


<b>Name of Policy:</b> <u>Treatment of Intravenous Non-Chemotherapeutic Extravasations</u> <b>Policy Number:</b> 3364-133-125 <b>Department:</b> Pharmacy <b>Approving Officer:</b> Senior Hospital Administrator <b>Responsible Agent:</b> Director of Pharmacy <b>Scope:</b> University of Toledo Medical Center	  <b>Effective Date:</b> 06/01/2023 <b>Initial Date</b> 10/01/2017
<input type="checkbox"/> New policy proposal <input type="checkbox"/> Minor/technical revision of existing policy <input type="checkbox"/> Major revision of existing policy <input checked="" type="checkbox"/> Reaffirmation of existing policy	

**A: Policy Statement:** Appropriate guidelines will be followed to prevent or minimize injuries that result from extravasation of vesicant and irritant medications excluding chemotherapeutic agents.

**B: Purpose:** Provide nursing, pharmacy, and physicians with a consistent framework for treatment of infiltrations with high risk medications. The infiltration of a drug into the subcutaneous tissue that may lead to pain, tissue necrosis and/or tissue sloughing. Extravasation may damage underlying muscles, nerves, tendons, and blood vessels. The degree of damage is dependent upon the drug extravasated, and amount of drug extravasated, the length of exposure, and the site of extravasation. Interventions directed toward prevention and management of extravasation can minimize potential complications.

**C: Definitions:**

1. **Irritant** refers to drugs that are capable of causing tissue inflammation, irritation, pain and phlebitis along the vein or at the injection site. Irritants may cause necrosis if the infiltration is severe or left untreated.
2. **Vesicant** refers to any medication or fluid with the potential for causing blisters, severe tissue injury, or necrosis if it escapes from the venous pathway.
3. **Extravasation** refers to the inadvertent administration of a vesicant medication into the tissue surrounding the intravenous (IV) catheter.
4. **Infiltration** refers to the inadvertent administration of a non-vesicant medication or solution into the tissue surrounding the IV catheter.

**D: Risk Factors, Recognition and Treatment:**

1. Risk Factors for Extravasation:
  - a. Elderly patients
  - b. Vascular disease, ischemia, obstruction
  - c. Prior radiation to arm or axilla
  - d. Small vessel diameter
  - e. Venous spasms
  - f. Decreased lymphatic drainage
  - g. Traumatic needle or catheter insertion

h. Patients unable to communicate discomfort

2. Recognition of Possible Extravasation:

Signs and Symptoms of extravasation	Drugs associated with extravasation
Pain	Anticoagulants
Erythema	Antifibrinolytics
Swelling	Antiplatelets
Tenderness	Vasodilators
Local blistering	Hormone therapy
Mottling/darkening of skin	Steroids
Firm induration	Diuretics
Ulceration (usually not evident until 1-2 weeks after injury)	Antihistamines
No capillary filling (a white appearance with non-blanching skin indicating full-thickness skin damage)	Analgesics
	IV antibiotics

3. Procedure

Equipment:

- 4 x 4 sterile gauze
- Compress (ice pack or warm compress, as appropriate)
- Antidote (phentolamine, nitroglycerin, terbutaline, or hyaluronidase, as appropriate - must be ordered by a prescriber)
- Five (5) 25 Gauge 5/8" needles
- Alcohol swabs
- Transparent dressing
- Two (2) 12 mL syringes
- TB syringe

1. **Stop infusion/injection** immediately
2. **DO NOT remove the needle/catheter.** Disconnect the IV tubing. Leave the catheter/needle in place to facilitate aspiration of drug and fluid from extravasation site and administer antidote, if appropriate.
3. **Gather supplies**
  - i. 4 x 4 sterile gauze
  - ii. Compress (ice pack or warm compress, as appropriate)
  - iii. Appropriate Antidote (phentolamine, nitroglycerin, terbutaline, or hyaluronidase)(Must be ordered by a prescriber)
  - iv. Five (5) 25 Gauge 5/8" needles
  - v. Alcohol swabs
  - vi. Transparent dressing
  - vii. Two (2) 12 mL syringes
  - viii. TB syringe
4. **Aspirate fluid**

1. Attempt to aspirate as much of the extravasated drug from the angiocath with a clean 12 mL syringe as soon as possible
  2. Cleanse the extravasation site gently with an alcohol sponge, insert the needle of the TB syringe into the subcutaneous tissue around the site and gently aspirate as much of the solution as possible
  3. Avoid friction or pressure to the affected area
5. **DO NOT apply pressure to the area**
  6. **DO NOT flush the line**
  7. **Elevate** the affected extremity
  8. **Notify the prescriber for management orders**
    1. Apply appropriate treatment as ordered
    2. **Refer to Appendix A** for management guidelines
  9. **Remove the needle/catheter**
  10. **Antidote**
    1. **Refer to Appendix A** for guidelines on preferred antidote administration
    2. Administer antidote as appropriate per prescriber order
    3. If antidote is ordered and administered, gently cleanse the area again with an alcohol swab, dry gently with a 4X4 and apply transparent dressing
  11. **Supportive Management** –Apply warm or cold compresses ONLY if appropriate OR use appropriate antidote (see Appendix A). There is no consensus on the appropriate approach to cold or warm compresses
    1. Cold
      - i. Intermittent cooling of affected area results in vasoconstriction potentially limiting the spread of the drug, providing pain relief and decreasing inflammation
      - ii. Apply dry, cold compress for 20 minutes at least four times per day for 24 hours or until inflammation subsides
    2. Warm
      - i. Application of dry warm compresses results in local vasodilation and increased blood flow, which is believed to facilitate removal of the drug from the affected area
      - ii. Apply dry, warm compress for 20 minutes at least four times per day for 24 hours or until inflammation subsides
  12. **Establish another IV line** immediately so that IV infusion may continue uninterrupted. Obtain access at another site (not affected by the extravasation).

**E: Monitoring:**

1. Close wound observation is suggested
  - i. If tissue sloughing, necrosis, or blistering occurs
    1. Notify physician
    2. Enzymatic debridement may be required
    3. Early surgical consult may be needed

2. Antidote administration monitoring for Phentolamine (Regitine), If phentolamine (Regitine) is ordered and administered, monitor the patient for hypotension secondary to phentolamine every 15 minutes for 1 hour, or more often as clinically indicated
3. DO NOT use the affected extremity for blood pressure readings or subsequent injections

**13. Complete documentation**

1. Mark the extravasation site with a permanent marker
2. Document in the medical record (as appropriate)
  - i. Date and time extravasation noted
  - ii. Appearance of skin at affected site
  - iii. Attempt to aspirate medication from site
  - iv. Amount of drug aspirated
  - v. Presence or absence of blood return
  - vi. Update plan of care
    1. Discontinued IV site – location, type, size of needle, and extravasation treatment
    2. New IV site – location, type, size of needle
  - vii. Vital signs
  - viii. Follow-up assessment and care
  - ix. Physician notification
  - x. Medication used on electronic MAR
3. Notify Pharmacy of extravasation so that a pharmacist can complete an adverse drug reaction entry in PSN.

<b>Approved by:</b>	<b>Review/Revision Date:</b>
/s/ _____ 05/23/2023	2/2020
Lindsey Eitniear, PharmD, BCPS, AAHIVP Director of Pharmacy	6/2023
/s/ _____ 05/24/2023	
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<i>Review/Revision Completed By:</i> Pharmacy	
<b>Next Review Date:</b> 06/01/2026	
<b>Policies Superseded by This Policy: none</b>	

*It is the responsibility of the reader to verify with the responsible agent that this is the most current version of the policy.*

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### Appendix A: Medication Extravasation Management Strategies

Extravasated Drug	Preferred Antidote	Antidote Administration	Supportive Management
Acyclovir	-Supportive management  -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, warm compress
Aminophylline	-Supportive management  -Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress
Amiodarone	-Supportive management  -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, warm compress
Ampicillin	-Supportive management  -Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
Calcium chloride (above 10%)	-Supportive management  -Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress
Calcium gluconate	-Supportive management  -Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress
Conivaptan	-Supportive management  -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, warm compress

Extravasated Drug	Preferred Antidote	Antidote Administration	Supportive Management
Contrast media	Conflicting information: Hyaluronidase	<ol style="list-style-type: none"> <li>1. American College of Radiology does not recommend use of hyaluronidase nor do they recommend aspiration of extravasation. If hyaluronidase is to be use it should be used as follows:</li> <li>2. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>3. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>4. Use a new 25-gauge needle for each injection</li> </ol>	Conflicting information for dry warm or dry cold compress
Dextrose (at least 10%)	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress
Diazepam	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
Digoxin	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
DOBUTamine or DOPamine	Phentolamine (Regitine)	<ol style="list-style-type: none"> <li>1. Phentolamine : Administer as soon as possible but within 12 hours of extravasation</li> <li>2. Dilute 5mg vial with 1ml NS to make 5mg/ml</li> <li>3. Further dilute 5 to 10mg in 10 to 15 mL NS</li> <li>4. Inject (subcutaneously) multiple injections across symptomatic areas</li> <li>5. It is acceptable to re-dose if patient remains symptomatic</li> </ol>	Apply dry, warm compress

	Alternatives	<ol style="list-style-type: none"> <li>1. Nitroglycerin ointment <ol style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ol> </li> <li>2. Terbutaline <ol style="list-style-type: none"> <li>a. Large Extravasations: <ol style="list-style-type: none"> <li>i. Using 1mg/ml concentration, mix 1ml with 9ml of NS to make 0.1mg/ml</li> <li>ii. Inject (subcutaneously) in 2-3ml increments into and around extravasation site at the leading edge in a clockwise manner</li> <li>iii. Use a new 25-gauge needle for each injection</li> </ol> </li> <li>b. Small/ Distal Extravasations: <ol style="list-style-type: none"> <li>i. Using 1mg/ml concentration, mix 1ml with 1ml of NS to make 0.5mg/ml</li> <li>ii. Inject (subcutaneously) in 0.5ml increments into and around extravasation site at the leading edge in a clockwise manner</li> <li>iii. Use a new 25-gauge needle for each injection</li> </ol> </li> </ol> </li> </ol>	
<b>Extravasated Drug</b>	<b>Preferred Antidote</b>	<b>Antidote Administration</b>	<b>Supportive Management</b>
Doxapram	No known antidote	None	Apply dry, cold compress
Doxycycline	-Supportive management -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, warm compress
Epinephrine	Phentolamine (Regitine)	<ol style="list-style-type: none"> <li>6. Phentolamine : Administer as soon as possible but within 12 hours of extravasation</li> <li>7. Dilute 5mg vial with 1ml NS to make 5mg/ml</li> <li>8. Further dilute 5 to 10mg in 10 to 15 mL NS</li> <li>9. Inject (subcutaneously) multiple injections across symptomatic areas</li> <li>10. It is acceptable to re-dose if patient remains symptomatic</li> </ol>	Apply dry, warm compress
	Alternatives	<ol style="list-style-type: none"> <li>1. Nitroglycerin ointment <ol style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ol> </li> <li>2. Terbutaline <ol style="list-style-type: none"> <li>a. Large Extravasations: <ol style="list-style-type: none"> <li>i. Using 1mg/ml concentration, mix 1ml with 9ml of NS to make 0.1mg/ml</li> <li>ii. Inject (subcutaneously) in 2-3ml increments into and around extravasation site at the leading edge in a clockwise manner</li> <li>iii. Use a new 25-gauge needle for each injection</li> </ol> </li> <li>b. Small/ Distal Extravasations: <ol style="list-style-type: none"> <li>i. Using 1mg/ml concentration, mix 1ml with 1ml of NS to make 0.5mg/ml</li> <li>ii. Inject (subcutaneously) in 0.5ml increments into and around extravasation site at the leading edge in a clockwise manner</li> <li>iii. Use a new 25-gauge needle for each injection</li> </ol> </li> </ol> </li> </ol>	



Esmolol	No known antidote	None	Apply dry, cold compress
Etomidate	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
Lorazepam	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
Magnesium Sulfate	No known antidote	None	Apply dry, cold compress
<b>Extravasated Drug</b>	<b>Preferred Antidote</b>	<b>Antidote Administration</b>	<b>Supportive Management</b>
Mannitol (above 5%)	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
Nafcillin	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress
Nitroglycerin	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
Norepinephrine	Phentolamine (Regitine)	<ol style="list-style-type: none"> <li>1. Phentolamine : Administer as soon as possible but within 12 hours of extravasation</li> <li>2. Dilute 5mg vial with 1ml NS to make 5mg/ml</li> <li>3. Further dilute 5 to 10mg in 10 to 15 mL NS</li> <li>4. Inject (subcutaneously) multiple injections across symptomatic areas</li> <li>5. It is acceptable to re-dose if patient remains symptomatic</li> </ol>	Apply dry, warm compress
	Alternatives	<ol style="list-style-type: none"> <li>1. Nitroglycerin ointment <ol style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ol> </li> <li>2. Terbutaline <ol style="list-style-type: none"> <li>a. Large Extravasations: <ol style="list-style-type: none"> <li>i. Using 1mg/ml concentration, mix 1ml with 9ml of NS to make 0.1mg/ml</li> </ol> </li> </ol> </li> </ol>	

		<ul style="list-style-type: none"> <li>ii. Inject (subcutaneously) in 2-3ml increments into and around extravasation site at the leading edge in a clockwise manner</li> <li>iii. Use a new 25-gauge needle for each injection</li> </ul> <p>b. Small/ Distal Extravasations:</p> <ul style="list-style-type: none"> <li>i. Using 1mg/ml concentration, mix 1ml with 1ml of NS to make 0.5mg/ml</li> <li>ii. Inject (subcutaneously) in 0.5ml increments into and around extravasation site at the leading edge in a clockwise manner</li> <li>iii. Use a new 25-gauge needle for each injection</li> </ul>	
Phenobarbital	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry warm or cold compress
<b>Extravasated Drug</b>	<b>Preferred Antidote</b>	<b>Antidote Administration</b>	<b>Supportive Management</b>
Pentamidine	-Supportive management -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, warm compress
Phenylephrine	Phentolamine (Regitine)	<ol style="list-style-type: none"> <li>1. Phentolamine : Administer as soon as possible but within 12 hours of extravasation</li> <li>2. Dilute 5mg vial with 1ml NS to make 5mg/ml</li> <li>3. Further dilute 5 to 10mg in 10 to 15 mL NS</li> <li>4. Inject (subcutaneously) multiple injections across symptomatic areas</li> <li>5. It is acceptable to re-dose if patient remains symptomatic</li> </ol>	Apply dry, warm compress
	Alternatives	<ol style="list-style-type: none"> <li>1. Nitroglycerin ointment <ul style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary <ul style="list-style-type: none"> <li>i.</li> </ul> </li> </ul> </li> </ol>	
Phenytoin	-Supportive management -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> <li>2. Can consider Nitroglycerin ointment as alternate treatment <ul style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ul> </li> </ol>	Apply dry, warm compress
Piperacillin/Tazobactam	No known antidote	None	Apply dry, cold compress
Potassium acetate (above 0.1 mEq/mL) or Potassium chloride (above 0.1 mEq/mL)	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress

<b>Extravasated Drug</b>	<b>Preferred Antidote</b>	<b>Antidote Administration</b>	<b>Supportive Management</b>
Promethazine	-Supportive management -Surgical consultation early -Hyaluronidase (refractory cases) Alternatives	<ol style="list-style-type: none"> <li>1. Hyaluronidase: Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol> <ol style="list-style-type: none"> <li>1. Nitroglycerin               <ol style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ol> </li> </ol>	Apply dry, warm compress
Propofol	No known antidote	No known antidote	Apply dry, cold compress
Sodium bicarbonate (at least 8.4%)	Hyaluronidase	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, cold compress
Sodium chloride (above 1%)	No known antidote	None	Apply dry, warm compress
Total Parenteral Nutrition (TPN)	Hyaluronidase  Alternative	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol> <ol style="list-style-type: none"> <li>1. Nitroglycerin               <ol style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ol> </li> </ol>	Apply dry, cold compress
Vancomycin	-Supportive management -Hyaluronidase (refractory cases)	<ol style="list-style-type: none"> <li>1. Hyaluronidase : Using a 150 units/mL concentration, mix 0.1 mL with 0.9 mL NS in 1 mL syringe to make final concentration of 15 units/mL</li> <li>2. Inject (subcutaneously) a total of 1mL (15 units/mL) as five separate 0.2 mL injections into the area of leading edge of the extravasation at the leading edge in a clockwise manner</li> <li>3. Use a new 25-gauge needle for each injection</li> </ol>	Apply dry, warm compress
Vasopressin	Preferred  Alternatives	<ol style="list-style-type: none"> <li>1. Nitroglycerin ointment               <ol style="list-style-type: none"> <li>a. 1-inch strip applied to site of ischemia</li> <li>b. May re-dose every 8 hours as necessary</li> </ol> </li> <li>2.</li> <li>3.</li> </ol> <ol style="list-style-type: none"> <li>1. Phentolamine : Administer as soon as possible but within 12 hours of extravasation</li> <li>2. Dilute 5mg vial with 1ml NS to make 5mg/ml</li> <li>3. Further dilute 5 to 10mg in 10 to 15 mL NS</li> <li>4. Inject (subcutaneously) multiple injections across symptomatic areas               <ol style="list-style-type: none"> <li>1. It is acceptable to re-dose if patient remains symptomatic</li> </ol> </li> </ol>	No recommendation

		<p>1. Terbutaline</p> <ul style="list-style-type: none"><li>b. Large Extravasations:<ul style="list-style-type: none"><li>i. Using 1mg/ml concentration, mix 1ml with 9ml of NS to make 0.1mg/ml</li><li>ii. Inject (subcutaneously) in 2-3ml increments into and around extravasation site at the leading edge in a clockwise manner</li><li>iii. Use a new 25-gauge needle for each injection</li></ul></li><li>c. Small/ Distal Extravasations:<ul style="list-style-type: none"><li>i. Using 1mg/ml concentration, mix 1ml with 1ml of NS to make 0.5mg/ml</li><li>ii. Inject (subcutaneously) in 0.5ml increments into and around extravasation site at the leading edge in a clockwise manner</li><li>iii. Use a new 25-gauge needle for each injection</li></ul></li></ul>	
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