EPINEPHRINE (Adrenaline)

ACTION: Sympathomimetic

- Catecholamine that stimulates alpha- and beta-adrenergic receptors.
- Results in increased heart rate (positive chronotropy), systemic vascular resistance, and blood pressure (positive inotropy). It also causes bronchodilation due to its effects on beta-2 adrenergic receptors.

INDICATION	ADULT	PEDIATRIC
Cardiac arrest	1 mg IVP/IO at the time intervals specified in Protocol 2.04 Cardiac Arrest - Appendix 1. Use 0.1 mg/mL concentration.	0.01 mg/kg up to 1 mg IVP/IO every 3-5 minutes. Use 0.1 mg/mL concentration.
Anaphylaxis	0.3 mg IM Use 1 mg/mL concentration. May repeat x1 in 5 min.	0.15 mg IM for weight < 30 kg - or - 0.3 mg IM for weight ≥ 30 kg Use 1 mg/mL concentration. May repeat x1 in 5 min.
Severe **bronchospasm**	0.3 mg IM Use 1 mg/mL concentration. May repeat x2 q20min.	0.15 mg IM for weight < 30 kg - or - 0.3 mg IM for weight ≥ 30 kg Use 1 mg/mL concentration. May repeat x2 q20min.
Hypotension and shock refractory to fluid bolus (such has septic shock, anaphylactic shock, cardiogenic shock after ROSC) Symptomatic Bradycardia For adult bradycardia only	Prepare 1 mcg/mL infusion (see last page of epinephrine reference). Infuse at 1-3 drops/second IV/IO (6-18 mL/min) using 10 drops/mL macrodrip chamber. Titrate to goal BP.	Prepare 1 mcg/mL infusion (see last page of epinephrine reference). Connect the liter bag to a buretrol or similar device and fill the buretrol or similar device with 100 mL of the mixed solution. Infuse at 0.3 drops/kg/second IV/IO (0.3 mL/kg/min) using the buretrol or similar device. Titrate to goal BP. (Use ADULT dosing for weight greater than 20 kg.) **Not to be used in pediatric bradycardia**

CONTRAINDICATIONS:

- None in cardiac arrest or other life-threatening situations.
- Use with caution for severe bronchospasm or allergic reactions in patients with coronary artery disease since myocardial ischemia may be precipitated.
- IV epinephrine should **only** be used in cardiac arrest . Use IM initially for patients with anaphylaxis.

POTENTIAL SIDE EFFECTS:

- Tachydysrhythmias including V-Tach and V-Fib
- Hypertension
- Nausea and vomiting
- Increased myocardial O2 demand.
- Extravasation causes tissue necrosis.
- Headache and dizziness

NOTES:

- Ratio expressions of medication concentration (e.g. 1:1000) are no longer preferred. For reference, **1 mg/mL = 1:1000** and **0.1 mg/mL** = **1 mg/10 mL** = **1:10000**.
- Do not run continuous infusion in same line as sodium bicarbonate.
- Ensure that the patient is not hypovolemic before infusing.
- After preparing a 1 mcg/mL infusion, label bag clearly to avoid confusion with normal saline.
- Buretrols and similar devices have 60 drops per mL, so 1 drop/second is equivalent to 1 mL/min, or 1 mcg/min given an infusion concentration of 1 mcg/mL.
- Intraosseous lines may need a pressure bag to obtain the target number of drops per minute.
- The anterolateral thigh is the preferred location for IM epinephrine.

Epinephrine 1 mcg/mL infusion preparation

Inject 1 mL* of 1 mg/mL = 1 mg **OR** 10 mL* of 0.1 mg/mL = 1 mg into 1000 mL 0.9% sodium chloride and immediately label the infusion to prevent confusion with normal saline.

*Note that the volume of the epinephrine solution is negligible when added to 1000 mL normal saline. There is no need to remove normal saline from the 1000 mL bag as the final concentration of epinephrine is not appreciably less than 1 mcg/mL.

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