SYSTEMIC TREATMENT

PROCEDURE

CATEGORY: Program Specific
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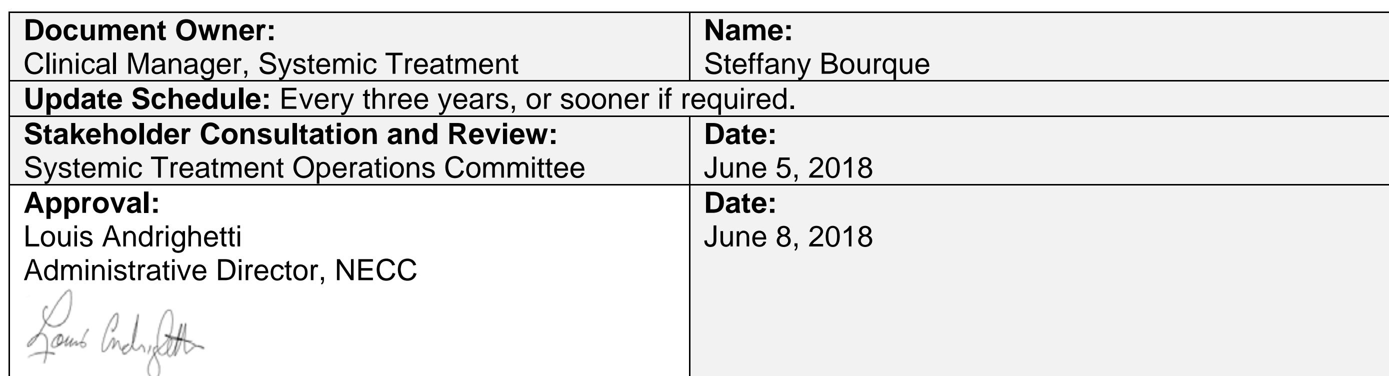
SUBJECT: **CHEMOTHERAPY - MANAGEMENT OF EXTRAVASATION**



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PURPOSE

To prevent or reduce potential tissue damage in the event of extravasation involving chemotherapy agents in patients 18 years of age and older.

PROCEDURE

Equipment (Extravasation Kit)

- Dimethyl sulfoxide (DMSO) 99% topical solution
- Hyaluronidase (HYALASE) 1500 units/ampoule injection
- Dexrazoxane (Zinecard)
- 10 mL Sodium Chloride injection (for reconstitution of Hyaluronidase)
- Hydrocortisone 1% cream
- Filter needle (for drawing up Hyaluronidase)
- 7 x 25 G or 27 G needles
- 7 x 1 mL syringe
- 2 x 3 mL syringe
- 2 x 10 mL syringe
- Chlorhexidine/alcohol swabs
- 2x2 sterile gauze
- Cotton buds (Q-tips)
- Paper tape measure
- Sling
- Black indelible ink marker
- Cold compress (in freezer)
- Warm compress (in warmer)
- Thin cloth and plastic bag for covering cold compress for DMSO
- Small empty amber glass bottle and label for home DMSO

Special Instructions

- Extravasation of vesicant and irritant drugs can result in severe tissue damage.
- All areas administering chemotherapy agents with vesicant and irritant properties must have an extravasation kit available (see above for contents).
- For extravasations involving non-chemotherapy, refer to *Non-Chemotherapy - Management of Extravasation*.
- In the event of a mixed extravasation of agents:
    - **Different classification**: Vesicant is a priority over an irritant
    - **Same classification**: Those requiring a cold compress take precedence over applying a warm compress. A cold compress should be applied first. A cold compress should <u>never</u> be used for Oxaliplatin.
- Patients should be closely followed after suspected/actual extravasation so that appropriate further action can be taken. Some extravasations, although painful, may heal without surgical interventions. This is particularly true of vinca alkaloids. Others, particularly those due to doxorubicin and other DNA binders (epirubicin, idarubicin, daunorubicin and mitoxantrone), may recycle locally and produce progressive necrosis and slough requiring surgical intervention.

See Appendix A for Infiltrates and Antidotes
See Appendix B for Preparation of Antidotes and Topical Agents

Method

<u>At the Time of Extravasation</u>

1. **STOP** the drug administration and IV infusion immediately. **DO NOT** flush the IV line.
2. Disconnect the IV tubing from the venous access device (VAD). **DO NOT** remove the VAD. Leaving the catheter in place may facilitate removal of some of the infiltrated medication and provide an injection site for the antidote.
3. Attempt to aspirate as much residual drug as possible using a new sterile 1-3 mL syringe.
4. Remove the VAD (IV cannula or port needle).
5. Collect the Extravasation Kit.
6. Identify the infiltrated agent and refer to **Appendix A** for recommended drug specific actions/treatment.
7. Notify the attending Medical Oncologist (MO) and Pharmacy that an extravasation has occurred. If the MO is not available, page the MO on-call.
8. Avoid friction or pressure to the affected area.
9. Elevate and immobilize the affected limb. Raise the limb above heart level using pillows or a sling. Gravity will help to drain the fluid.
10. Apply an appropriate compress at the extravasation site as per **Appendix A** for 20 minutes at a time, four times per day, for 24-48 hours. Protect the skin from excess cold or heat by covering the compress in a thin cloth to avoid tissue injury.
11. If applicable, administer antidote(s) as per **Appendix B**. All antidotes require a physician order. Antidotes are administered by a physician <u>except for</u> DMSO which can be applied by a nurse.
12. Assess the site of the suspected extravasation. Assess symptoms experienced by the patient (i.e. pain, impaired range of motion of extremity).
13. Measure the two largest lengths in centimeters and mark the affected area on the patient's skin with an indelible marker.
14. Take photographs of the affected site. Ensure that a paper measuring tape with patient identification, date and time of event (written on the tape) is included in the photo and that the measuring tape does not obscure the affected site. Photographs allow for thorough documentation and continuity of care between practitioners.
15. The chemotherapy booking clerk will upload the photos into the patient's Mosaiq file.

16. Initiate the *Antineoplastic Drug Extravasation Assessment Tool* and file on the patient's paper chart once complete.
17. Complete an incident report and notify the immediate manager.
18. Send a copy of the completed *Antineoplastic Drug Extravasation Assessment Tool* to the most responsible MO. The original form is kept on the patient's chart and updated at follow up appointments.
19. As necessary, arrange for prescriptions for use at home (i.e. analgesics, hydrocortisone cream, DMSO).
20. Educate the patient regarding appropriate treatment guidelines, including signs and symptoms to monitor for and when to call the MO/nurse team.
21. Provide written *Patient Instructions for Care at Home After an Extravasation* to reinforce verbal information on home management of the injection site.
22. Arrange patient follow up appointments to ensure extravasation is reviewed regularly as per the *Antineoplastic Drug Extravasation Assessment Tool* or as specified by the MO. Patients must be closely followed so that appropriate action can be taken.
23. Referral for an urgent surgical review should be discussed and organized by the MO if applicable.
24. Replace items in the extravasation kit if required.

<u>Follow-Up</u>

1. For a chemotherapy extravasation, make arrangements for the patient to return to the chemo room for assessment in 48 hours. Arrange follow-up assessments on Day 5, 7 and 14. Continue weekly follow-up if necessary. If an assessment date falls on a weekend or holiday, the patient will be scheduled for the next business day.
2. When the patient returns to the chemo room for assessment, they will be seen by the nurse (and MO if necessary, based on the nurse's assessment).
3. Areas of extensive blistering or ulceration, progressive induration and erythema, or persistent severe pain, are indications for surgical assessment and possible excision of the injured tissue. The most responsible MO should refer the patient for surgical intervention in the presence of the progressive local injury. Analgesics should be given, as required, for pain.

EDUCATION AND TRAINING

References and Related Documents

BCCA Extravasation Hazard Table and Prevention and Management of Extravasation of Chemotherapy policy III-20 January 2016

Cancer Care Ontario Drug Formulary

Cancer Institute NSW eviQ.org; Extravasation Management

HemOnc.org; Vesicant and Irritant Chemotherapy: Chemotherapy vesicant and irritant prpoperties and suggested management for extravasation; August 2013

HSN *Administration of Hazardous Drugs – NECC Outpatient* procedure

Lexicomp

LRCP Chemotherapy Extravasation Management Protocol

Polovich, M. et al 2014. Oncology Nursing Society Chemotherapy and Biotherapy Guidelines and Recommendations for Practice 4th Ed.

APPENDIX A

Infiltrates and Antidotes

A cold compress will localize the medication in the tissue and reduce inflammation.
A warm compress will increase blood flow and facilitates diffusion of the agent through the tissues.

Drug	Type	Compress	Additional Instructions/Antidote
Amsacrine (AMSA P D®)	Vesicant	Cold	Elevate limb. DMSO.
Bendamustine (Treanda®)	Irritant with vesicant properties	Cold	Elevate limb
Cabazitaxel (Jevtana®)	Irritant	Cold	Elevate limb
Carmustine (BiCNU®)	Vesicant	Cold	Elevate limb
Cisplatin (Platinol AQ®)	Irritant with vesicant properties	Cold	Elevate limb. DMSO may be considered for concentrated extravasations (> 0.5 mg/mL).
Dacarbazine (DTIC®)	Irritant	Cold	Elevate limb
Dactinomycin (Cosmegen®) (Actinomycin-D®)	Vesicant	Cold	Elevate limb. DMSO.
Daunorubicin (Cerubidine®) (Daunomycin®)	Vesicant	Cold	Elevate limb. DMSO for small extravasation. Dexrazoxane for large extravasation. **DO NOT** use DMSO and Dexrazoxane in combination.
Docetaxel (Taxotere®)	Irritant with vesicant properties	Cold	Elevate limb
Doxorubicin (Adriamycin®)	Vesicant	Cold	Elevate limb. DMSO for small extravasation. Dexrazoxane for large extravasation. **DO NOT** use DMSO and Dexrazoxane in combination.
Epirubicin (Pharmorubicin®)	Vesicant	Cold	Elevate limb. DMSO for small extravasation. Dexrazoxane for large extravasation. **DO NOT** use DMSO and Dexrazoxane in combination.
Etoposide (Vepesid®)	Irritant	Cold	Elevate limb
Fluorouracil (Adrucil®)	Irritant	Cold	Elevate limb
Gemcitabine (Gemzar®)	None (treat as an Irritant)	Cold	Elevate limb
Idarubicin (Idamycin®)	Vesicant	Cold	Elevate limb. DMSO for small extravasation. Dexrazoxane for large extravasation. **DO NOT** use DMSO and Dexrazoxane in combination.
Ifosfamide (Ifex®)	Irritant	Cold	Elevate limb
Melphalan (Alkeran®)	Vesicant	Cold	Elevate limb

Drug	Type	Compress	Additional Instructions/Antidote
Mitomycin (Mutamycin®)	Vesicant	Cold	Elevate limb
Mitoxantrone (Novantrone®)	Vesicant	Cold	Elevate limb. DMSO for small extravasation. Dexrazoxane for large extravasation. **DO NOT** use DMSO and Dexrazoxane in combination.
nab-Paclitaxel (Abraxane®)	Irritant with vesicant properties	Cold	Elevate limb
Oxaliplatin (Eloxatin®)	Irritant with vesicant properties	Warm	Elevate limb
Paclitaxel (Taxol®)	Irritant with vesicant properties	Cold	Elevate limb
Pegylated Liposomal Doxorubicin (Caelyx®)	Irritant	Cold	Elevate limb
Streptozocin (Zanosar®)	Vesicant	Cold	Elevate limb
Trabectedin (Yondelis®)	Vesicant	Cold	Elevate limb
Trastuzumab Emtansine (Kadcyla®)	Irritant	Cold	Elevate limb
Vinblastine (Velban®)	Vesicant	Warm	Elevate limb. Hyaluronidase.
Vincristine (Oncovin®)	Vesicant	Warm	Elevate limb. Hyaluronidase.
Vinorelbine (Navelbine®)	Vesicant	Warm	Elevate limb. Hyaluronidase.
Zoledronic Acid (Zometa®)	Irritant	Cold	Elevate limb

APPENDIX B

Preparation of Antidotes and Topical Agents

Dexrazoxane (Zinecard) **If available on the market**

Instructions	Special Notes
• Administer over 1 to 2 hours IV at the recommended doses below, daily for 3 consecutive days (maximum dose 2000 mg): o Day 1: 1000 mg/m2 o Day 2: 1000 mg/m2 o Day 3: 500 mg/m2 • Day 2 and day 3 doses should be administered at approximately the same time (± 3 hours) as the dose on Day 1. • Reduce dose by 50% in patients with moderate to severe renal impairment (creatinine clearance < 40 mL/minute).	*Community Oncology Clinic Network sites residing over 3 hours away from NECC must keep 2000 mg on hand to get first treatment started and then patient will be sent to NECC for further doses. At NECC, drug is stored in Pharmacy*. • Dexrazoxane is a LOW RISK hazardous drug. Follow safe handling precautions for PPE requirements. • Dexrazoxane should be administered as soon as possible and **within 6 hours** of extravasation. • If cooling techniques are being used, withhold cooling 15 minutes before and after the Dexrazoxane infusion to allow blood flow to the area of extravasation. • Dexrazoxane should be infused in a large vein in an area other than the extravasation area (opposite arm). • The same arm should be used only when the patient's clinical status (i.e. lymphedema, loss of limb) precludes use of the unaffected arm. A large vein above and as far away from the extravasation site should be used for administration. • **DO NOT** use DMSO and Dexrazoxane in combination, as it may lessen efficacy.

Hydrocortisone 1% Cream

Instructions	Special Notes
• Apply to irritants only (MO to provide direction regarding application for irritants with vesicant properties). • Apply thinly over the site and cover with a sterile dressing. • Reapply as often as every 2 hours if the area remains painful.	

Dimethyl Sulfoxide 99% (DMSO)

Instructions	Special Notes
• Don gloves. • Ensure the skin is dry. If skin is wet or DMSO is applied with wet gloves, it will cause the skin to blister. • Apply DMSO to **twice the size** of the affected area using a cotton bud (Q-tip). • Wet the cotton bud with DMSO and then paint a thin layer over the area. • Allow the area to air dry completely. Do not cover the area with a dressing. • Once the area has dried, apply a cold compress to the area for 20 minutes at a time, four times per day, for at least 7 days. • Put a thin cloth around the cold compress and ensure the cold compress has a waterproof cover (plastic bag) to keep the outside dry. • Provide patient with a 20 mL bottle of DMSO and a pair of gloves for home application. • Instruct patient to discontinue DMSO if there is any blistering or excessive irritation and report to the physician.	• DMSO should be applied as soon as possible after extravasation has occurred (ideally **within 10-25 minutes**). • **DO NOT** use DMSO and Dexrazoxane in combination, as it may lessen efficacy.

Hyaluronidase 1500 units/ampoule Injection

Instructions	Special Notes
Reconstitute Hyaluronidase solution to 150 units/mL: • Add 1 mL of 0.9% sodium chloride to the ampule of powder to make 1500 units/mL solution • Draw up 0.1 mL of this solution (150 units) into a 1 mL syringe using a filter needle and further dilute with sodium chloride 0.9% to obtain a total volume of 1 mL. Discard filter needle. • Prepare 5 syringes of 0.2 mL (each 0.2 mL contains 30 units of Hyaluronidase). • Using a 25 or 27 gauge needle, infiltrate 5 syringes of antidote subcutaneously into the leading edge of the extravasation (in a clockwise manner).	*Special Access Product. Must be obtained from Pharmacy. Provide patient name and hospital number.* • Should be administered **within 4 hours** of infiltration. • Is not for IV administration and should not be injected into tumours, acute inflamed or infected skin. • Has an immediate onset of action and 24-48 hour duration of effect. • Corticosteroids (any route) may worsen toxicity. • The toxicity of Hyaluronidase is not increased by the use of a cold pack. • Gently massage the area to facilitate dispersal of the drug.