Epinephrine

INTRAVENOUS DRUG THERAPY MANUAL

OTHER NAMES	CLASSIFICATION	ALERTS
Adrenalin	Sympathomimetic	HIGH ALERT MEDICATION INDEPENDENT DOUBLE CHECK for continuous infusion

PREPARATION and ADMINISTRATION

WARNING: Available in multiple strengths and ampoule/vial sizes. Use caution when selecting product.

Reconstitution
Not applicable

IV Direct

Standard preparation
Preferred format: prefilled syringe
0.1 mg/mL (1 mg/10 mL, 100 mcg/mL)

Cardiac arrest
1 mg (10 mL epinephrine 0.1 mg/mL)

Alternative preparation
To facilitate accurate administration of doses less than 0.1 mg (100 mcg)
Diluent: D5W, NS

Use 1 mg/mL (1 mL) ampoule; dilute 1 mL with 9 mL diluent to produce epinephrine 0.1 mg/mL

Severe anaphylaxis/anaphylactic shock
0.05–0.1 mg (0.5–1 mL epinephrine 0.1 mg/mL) over 5 min

Local anesthetic systemic toxicity (LAST) associated cardiac arrest
Dose: less than 1 mcg/kg
e.g., 50 mcg = 0.5 mL epinephrine 0.1 mg/mL

Intermittent Infusion

IV Bag (large volume pump)

Not applicable

Syringe (syringe pump)

Not applicable

Continuous Infusion

IV Bag (large volume pump)

Standard preparation
Use 1 mg/mL to prepare
Diluent: D5W, NS

16 mcg/mL (4 mg/250 mL)

Work up of suspected familial sudden death
4 mcg/mL (1 mg/250 mL)

Alternative preparation (central line)
Use 1 mg/mL to prepare
Diluent: D5W, NS

240 mcg/mL (60 mg/250 mL total*)
*Remove 60 mL from 250 mL IV bag
*Add 60 mg (60 mL epinephrine 1 mg/mL)

Syringe (syringe pump)

Standard preparation
Diluent: D5W, NS

80 mcg/mL (4 mg/50 mL)

Alternative preparation (central line)
Diluent: D5W, NS

240 mcg/mL (12 mg/50 mL)

DRAFT

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Requirements and Monitoring		
Blood pressure via cuff Cardiac monitor	Not applicable	Blood pressure via arterial line Cardiac monitor Infusion device 240 mcg/mL – central line required Concentrations 80 mcg/mL or less – peripheral administration, consistent with guideline, permitted for a maximum of 12 h Peripheral Vasopressor Inotrope Guideline

INDICATIONS

- Severe acute (type 1) hypersensitivity reactions including anaphylactic shock.
- Advanced cardiovascular life support (ACLS).
- Cardiac and circulatory failure.
- Septic shock.
- Work up of suspected familial sudden death.

ADVERSE EFFECTS

- Palpitation, tachycardia, hypertension, flushing, pallor.
- Nervousness, restlessness, dizziness, lightheadedness, insomnia, headache (common).
- Nausea, vomiting.
- Trembling, weakness, sweating.
- Severe vasoconstriction with tissue necrosis or gangrene in the extremities or at the site of injection; tissue sloughing can occur. Observe patient's skin especially extremities, lips, and earlobes for signs of vasoconstriction such as grey, mottled or cold skin.
- If extravasation occurs, refer to Extravasation Policy Link.

DOSAGE

- Dosage units: continuous infusion–mcg/kg/min; bolus dose–mcg.
- Anaphylactic shock, IV direct: 0.05 to 0.1 mg. May repeat q5 min.
- Anaphylactic shock, infusion: refer to "continuous infusion, pressor activity" (below).
- Cardiac arrest, IV direct: 1 mg. May repeat q3–5 min per ACLS guidelines.
- ACLS, infusion: 2–20 mcg/min can be approximated with mcg/kg/min dosing provided in "continuous infusion, pressor activity" section below. Alternatively, 2 to 20 DIVIDED by patient weight (kg) = dosage (mcg/kg/min).
- Cardiac arrest secondary to local anesthetic systemic toxicity (LAST), IV direct: less than 1 mcg/kg; initial dose of 50 mcg suggested for most adults.
- Continuous infusion, pressor activity for shock (including anaphylaxis): initially 0.05 mcg/kg/min with dose adjusted by 0.05 mcg/kg/min q3–5 min to achieve a mean arterial pressure (MAP) >70 mmHg while maintaining adequate urine output (>0.5 mL/kg/h) and peripheral perfusion. Adjust dose according to heart rate, blood pressure, central venous or pulmonary artery wedge pressure, cardiac index/output, tissue perfusion and urine output. Usual effective dose is

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0.05-0.2 mcg/kg/min although in refractory shock 1 mcg/kg/min or higher has been used. Once patient is stabilized, dose can be reduced by 0.05 mcg/kg/min q10-15 min while assessing the same parameters used during dose titration to ensure hemodynamic stability.

- Continuous infusion, work up of suspected familial sudden death: baseline ECG, epinephrine 0.05 mcg/kg/minute x 5 min, repeat ECG, increase epinephrine to 0.1 mcg/kg/min x 5 min, repeat ECG, increase epinephrine to 0.2 mcg/kg/min x 5 min, repeat ECG, stop epinephrine, 30-minute wash out period, repeat ECG q10 min during wash out.

COMPATIBILITY, STABILITY

- Compatible at Y-site with D5W, NS, lactated Ringer's, Ringer's; compatible in concentrations up to 80 mcg/mL with Plasma-Lyte A.
- Continuous infusions at concentrations of 4-240 mcg/mL in D5W or NS may be administered for up to 24 h at room temperature.
- Do not use discoloured solutions (pink/brown).
- Contains sodium metabisulfite as an antioxidant.
- Prefilled syringes and ampoules are single use; discard unused portion. 30 mL vials are multidose.
- Protect ampoules/vials from light.

DOSAGE FORMS

- 1 mg/mL; 1 mL ampoule, 30 mL vial. 0.1 mg/mL; 10 mL prefilled syringe.

MISCELLANEOUS

- Epinephrine 1 mg = 1 mL of 1 mg/mL solution = 10 mL of 0.1 mg/mL prefilled syringe. USP does not support ratios to express strength.

LIBRARIES

- Searchable Drug Library Document

REFERENCES

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