One Extravasation is too Many: Deep Dive into the Process of Improving Practice for Peripherally Administered Vasopressors

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Yellow highlighted references include information about their PIV Vasopressor protocol/guideline.

Red highlighted references include information about assessing and caring for patients with melanin-rich skin.

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Resources:

The "Administration of Vasopressors Through a Peripheral Intravenous Catheter (PIV)" Guideline will be published on the Shared Health Organizational Portal (SHOP) hopefully by the end of October 2024. Please search for it through our website at: https://shop.healthcarebc.ca/ . I will update this document as soon as it is up.

In the interim, see next pages for the draft versions of the algorithm and poster.

Urgent Need to Start A Vasopressor but the Patient Does Not Have a Central Venous Catheter (CVC).

Extravasation Prevention Strategies

When initiating a PIV:

- Choose a large vein with good blood flow.
- Choose the smallest gauge catheter (i.e., 22 or 20 gauge) in the largest vein because this allows for greater hemo-dilution of vesicant medication.
- **Avoid:**
  - digits, hands and wrists (never);
  - areas of flexion (never);
  - 'long' and/or deeply placed PIV such as those placed with ultrasound.
- Apply a transparent adhesive dressing with IV site completely covered and visible with catheter hub/wing secured to prevent dislodgement.

If considering using an existing PIV:

- Use a new PIV (i.e., less than 24 hours old), appropriate location (see above)
- Review insertion history to ensure it was a "clean stick" (no probing during insertion)

When initiating an infusion:

- Check patency using a 10 mL NS in pre-filled syringe as a manual flush.
- Ensure there is a flush line at least **25 mL/hour**.
- Apply a "vesicant drug infusing" alert label on the PIV site dressing.
- Post a "no cuff pressures or tourniquets on ___ arm" sign above bed.
- Bring an emergency extravasation kit to the bedside and confirm that antidote medications (i.e., phentolamine) are stocked on the unit.

Is it anticipated that the patient will need either NORepinephrine or PHENYLephrine (only one) for a:

- **SHORT duration** (i.e., less than 48 hours) AND
- at **a LOW dose** (i.e., equal to or less than 10 mcg/min NORepinephrine or 80 mcg/min PHENYLephrine,)

No

Yes

Does the patient have any of the contraindications for peripherally administered vasopressor?

Contraindications include:

- Difficult PIV placement (i.e., more than 2 attempts)
- Fragile skin & veins (e.g., advanced age)
- Patient is prone to excessive restlessness or agitation.

Yes

Advocate to **transition to CVC** administration of the vasopressor as soon as possible.

No cautions

Extravasation Prevention Strategies

During the infusion period:

- Position the arm so the PIV site is above the bedsheets and visible at all times.
- Avoid applying cuff pressures, tourniquets, or other constrictions to the infusion arm.
- Educate the patient and/or family (i.e., signs of extravasation, encourage reporting of accidental line pulls or tube dislodgements, etc.)
- Assess PIV site for signs of extravasation **q 1 hour** and document.
- Review the continued need for, evolving eligibility, and risks of peripherally administered vasopressors with the interdisciplinary care team q shift.

Emergency Extravasation Kit

Norepinephrine and other Vasopressors

Supplies:

1. **Skin Marker,** for marking the boundaries of Extravasation.
2. **2x 10 mL syringe,** for aspirating the PIV, and for reconstituting phentolamine.
3. **4x Alcohol Swabs**
4. **Sterile Swab Sticks**
6. **5x Tuberculin syringes (luer-lock)**
6. **5x 25 g needle (luer-lock)** for subcutaneous administration of phentolamine.
7. **Sterile gauze**
8. **Warm Compresses,** (e.g. warmed IV bag wrapped in a towel) can be applied for 20 min every 4-6 hours for the first 12 hours.
9. **Antidote Medications** are stocked in the unit (i.e., phentolamine stored in the fridge)

Ensure unit is stocked with the antidote

Signs & Symptoms of Extravasation

The patient may also experience:

- **pain**
- **discomfort**
- **burning or stinging sensation**

Image from Kim SM, Aikat S, & Bailey, (2012) A Well recognised but still overlooked: norepinephrine extravasation Case Reports 2012;2012:bcr2012006836.

Treating Extravasation

Norepinephrine and other Vasopressors

Scan for Elsevier Skills Video

Stop, Clamp & Disconnect

Stop the infusion, clamp the line and disconnect the IV but leave the PIV in place.

Call Primary Care Physican/NP

MRPs are needed to order and administer the antidote (i.e., phentolamine) as soon as possible to mitigate the tissue injury.

Administering the Antidote (i.e., phentolamine):

1. **Aspirate the PIV.** Disconnect the tubing and use a 1cc syringe to remove as much vesicant fluid as possible.
2. **Instill antidote through PIV.** Dose = 5 mg phentolamine (reconstituted to a 1 mg/mL concentration).
3. **Remove the PIV.**
   - If the antidote was instilled, remove without aspirating.
   - If the antidote was NOT instilled, remove PIV while aspirating the PIV.
4. **Inject the antidote dermally and/or subcutaneously** around the edge of the extravasation site as appropriate. Use 5 or more tuberculin syringes to inject 0.1 mg to 0.2 mg phentolamine each around the leading edge of the lesion (up to 1 mg). May repeat.

NOTE: while it's ideal to administer phentolamine as soon as possible, the patient will still benefit if its given within 12 hours.

By MD or NP only

Ongoing Management:

1. **Trace and date the bounderies** of the extravasation site with the marker. Take a picture if possible, and dress the wound.
2. **Elevate the limb** for 48 hours. May also **apply WARM compresses** to promote vasodilation (20 min every 4-6 hours for 12 hours).
3. **Monitor the lesion q2h** using the Infiltration Grading Scale for 48 hours.
4. **Complete a PSLS Report.**