onset:

- IV/IO: 1-2 min
- IM/SQ: 5-10 min

Duration:

- IV/IM/SQ: 5-10 min

Side Effects:

- Anxiety
- Tachycardia
- HTN
- Angina
- Arrhythmias
- V-Fib
- N/V
- Fear
- Headache
- Pallor
- Dizziness
- Tremors

Interactions:

- Potentiated by MAOIs and TCAs
- Antagonized by beta blockers
- Precipitates in alkaline solutions

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Dosage:

Adults:

Pulseless Rhythms

- **IV/IO:** 1 mg (1:10,000) every 3-5 minutes

Anaphylaxis

- **IM/SQ:** 0.3 mg (1:1,000), repeat once at 10 minutes if s/s do not improve
- **IV Infusion:** IV/IO: 0.05-1 mcg/kg/min titrate for effect
  - **For persistent hypotension and/or severe refractory Cases**
  - **To Mix**: 1 mg epinephrine in 250 cc NS bag
- **Neb:** *For laryngeal edema only*, 3 mg epinephrine 1:1,000 (3 ml) mixed with 3 ml NS for 6ml solution total

Acute bronchospasm associated with asthma or COPD (refractory to first-line agents)

- **IM/SQ:** 0.3-0.5 mg (1:1,000)

Persistent/Refractory Hypotension

- **IV Infusion:** IV/IO: 0.05-1 mcg/kg/min, titrate for effect
- **To Mix**: 1 mg epinephrine in 250 cc NS bag

Symptomatic Ca Channel Blocker/Beta Blocker OD refractory to other interventions

- **IV Infusion: IV/IO: 0.05-1 mcg/kg/min titrate for effect**
- **To Mix**: 1 mg epinephrine in 250 cc NS bag

Pediatrics:

Pulseless Rhythms:

- **IV/IO:** 0.01 mg/kg (1:10,000) every 3-5 minutes
- **NEONATES**: 0.01-0.03 mg/kg (1:10,000) IV/IO every 3-5 minutes

Anaphylaxis

- **IM/SQ:** 0.15 mg IM
- **Neb:** *For laryngeal edema only,* 3 mg epinephrine 1:1,000 (3 ml) mixed with 3 ml NS for 6ml solution total

Persistent/Refractory Hypotension

- **IV Infusion:** 0.05-1 mcg/kg/min, titrate for effect
- **To Mix**: 1 mg epinephrine in 250 cc NS bag

Croup & Epiglottitis:

- **Neb:** *For laryngeal edema only,* 3 mg epinephrine 1:1,000 (3 ml) mixed with 3 ml NS for 6ml solution total

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Refractory Bronchospasm (Severe):

- **IM/SQ:** 0.01 mg/kg (1:1000, 0.1 ml/kg)

Airway Management:

"Push Dose" Epinephrine: Epinephrine 1:100,000 to treat peri-airway management hypotension, and as a bridge to vasopressor infusions in peri-airway management.

- **IV/IO:** Initial dose of 20 mcg (2 ml) followed by 5 mcg (0.5 ml) repeated 2-3 minute as needed for hypotension and/or bridge to infusion (if appropriate).
- **To Mix:** 1 ml (0.1 mg) of 1:10,000 Epinephrine ("Cardiac Arrest Epi") in a 9 ml NaCL Flush for a 10 mcg/cc concentration. **LABEL SYRINGE.**

PEARLS:

CAUTION: All patients receiving inhaled beta agonists and/or anticholinergic medications should be observed for a least one hour following treatment for return of symptoms.

ALS evaluation is indicated if Epi administered either PTA or by EMS, and transport strongly encouraged. Refusals require medical control contact.

- I.M. Epi is be more effective than SQ Epi in shock situations, such as anaphylaxis.
- Sodium bicarbonate or Furosemide will inactivate epinephrine, flush line well between administration.
- Use an IV Infusion pump when administering Epi Infusions.

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