NORTH YORK GENERAL HOSPITAL

ADULT PARENTERAL GUIDELINES

Dev: March 1999
Ltd. Rev. Dec 2012
Rev. Dec 2020
MAC approval: Feb 2021

NAME

norepinephrine

OTHER NAMES
Levophed®

AHFS CLASSIFICATION
12:12.12 Alpha- and Beta-Adrenergic Agonists

INDICATIONS

- Temporary maintenance of blood pressure in acute hypotensive states produced by trauma, surgery, myocardial infarction, poliomyelitis, pheochromocytomectomy, sympathectomy, spinal anesthesia, septicaemia, drug reactions, haemorrhage and blood transfusion reactions.
- Limited use in shock states while attempting to replace circulating blood volume.
- Adjunct in the treatment of cardiac arrest and profound hypotension.

ADMINISTRATION

Continuous Infusion

- Infuse via **CENTRAL LINE**.
    - In exceptional circumstances, infusion via peripheral line may be used temporarily until central line established. Maximum concentration for peripheral administration is 16 mcg/mL (i.e. 4 mg/250 mL).

- Concentration of infusion solution will depend on dosage and fluid requirement of each patient.

Final Concentration (micrograms/mL)	Amount of norepinephrine (4 mg/4 mL vial)	Volume of IV solution
16 mcg/mL	4 mg (4 mL)	250 mL
32 mcg/mL	8 mg (8 mL)	250 mL
64 mcg/mL[1]	16 mg (16 mL)	250 mL
128 mcg/mL[2]	32 mg (32 mL)	250 mL

DOSAGE

- Dose should be titrated according to individual patient response and hemodynamic effect.
- Usual initial dose: start at 1-2 mcg/min, then titrate to MAP > 65 mmHg
- Usual maintenance dose range is 2-20 mcg/min. Doses up to 30 mcg/min may be required in specific patients.
- Continue therapy until patient can maintain own blood pressure, then decrease gradually to prevent sudden drop in BP.

COMPATIBILITY AND STABILITY

- Store vials at room temperature and protect from light.
- Compatible with D5W, NS, and Ringer's Lactate. (D5W preferred to protect against loss of potency due to oxidization.)
- Do not use if pink or darker than slightly yellow or contains a precipitate.
- Other compatibilities: Consult IV compatibility references or Pharmacist.

POTENTIAL HAZARDS OF PARENTERAL ADMINISTRATION

- Hypersensitivity: contains metabisulfite that may cause allergic-type reaction such as anaphylaxis, asthma.
- Cardiovascular: bradycardia (Antidote: atropine), arrhythmia.
- CNS: headache, weakness, dizziness, tremor, anxiety.
- Respiratory difficulty or apnea.
- Local reactions: blanching along the infused vein, may progress to superficial sloughing. If this occurs, change infusion site.
- Extravasation hazard: vesicant. (Antidote: phentolamine 5-10 mg diluted in 10 mL of NS, administered subcutaneously within 12 hours of extravasation. See NYGH Guideline Extravasation Management in Adults XV-210.)

PRECAUTIONS/CONTRAINDICATIONS

- Contraindications:[2]
  - Hypotension from hypovolemia except as an emergency measure to maintain coronary and cerebral perfusion until volume could be replaced;
  - Mesenteric or peripheral vascular thrombosis unless it is a lifesaving procedure;
  - During anesthesia with cyclopropane or halothane anesthesia (risk of ventricular tachycardia or fibrillation)
- Address hypovolemia before initiating therapy. Patients who are hypotensive from hypovolemia may experience severe peripheral and visceral vasoconstriction, decreased renal perfusion and reduced urine output, tissue hypoxia, lactic acidosis, and reduced systemic blood flow despite normal BP.
- Use with extreme caution in patients with profound hypoxia or hypercarbia due to risk of ventricular tachycardia or fibrillation.
- Use with extreme caution in patients on MAO inhibitors or tricyclic antidepressants because severe prolonged hypertension may result.[2]

NURSING CONSIDERATIONS/MONITORING

- **Continuous cardiac monitoring required.**
- Monitor vital signs, fluid status (including urine output), and infusion flow rate.
- Monitor infusion site for extravasation. Blanching along vein pathway is a preliminary sign of extravasation.
- Monitor peripheral perfusion (e.g. skin temperature and colour of extremities).
- Avoid abrupt discontinuation of infusion. Decrease infusion rate gradually to prevent sudden drop in blood pressure.

	OTHER		INTRAVENOUS		
	S.C.	**I.M.**	**DIRECT I.V.**	**INTERMITTENT INFUSION**	**CONTINUOUS INFUSION**
Routes Recommended	No	No	No	No	Yes
Who may give at NYGH					CrCU, ED, and PACU RNs Anaesthesia Assistants
Special Equipment					Cardiac Monitor Infusion Pump

CROSS REFERENCES: NYGH Guideline Extravasation Management in Adults XV-210

REFERENCES

1. Walker SE, Law S, Garland J, et al. Stability of Norepinephrine Solutions in Normal Saline and 5% Dextrose in Water. Can J Hosp Pharm 2020;63(2):113-118.

2. ASHP Adult Continuous Infusion Standards, 2020. Available at: https://www.ashp.org/-/media/assets/pharmacy-practice/s4s/docs/Adult-Infusion-Standards.ashx. Accessed Jan 8, 2021.

3. Norepinephrine bitartrate injection USP. [Product monograph.] Boucherville, QC: Sandoz Canada Inc.; 2011. Available at: https://www.sandoz.ca/sites/www.sandoz.ca/files/Norepinephrine%20Consumer%20Information.pdf Accessed Dec 15, 2020.

4. Lexicomp Online, Lexi-Drugs Online, Hudson, Ohio: Wolters Kluwer Clinical Drug Information, Inc.; 2020; Last updated Dec 14, 2020. Accessed on Dec 15, 2020.

5. Giudice M, Gregoire N, Massicotte A. eds. Norepinephrine. Ottawa Parenteral Drug Therapy Manual. 41st ed. Ottawa, ON: The Ottawa Hospital; 2020.

6. IV drug monograph: norepinephrine. Sunnybrook Health Sciences Centre Drug Information Centre, Department of Pharmacy. Revised May 2001.