

NATIONAL INSTITUTES OF HEALTH
CLINICAL CENTER
CLINICAL CENTER NURSING DEPARTMENT

**Procedure: Extravasations and Flares with Vesicant and Irritant Drugs,
Management Guidelines**

SUMMARY OF SIGNIFICANT CHANGES SINCE LAST REVIEW

- ❖ Incorporated Closed System Transfer Devices now in use.
- ❖ Expanded definition of extravasation versus flare reaction. Table added.
- ❖ Expanded information on management of flare reaction.
- ❖ Updated references.
- ❖ 9/2017 Added new Appendix B for Vesicant/Irritant and Extravasation Management Guidelines

Clinical Nurse Specialist: Myra Woolery

Primary Stakeholder(s): Tracy Intrater

Deletes or Replaces - [Extravasations and Flares with Vesicant and Irritant Drugs, Management Guidelines \(06/12\)](#)

[Appendix A Guidelines for Measuring Extravasations](#)

[Table of Evidence- Extravasations and Flares \(06/12\)](#)

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**Procedure: Extravasations and Flares with Vesicant and Irritant Drugs,
Management Guidelines**

Approved:

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Formulated: 04/1996
Implemented: 12/1996
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6/2012, 10/2015, 9/2017

Procedure: Extravasations and Flares with Vesicant and Irritant Drugs, Management Guidelines

Essential Information:

1. Nurses must have completed:
 - a. Safe Handling of Hazardous Drugs (HD) Competency before administering vesicant HDs
 - b. **Intravenous Therapy, Blood Draw via a VAD, and Venipuncture Competency** before they may administer vesicant intravenous HDs
 - c. Chemo/Biotherapy Competency before administering antineoplastic vesicants.
2. Infiltration is the inadvertent administration of a non-vesicant solution or medication into the tissue of the surrounding IV catheter, whereas extravasation is the inadvertent administration of a vesicant medication into the surrounding tissue.^{1,2}
3. This procedure applies to management of all medications and fluids with irritant or vesicant potential and is not limited to hazardous drugs.
 - a. A vesicant is any medication or fluid with the potential for causing blisters, severe tissue injury, or necrosis if it escapes from the venous pathway.^{1,2}
 - b. An irritant is any medication or fluid that can cause irritation if it escapes from the venous pathway but does not lead to necrosis. Some drugs that are classified as irritant also have the potential to be vesicants. The extent of tissue injury is dependent on the amount of drug that has extravasated.
 - c. A flare is an inflammatory reaction with pain, warmth, or erythema along the vein or that the VAD site but does not lead to tissue necrosis. Clinical sig.
 - d. Examples of agents with irritant and vesicant potential include, but are not limited to: anti-neoplastics such as cisplatin, doxorubicin, and vincristine and non-anti-neoplastics such as phenergan, potassium chloride, and vancomycin.
4. Prevention and early recognition remain the ideal management for extravasation injuries. Prevention includes avoiding the back of the hand, wrist, antecubital fossa, tendons and joints, avoiding butterfly needles, flushing and verifying blood return before infusion and clinical supervision throughout the administration of a vesicant. Early recognition of initial symptoms includes loss of blood return, edema, erythema or discomfort at the VAD site. Refer to NPCS SOPs for Peripheral Venous Access Devices, Central Venous Access Devices, Medication Administration, and Chemo/Biotherapy Administration for nursing considerations.
5. Risk factors associated with extravasation include impaired circulation or sensation (neuropathy, diabetes, Raynaud's, lymphedema, SVC, peripheral vascular disease) confusion/agitation, communication difficulties, obesity or advanced age.

A. Equipment

1. 2 pairs of gloves approved for use with hazardous drugs
2. 1 10mL syringe
3. Gown approved for use with hazardous drugs
4. Splash goggles, N95 respirator mask, and/or face shield (indicated if there is a possibility of splashing and/or inhalation of HD)
5. Absorbent, plastic lined pads, e.g. chux
6. Warm or cold packs, if indicated

EXTRAVASATION GUIDELINES FOR VESICANTS AND IRRITANTS	
STEPS	KEY POINTS
1. Stop the administration of drug at the first sign of extravasation: local pain, burning sensation, swelling, erythema, and diminished flow rate as evidenced by pump occlusion or lack of flow to gravity and/or lack of blood return. Pt. should have been informed of the risk of extravasation and instructed to report any sensation of pain or burning at infusion site when drug was started.	1. Early recognition and intervention can decrease further tissue damage. When a nurse cannot differentiate extravasation from another local reaction, the nurse should err on the side of caution as if an extravasation has occurred. ⁷ A patient inadequately instructed regarding the symptoms that must be reported at once during infusion is unable to assist and prevent extravasation.
2. Don gloves and appropriate personal protective equipment (PPE) if extravasant is a HD, and apply absorbent plastic lined pad between infusion connection and patient. Disconnect the IV line at the point closest to the vascular access device.	2. NA
3. Aspirate residual drug from the vascular access device using an empty 10mL syringe. Leave peripheral IV in place until evaluated by team. (Gonzalez article says 1-3 ml. syringe)	3. Aspiration may remove drug still present in the vascular access device. Leaving VAD in place may facilitate administration of antidote into extravasated area if appropriate.

EXTRAVASATION GUIDELINES FOR VESICANTS AND IRRITANTS	
STEPS	KEY POINTS
4. Estimate the amount of extravasated drug. Calculate volume infused and send bag back to pharmacy to measure amount remaining in the bag or syringe. ⁶	4. NA
5. Contact the Licensed Independent Practitioner (LIP) to assess the patient and consult the Clinical Pharmacy Specialist.	5. After hours call the clinical specialty pharmacist on call for guidance on appropriate management.
6. Obtain orders from LIP and administer an antidote, if appropriate. Coordinate with team timing and technique for antidote administration, and removal of PIV. See table below for administration of antidote.	6. Delivery of antidote to the extravasated area (or in close proximity) provides maximum efficacy. ^{3,6} Existing PIV may be used in some cases.
7. Obtain an order for medical photography, verify consent, and have extravasation area photographed. Photography is available Monday-Friday 0800-1600. If photography is not available arrange for an appointment on the next day that photography is available.	7. Over time, photography provides the best documentation of site changes. ^{3,4,5,6}
8. Remove peripheral vascular access device. Remove needle from implanted port. This does not include percutaneous temporary central venous catheters or midlines.	8. Central catheters require evaluation by team and surgery consult prior to removal.
9. Avoid applying direct pressure on the site. Cover lightly with a dressing if indicated.	9. Pressure can spread an extravasated agent to a much broader area. ³
10. Apply a warm or cold compress, depending on agent extravasated. Call pharmacy for guidance and see table below.	10. Depending on the extravasated drug, warm or cold may be indicated to produce local hyperthermia or vasoconstriction respectively. ¹

EXTRAVASATION GUIDELINES FOR VESICANTS AND IRRITANTS	
STEPS	KEY POINTS
11. Elevate and rest the extremity for 48 hours.	11. This may aid in local absorption of the extravasated vesicant and provide comfort. ^{3,6}
12. Assess for presence of pain, erythema, induration, blistering, sloughing, and necrosis. Additionally, assess for extremity swelling, capillary refill, and/or numbness and tingling. ¹ Provide analgesia if needed.	12. Immediate complications of extravasation injuries can range from mild skin irritation to compartment syndrome. ^{1,4} Extravasation injuries can cause significant pain requiring pain management. ⁴
13. Use a skin marker to indicate the area of induration, erythema, and swelling. Measure greatest perpendicular length and width of affected area as shown in Appendix A.	13.
14. Obtain consult(s) for surgery, pain management, and/or rehab medicine if indicated. Surgery should always be consulted for extravasation of DNA binding antineoplastic.	14. In extravasations involving large volumes, severe pain, or impaired healing, surgical consult is recommended. Delayed intervention could cause permanent functional impairment. ^{4,5}
15. Educate patient to monitor the site and report fever, chills, blistering, skin sloughing, and worsening pain. Patient should protect the area from exposure to sunlight and avoid wearing tight clothing around the affected area.	15.
16. Document assessments, interventions, and patient education in approved electronic medical record.	16.
17. Monitor the site minimally at 24 hours and weekly. Complications are assessed until resolved. Photography can be used to monitor progress.	17. The extent of tissue injury can increase over time. As cells die, they can release the extravasated drug into the tissue, where previously unaffected cells are exposed to the offending agent. ^{5,6}
18. Complete Occurrence Report.	18.

FLARE REACTION	
STEPS	KEY POINTS
1. Stop the administration of the drug at the first sign of flare and flush the IV line with a compatible flush solution.	1. A flare reaction differs from extravasation. A flare reaction is characterized by streaking, erythema, pruritus, and/or hives along the affected vein without pain or loss of blood return. ^{5,7}
2. Verify blood return.	2. NA
3. Flush line with a compatible solution and watch for resolution of flare. Assess patency by allowing solution to flow to gravity.	3. NA
4. If resolution does not occur, contact the LIP to obtain orders for hydrocortisone and/or diphenhydramine IV followed by IV flush solution.	4. A flare response is a self-limiting, localized hypersensitivity reaction. ⁷
5. Once flare has subsided, confirm blood return, and contact LIP. Confirm infusion order and expiration time of drug. Resume drug administration at a slower infusion rate.	5. NA
6. Monitor for recurrence of flare reaction and repeat sequence listed above, as ordered.	6. NA
7. For patients scheduled to receive the same drug in the future, discuss with LIP strategies to minimize risk of another flare reaction, i.e., pre-medications, slower infusion rate, and dilution of hazardous drug.	7. NA
8. Document assessments, interventions, and patient education in approved electronic medical record.	8. NA

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