



Montgomery County Fire and Rescue Service

Division of Operations

Emergency Medical and Integrated Healthcare Services

Office of Medical Oversight Clinical Practice Guideline

Title:	Norepinephrine Infusion	Number:	2024 – 02
Date:	July 18, 2024		
Issued by:	Roger M. Stone MD, MS – MCFRS Medical Director		
Purpose:	To define the use of norepinephrine (Levophed)		
Target Patient Population:	Patients 18 years or older meeting the criteria of the Shock/Hypoperfusion protocol, post-ROSC hypotensive patients, or “Pseudo PEA” patients		
Guideline:	<p>Background: Norepinephrine is a potent vasopressor medication with large Alpha-1 (vasoconstriction) effects and moderate Beta-1 (cardiac output) effects. It is the preferred medication for the management of patients with cardiogenic, hypovolemic, septic, and neurogenic shock.</p> <p>Norepinephrine infusions should be used in patients with signs/symptoms of shock, hypotensive post-ROSC patients, or patients without palpable pulses but with positive carotid blood flow on ultrasound (“Pseudo PEA”) after epinephrine boluses have been maxed out.</p> <p>Norepinephrine infusions require near constant monitoring and adjustment. Assigning one ALS clinician to this task alone and calling for additional ALS is highly encouraged.</p> <p>Goals of therapy (consistent with guidelines in MMP Section 15.24):</p> <ol style="list-style-type: none"> To maintain a SBP between 90-140 or MAP between 65-90 mmHg in patients with cardiogenic, hypovolemic, or septic shock. Post-ROSC patients may benefit from maintaining a minimum SBP of 110 mmHg or a MAP of 80 mmHg. To maintain a SBP between 110-140 or MAP 85-100 mmHg in neurogenic shock. <p>Procedure:</p> <ol style="list-style-type: none"> Use pre-mixed solution of 4mg/250mL when available or reconstitute 4mg of norepinephrine into 250 mL of 5% Dextrose solution. The infusion must be administered via IV pump through the largest and most proximal IV/IO access available (IV preferred). Begin the infusion at 10 mcg/min. Repeat blood pressures (on the extremity opposite the infusion) every 2 minutes and titrate the infusion rate in 10 mcg/min increments based on these criteria: <ol style="list-style-type: none"> If SBP/MAP is lower than the goal, increase by 10 mcg/min. If SBP/MAP meets the goal, maintain the infusion rate. If SBP/MAP is above the goal, decrease by 10 mcg/min. The maximum dose is 200 mcg/min. The minimum dose is 10 mcg/min. 		



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Notes/Clinical Pearls:

- Epinephrine is the catecholamine medication of choice for **anaphylaxis** and **bradycardia** and norepinephrine should not be used for those indications.
- Norepinephrine should only be considered in hemorrhagic shock after all other treatments are in place (multiple units of blood, Calcium Chloride, and TXA).
- If a patient receiving a norepinephrine infusion goes into cardiac arrest, STOP the infusion and follow the cardiac arrest algorithm.
- Norepinephrine can occasionally cause hypertension and/or reflex bradycardia. Titrating down or stopping the medication should alleviate these complications.
- The onset of action is rapid and the half-life is 2-4 minutes. As noted above, adjusting doses or stopping the medication will have fast effects.
- Norepinephrine replaces epinephrine in CPG 2023-02.

Questions may be referred to the EMIHS Quality Management Battalion Chief.