Extravasation Management (Non-Antineoplastic Vesicant/ Irritant Medications) - Adults

Site Applicability

All VCH and PHC sites

Practice Level

Profession	Basic Competency	Advanced Competency (requiring additional education)
RN	Care and management of extravasation Basic skill *not including antidote administration	*Antidote administration • The administration of all parenteral antidote medications will be completed by the Most Responsible Provider (MRP)-Physician or NP **or** • RNs with the education / competencies required to enact the necessary extravasation protocols for the non-antineoplastic medication in question may administer antidote under MRP direction.
RPN/ LPN		Assessment and identification of extravasation. **NOTE:** Care must be handed over to RN and MRP for management and treatment.

NOTE: The term Patient is used throughout this document but is intended to be synonymous with Client or Resident

Need to Know

The information provided here is intended as a general guide only. Consult additional references and product labeling for more detailed information.

If extravasation occurs, immediate treatment and follow-up management is required.

Healthcare personnel must be acutely aware of the signs and symptoms of extravasation, which include extreme discomfort, pain or burning at the site, stinging, swelling or redness, and possible absence of blood return from catheter. Extravasation can also occur without burning, stinging and even if blood returns well on aspiration. The severity is dependent upon the drug, drug concentration, site of reaction, diluent used to reconstitute the drug, admixed solution, condition of the surrounding skin and volume of extravasate.

Patients should be educated about the symptoms suggestive of extravasation / hypersensitivity and be instructed to report these immediately should they occur.

Patients should not leave the nursing unit during vesicant infusion and, ambulation during administration is discouraged.

Click here for common non-antineoplastic drugs that can act as vesicants or irritants.

Equipment and Supplies

- Drug reference (monograph)
- Syringe(s) (10 mL)
- Syringe(s) (tuberculin subcutaneous / intradermal needles)
- Normal Saline for Injection
- 25 gauge needles (or smaller)
- Gauze pads 2 x 4”x4”
- Antidote medication(s) and diluent if required
- Heat Packs as appropriate
- Cold Packs as appropriate
- Felt pen
- Personal Protective Equipment as appropriate

Protocol

1. Immediately stop the infusion, clamp and remove the tubing, leaving the original catheter/needle in place; notify MRP.

Refer to Practice Level competencies above before proceeding with protocol.

(All antidotes are to be administered by the MRP, or under MRP direction by RN staff with the education / competencies required to enact the necessary extravasation protocols based on requirements for the extravasated medication).

2. Using a 10 mL syringe(s), attempt to gently aspirate as much of the extravasated agent/surrounding solution as possible **(do not flush the line)** via the original catheter (approximately 3 – 5 mL of blood). If a subcutaneous bleb is present, aspirate with a syringe and 25 gauge needle and withdraw as much of the remaining extravasated solution as possible. Attempt several times as necessary. Do NOT apply pressure or friction to the area.

3. After aspiration, reversal agents should be administered as soon as possible (if available, injection of reversal agents through the infiltrated catheter allows delivery to the same injured tissue plane). Refer to reference(s): PDTM, drug resources (e.g., Lexicomp®, or UpToDate®), or product labeling for detailed instructions.

4. If reversal agents have been instilled, remove the original catheter without aspirating; otherwise, gently aspirate while removing the catheter.

5. Elevate the affected limb, for at least 48 hours, to minimize swelling, and to encourage lymphatic resorption of the drug.

6. If indicated and prescribed, apply dry warm or cold compresses based on recommended best practices for the extravasated drug. References include (but not limited to); Lexicomp®, Up-to-date®, eCPS/CPS®, or manufacturer product labeling. Contact your local Pharmacy for additional information as required.

7. If the patient requires continued IV therapy start an IV in another site (use large stable vein in forearm) away from the site of injury (AVOID using hand, wrist, or antecubital fossa).

8. Outline the extravasation site with felt pen to provide a baseline for monitoring. Monitor the site of injury using infiltration grading scale Q2H x 48 hours (or as ordered) for signs of tissue injury such as pain, tightness, redness, blanching, swelling, blistering, skin breakdown, or necrosis. A surgical consult may be required prior to a grade III or IV assessment. All grades III and IV requires an immediate plastic/vascular surgery consult within 24 hours to assess the degree of tissue damage, intervene, and/or to evaluate the outcome of the initial treatments.

9. Provide patient education (see Education Section).

10. Document all interventions, including patient education in the medical record (see suggested documentation) and complete a Patient Safety Learning System (PSLS) report. Refer to PSLS Handler Guide for more information.

11. Keep patient and family informed of process and interventions.

Antidote Protocols

- Follow "Preparation and Administration Instructions" in parenteral drug therapy manual monograph (PDTM), drug resources (e.g., Lexicomp®, or UpToDate®), or product labeling instructions.

Expected Patient/Client/Resident/Family Outcomes

The extravasation will have minimal to no long term impact for the patient.

Assessment

Ongoing assessment should be Q2H x 48 hours, or as ordered, using standardized grading scale (See Grading Scale)

Following initial treatment, all injuries should be reviewed by the MRP within 24 hours of the extravasation occurring.

If, at any time, there are signs and symptoms of a wound infection, consult the MRP.

Intervention

Determined by the grade and extent of extravasation (See Grading Scale)

Consultation with Nurse Specialized in Wound, Ostomy and Continence (NSWOC) is recommended for Grades I - IV, especially in the management of those wounds which do not require surgical intervention.

For contrast related extravasation guidance see document by Integrated Medical Imaging

Extravasation of Non-Ionic Intravascular Contrast: Patient Management Guidelines

Documentation

Documentation of the site including extent and management of the injury should be competed in the patient's progress notes and/or the following flow-sheets:

PHC

- Extravasation Flowsheet Initial Evaluation
- Extravasation Flowsheet Ongoing Evaluation

VCH (available through Print Shop)

- Extravasation Flowsheet Initial Evaluation (printing catalogue number VCH.0616)
- Extravasation Flowsheet Ongoing Evaluation (printing catalogue number VCH.0617)
- Print Services: https://hssbcprinting.healthbc.org/

Drug and Infusion Information

- Date and time of occurrence
- Drug name, dose, volume, and concentration
- Amount of extravasated drug (best estimate)
- Total amount of drug infused
- Other agents administered and the sequence
- Method of IV administration (e.g., IV direct, via IV pump)
- Location of new venous access and number of attempts
- Catheter/Needle size and type
- Extravasation site, measured size, colour, description, and grade (See Grading Scale)
- Patient complaints or statements
- Ongoing documentation as required

Interventions

- Describe the physical measures used to prevent further extravasation
- Note physician/NP contacted
- Note the name, dose, and route of antidotes
- Describe use of warm or cold therapy
- Describe the site
- Note any medical/interventional consult request
- Note pain management follow-up / reassessments
- Ongoing documentation as required

Patient Education

- Document all information provided

Patient and Family Education

Instruct patient regarding the care of the site, e.g. elevate arm, use warm or cold compresses as applicable, protect from sun or abrasion, do not immerse in water, and any other pertinent instructions.

Instruct patient to report / call provider for any of the following: increased pain, skin colour changes, increased edema, stiffness in the extremity, skin breakdown, fever, decreasing limb mobility, any additional questions.

Provide written instructions at discharge as needed.

Provide the patient with follow-up appointment as needed.

Evaluation

Infiltration Grading Scale					
Grade	**0**	**I**	**II**	**III**	**IV**
Colour	Normal	Pink	Red	Blanched center surrounded by red	Blackened
Skin Integrity	Unbroken	Blistered	Superficial skin loss	Tissue loss exposing subcutaneous tissue	Tissue loss exposing muscle/bone with a deep crater or necrosis
Skin Temperature	Normal	Warm	Hot		
Edema	Absent	Non-pitting	Pitting		
Mobility of limb	Full	Slightly limited	Very limited	Immobile	
Pain	Rate using agency/clinical area tool				
Fever	Normal	Elevated (record per physician order/agency/clinical area protocols)			

Adapted from the 2006 Infusion Nursing Society Standards of Practice

Monitoring

Q2H x 48 hours (or as ordered), and as determined by clinical need.

Related Documents

- IV Therapy, Peripheral: Insertion, Care and Maintenance
- Vancouver Acute - Extravasation of Non-Ionic Iodinated Contrast Media Protocol (Medical Imaging)

Related Resources

- Lexicomp®
- UpToDate®
- Elsevier Clinical Skills
- Parenteral Drug Therapy Manual
- PSLS Safety Event Handler Guide – Please copy and paste the following hyperlink to Chrome https://my.vch.ca/learning-practice/patient-safety-learning-system-psls/psls-training-how-tos

References

1. Antineoplastic Drug Administration: Vesicant and Irritant Agents (Oncology). In Elsevier clinical skills. Retrieved December 11, 2017 from https://lms.elsevierperformancemanager.com/ContentArea/NursingSkills/GetNursingSkillsDetails?skillid=ON_033&skillkeyid=10739&searchTerm=extravasation&searchContext=nursingskills

2. Cardenas-Garcia J, Schaub KF, Belchikov YG, Narasimhan M, Koenig SJ, Mayo PH. Safety of peripheral intravenous administration of vasoactive medication. J Hosp Med 2015;10:581-5

3. Hurst S, McMillan M. Innovative solutions in critical care units: extravasation guidelines. Dimens Crit Care Nurs. 2004;23(3):125-128.[PubMed 15192356]

4. Infusion Nurses Society (INS). (2016). Infusion therapy standards of practice. Journal of Infusion Nursing, 39 (1Supplement), S1-159

5. Lewis T, Merchan C, Altshuler D, Papadopoulos J. Safety of peripheral administration of vasopressor agents. J Intens Care Med 2017: DOI: 10.1177/0885066616686035

6. Reproduced/adapted from: Drug Extravasation Flow Sheet: BC Children's, Woman's, and Sunny Hill Hospitals)

7. Reproduced/adapted from: Mullin S, Beckwith MC, Tyler LS. Prevention and management of antineoplastic extravasation injury. Hospital Pharmacy, 2000; 35:57-76. (per KUMED)

8. Reynolds PM, MacLaren R, Mueller SW, Fish DN, Kiser TH. Management of extravasation injuries: a focused evaluation of noncytotoxic medications. Pharmacotherapy. 2014;34(6):617-632.[PubMed 24420913]

Definitions

- **Extravasation:** Unintentional or inadvertent leakage (or instillation) of fluid out of a blood vessel into surrounding tissue.

- **Flare:** Local, non-painful, possibly allergic reaction often accompanied by reddening along the vein.

- **Irritant:** An agent that causes aching, tightness, and phlebitis with or without inflammation, but does not typically cause tissue necrosis. Irritants can cause necrosis if the extravasation is severe or left untreated.

- **Phlebitis:** Inflammation of the walls of a vein.

- **Vesicant:** An agent that has the potential to cause blistering, severe tissue injury, or tissue necrosis when extravasated.

Appendices

- Appendix A – VCH Extravasation Flowsheet Initial Evaluation
- Appendix B – VCH Extravasation Flowsheet Ongoing Evaluation

Effective Date:	25-JUN-2019	
Posted Date:	25-JUN-2019	
Last Revised:	28-AUG-2020 (Minor revision to link to regional guidelines by MI)	
Last Reviewed:	28-AUG-2020 (Minor revision to link to regional guidelines by MI)	
Approved By: *(committee or position)*	PHC	VCH
	Endorsed By: PHC Professional Practice Standards Committee	**Endorsed By:** (Regional SharePoint 2nd Reading) Health Authority Profession Specific Advisory Council Chairs (HAPSAC) Health Authority & Area Specific Interprofessional Advisory Council Chairs (HAIAC) Operations Directors Professional Practice Directors **Final Sign Off:** Vice President, Professional Practice & Chief Clinical Information Officer, VCH
Owners: *(optional)*	PHC	VCH
	Clinical Pharmacy Specialist, LMPS, VA	• Prof Practice Director, Nursing & Allied Health Professional Practice Admin, VCH • Project Manager, Professional Practice, VA

Appendix A – VCH Extravasation Flowsheet Initial Evaluation

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EXTRAVASATION FLOWSHEET INITIAL EVALUATION

Client Name: _____
DOB: _____
PHN: _____

OR ADDRESSOGRAPH/LABEL Year: _____

Appendix A

This form to be completed ***at the time of the extravasation event***. Document subsequent assessments and interventions on the "Extravasation Flowsheet Ongoing Evaluation" form.

Extravasation Event		IV Access at Time of Extravasation Event	
Date of suspected extravasation		☐ Peripheral IV	☐ CVC
Time of suspected extravasation		Type and gauge of IV	
Extravasated drug		Location of IV	
Concentration of extravasated drug		Number of venipuncture attempts (for peripheral administration) :	
Estimated volume of extravasated drug		Administration technique	☐ Bolus ☐ Infusion
Drug is: ☐ Vesicant ☐ Non-vesicant ☐ Irritant		Description and quality of blood return before and during administration:	
Symptoms reported by the patient:			
		Description of site & extremity:	
Wound Grade: *Reference: Extravasation Mngmnt Protocol Non-antineoplastic – Adult (DST)*			

On the diagrams below, please indicate the following:
○ = Insertion site
X = Insertion attempts

Area of swelling and redness
Outline the area of swelling and redness on the diagram below and **include measurements of width x height** in centimeters.

Initial Interventions	Additional Interventions
☐ Physician notified:	☐ Patient/family education:
☐ Antidote given:	
	☐ Wound Care consult
☐ Cold compresses:	☐ Plastics consult ☐ Surgical consult ☐ Vascular consult
☐ Warm compresses:	☐ Follow-up:
☐ Other:	

Date: _____ Time: _____

Signature: _____ Printed name: _____ Designation: _____

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Appendix B – VCH Extravasation Flowsheet Ongoing Evaluation

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EXTRAVASATION FLOWSHEET ONGOING EVALUATION

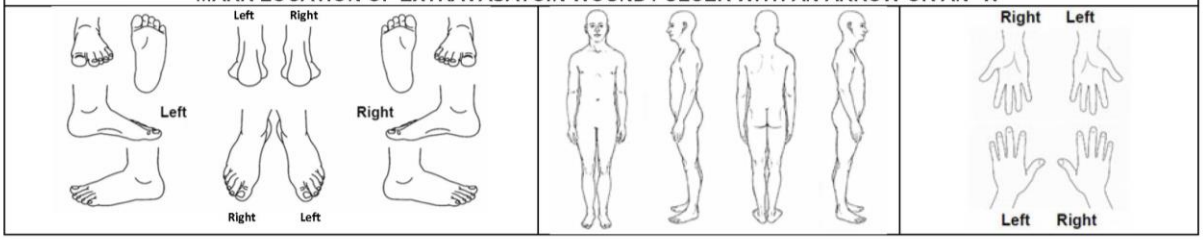
Client Name: _____
DOB: _____
PHN: _____

OR ADDRESSOGRAPH/LABEL Year: _____

Initial Extravasation Date _____ Initial Extravasation Grade _____

Document assessment using Decision Support Tool "Grading Scale" every shift.
Monitor site every 2 hours x 48 hours from initial assessment (or as prescribed) and chart any changes in assessment.

MARK LOCATION OF EXTRAVASATOIN WOUND / ULCER WITH AN ARROW OR AN "X"



Legend:	**X** or **Blank Space** = Not applicable (as per agency)	[✓] = Assessed / Completed					**PN** = Progress Notes				
Date:	Month / Year										
	Day										
	Time										
	Outpatient: Indicate **call** or **visit**										
Wound Measurements in cm	Length										
	Width										
	Depth										
Wound Bed: Total % must = 100%	% Pink / Red										
	% Granulation (red pebbly)										
	% Slough										
	% Eschar										
	% Foreign Body (sutures, mesh, hardware)										
	% Underlying Structures (fascia, tendon, bone)										
	% Not visible										
	% Other:										
Exudate Amount [✓] one	None										
	Scant / small										
	Moderate										
	Large / copious										
Exudate Type [✓] all that apply	Serous										
	Sanguineous										
	Purulent										
	Other:										
Odour	Odour present after cleansing **Yes** or **No**										
Edema	Absent (A); Non-pitting (N); Pitting (P)										
	INITIALS										

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Reference: Extravasation Mngmnt Protocol Non-antineoplastic – Adult (DST)
Adapted from Wound Assessment & Treatment Flowsheet (2019)

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Client Name: _____
DOB: _____
PHN: _____

OR ADDRESSOGRAPH/LABEL Year: _____

EXTRAVASATION FLOWSHEET ONGOING EVALUATION

Wound Edge [✓] all that apply	Attached (flush w/ wound bed or "sloping edge")										
	Non-attached (edge appears as a "cliff")										
	Rolled (curled under)										
	Epithelialization										
Affected Skin [✓] all that apply	Intact										
	Erythema (reddened) in cm										
	Indurated (firmness around wound) in cm										
	Macerated (white, waterlogged)										
	Excoriated / Denuded (superficial loss of tissue)										
	Blistered										
	Ulceration										
	Other: (necrosis, discoloration)										
Wound Pain (10 = worst)	Scored from 10 point analogue Pain Scale	10	10	10	10	10	10	10	10	10	10
Packing Count	Any depth 1cm or greater, Count packing pieces Out / In										
Treatment	Treatment done as per Treatment Plan										
Mobility of Limb	Full (F); Slightly limited (S); Very Limited (V); Immobile (I)										
Extravasation Grade	See DST for Grading Scale										
	INITIALS										

WOUND TREATMENT PLAN

Leave plan in place for ONE week whenever possible. Document rationale for change on the Progress Notes.	Date Initiated	Initials	Date D/C	Initials

Reference: Extravasation Mngmnt Protocol Non-antineoplastic – Adult (DST)
Adapted from Wound Assessment & Treatment Flowsheet (2019)

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