UAB Guideline for Peripheral IV Vasopressor Use

I. Background

Administration of vasopressors through peripheral venous catheters has historically been avoided given concerns for complications such as extravasation, limb ischemia and tissue necrosis.[1-3]. More recent data show that the incidence of extravasation is quite low (1.8%). Therefore, delivering vasopressors via peripheral catheters is acceptable in certain circumstances, and helps to avoid complications of central venous catheter placement and delays in vasopressor initiation.[3] Even the Surviving Sepsis Campaign guideline recommends prioritizing treatment of low MAP through vasopressors given peripherally, rather than waiting for placement of a central venous catheter.[4]

II. Clinical Guideline

1. Peripheral IV (PIV) vasopressor use can be considered if the following criteria are met*:
    a. PIV must not be in the same upper extremity as the blood pressure cuff
    b. PIV must be in external jugular vein or upper arm/forearm vein (NOT hand, wrist, antecubital fossa, lower extremity)
    c. PIV must be 20g or larger
    d. Patient must have a 2nd working PIV in case the 1st PIV fails
    e. PIV must be infusing standard concentration of norepinephrine, epinephrine or phenylephrine
    f. **<u>Vasopressin and Angiotensin II cannot be administered peripherally due to lack of antidote for extravasation</u>**

    *If PIV pressor use falls outside above criterial, ICU Attending must verbally approve use
    **Outside of the above criteria, PIV can be used for emergency vasopressor use when central line access is unavailable or delayed

2. Management of PIV vasopressors
    a. Nursing staff must examine skin near PIV and check PIV for blood return **every 4 hours**
    b. If there is concern for vasopressor extravasation:
        i. Stop pressor infusion immediately (move vasopressor to different venous access)
        ii. Aspirate blood through PIV to remove residual vasopressor
        iii. Remove PIV
        iv. Contact pharmacy and providers for immediate use of **phentolamine** (5mg diluted in 10mL normal saline) injected subcutaneously into leading edge of affected area in 5 separate 2mL injections, changing needle with each injection
        v. Blanching reversal should be immediate, otherwise consider a 2nd dose (<u>DO NOT exceed 10 mg total</u>)

vi. Monitor region for blanching, induration, necrosis, pain for 48-72 hours

3. Contraindications to peripheral vasopressor use (any of the following requires placement of a central venous catheter):
   a. Vasopressor use for ≥ 72 hours
   b. Addition of a second vasopressor
   c. Use of any vasopressor or inotrope other than Norepinephrine, Epinephrine, Phenylephrine)
   d. Norepinephrine dose >0.3 mcg/kg/min
   e. Epinephrine dose >0.3 mcg/kg/min
   f. Phenylephrine dose >2 mcg/kg/min

III. References

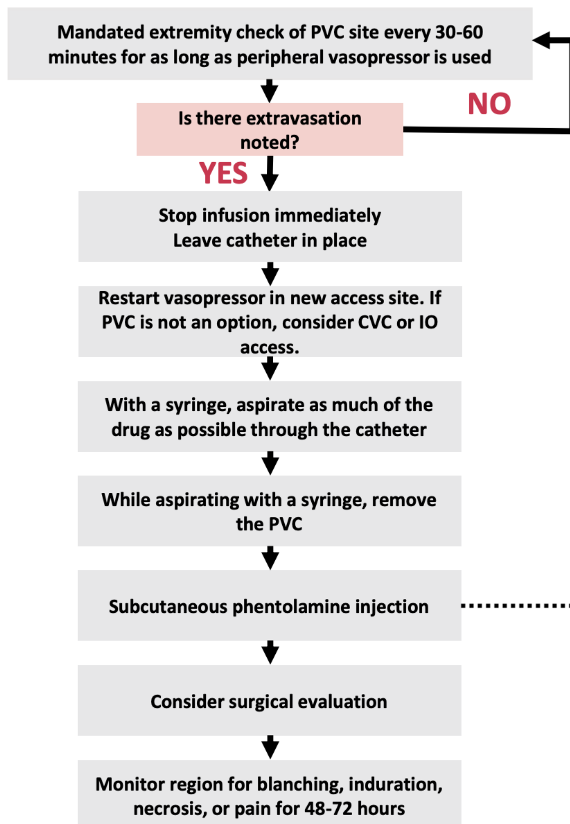
1. Araiza A, Duran M, Varon J. Administration of vasopressors through peripheral venous catheters. CMAJ. 2022 May 30;194(21):E739.

2. Loubani OM, Green RS. A systematic review of extravasation and local tissue injury from administration of vasopressors through peripheral intravenous catheters and central venous catheters. J Crit Care 2015;30:653.e9–17.

3. Owen VS, Rosgen BK, Cherak SJ, et al. Adverse events associated with administration of vasopressor medications through a peripheral intravenous catheter: a systematic review and meta-analysis. Crit Care 2021;25:146.

4. Evans L, Rhodes A, Alhazzani W, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. Intensive Care Med 2021;47:1181–247.

Vasopressor Extravasation Management in Adult Patients



Abbreviations

CVC: Central venous access; IO: Intraosseous; PVC: Peripheral venous catheter; SQ: Subcutaneous

Vasopressors

- Dopamine
- Epinephrine
- Norepinephrine
- Phenylephrine

Drug therapy

Phentolamine mesylate SQ dose: 0.1-0.2 mg/kg; do not exceed 10 mg total

Dilute 5 mg of phentolamine mesylate in 10 mL of 0.9% sodium chloride

Inject subcutaneously along edges of extravasation area

Blanching reversal should be immediate, otherwise consider an additional dose

Monitor for hypotension. Patient should be on vasopressors through another access

Appendix 1, as submitted by the authors. Appendix to: Araiza A, Duran M, Varon J. Administration of vasopressors through peripheral venous catheters. *CMAJ* 2022. doi: 10.1503/cmaj.211966. Copyright © 2022 The Author(s) or their employer(s). To receive this resource in an accessible format, please contact us at cmajgroup@cmaj.ca.

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