

NIH Clinical Center Vesicant/Irritant and Extravasation Management Guidelines

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|--|--|--|--------------|
| Acyclovir (Zovirax®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen | 34-36 |
| Ado-trastuzumab emtansine (Kadcyla®) | Irritant | None | 1,2 |
| Amiodarone (Nextarone®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen | 36,37 |
| Amsacrine (<i>Not commercially available in U.S.</i>) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Elevate extremity | 2,3 |
| Bendamustine (Bendeka®, Treanda®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2-4 |
| Cabazitaxel (Jevtana®) | Irritant with Vesicant Properties <i>Classification extrapolated from other agents in the taxane family</i> | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,5 |

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|---------------------------|--------------------------|---|--------------|
| Calcium chloride | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm or cold compress for 20 minutes four times daily for 1-2 days 5. Plastic surgery consult strongly recommended <p style="margin-left: 20px;">Consider hyaluronidase injections (see dosing guidelines at end of document for details)</p> | 38-49 |
| Calcium gluconate | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm or cold compress for 20 minutes four times daily for 1-2 days 5. Plastic surgery consult strongly recommended <p style="margin-left: 20px;">Consider hyaluronidase injections (see dosing guidelines at end of document for details)</p> | 38-49 |
| Carboplatin (Paraplatin®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Carmustine (BiCNU®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Ciprofloxacin (Cipro®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen <p style="margin-left: 20px;">Apply dry, cold compress for 20 minutes four times daily for 1-2 days</p> | 50 |
| Cisplatin (Platinol®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider injecting sodium thiosulfate through IV if line is still in place; if IV line has been removed, consider local infiltration of affected area with sodium thiosulfate. Sodium thiosulfate may be beneficial for large volume extravasations (see dosing guidelines at end of document for details) | 2,3,6-9 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|--|--------------------------|---|--------------|
| Dacarbazine (DTIC®, DTIC-Dome®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3,10 |
| Dactinomycin, Actinomycin-D (Cosmegen®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Darubicin (Idamycin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of idarubicin infusion: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after idarubicin infusion: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p style="text-align: center;">*Concurrent use of dexrazoxane and DMSO is NOT recommended.</p> | 2,3,11-14 |
| Daunorubicin (Cerubidine®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of daunorubicin infusion: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after daunorubicin infusion: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p style="text-align: center;">*Concurrent use of dexrazoxane and DMSO is NOT recommended.</p> | 2,3,11-14 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|-------------------------------------|--------------------------|---|----------------|
| Daunorubicin Liposomal (DaunoXome®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of daunorubicin infusion: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after daunorubicin infusion: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p><i>*Concurrent use of dexrazoxane and DMSO is NOT recommended.</i></p> <p><i>Extrapolated from standard daunorubicin information due to lack of significant data on liposomal daunorubicin extravasation management</i></p> | 2,3,11-14 |
| Dextrose (> 10%) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider plastic surgery consult <p>Consider hyaluronidase injections (see dosing guidelines at end of document for details)</p> | 36,38,49,51-53 |
| Diazepam (Valium®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 38,49,54 |
| Dobutamine (Dobutrex®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with phentolamine (see dosing guidelines at end of document for details) 6. (Alternative to 5) Apply topical nitroglycerin ointment (see dosing guidelines at end of document for details) | 38,49,55-60 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|------------------------------|---|--|----------------|
| Docetaxel (Taxotere®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Dopamine (Intropin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with phentolamine (see dosing guidelines at end of document for | 36,38,49,57-61 |
| Doxorubicin (Adriamycin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of doxorubicin infusion: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after doxorubicin infusion: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p><u>*Concurrent use of dexrazoxane and DMSO is NOT recommended.</u></p> | 2,3,11-15 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|--|---|--|-------------------|
| Doxorubicin Liposomal (Doxil®, LipoDox®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of doxorubicin infusion: administer dexrazoxane (see dosing guidelines at end of document for details)*, † 5. If extravasation is noted more than 6 hours after doxorubicin infusion: administer topical DMSO (see dosing guidelines at end of document for details)*, † 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p>*<u>Concurrent use of Dexrazoxane and DMSO is NOT recommended.</u></p> <p>†Several case reports have administered dexrazoxane several days after initial liposomal doxorubicin extravasation was noted and reported complete resolution of symptoms – consider administering dexrazoxane regardless of timing if patient is symptomatic.</p> | 2,3,11-20 |
| Epinephrine (Adrenalin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with phentolamine (see dosing guidelines at end of document for details) 6. (Alternative to 5) Apply topical nitroglycerin ointment (see dosing guidelines at end of document for details) | 36,38,49,55,62,63 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|---|------------------------------|---|--------------|
| Epirubicin (Ellence®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of epirubicin infusion: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after epirubicin infusion: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p>*Concurrent use of dexrazoxane and DMSO is NOT recommended.</p> | 2,3,11-15 |
| Etoposide (Toposar®) <i>Etoposide is not the same as Etoposide Phosphate</i> | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3,21 |
| Etoposide Phosphate (Etopophos®) | Non-irritant | <p>None</p> <p><i>Listed solely to distinguish etoposide phosphate from etoposide</i></p> | |
| Fluorouracil (Adrucil®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Ibritumomab Y-90 (Zevalin®) | Vesicant | <ol style="list-style-type: none"> 1. Symptomatic management - extravasation symptoms not likely to appear until weeks or months after extravasation 2. Use caution, as Ibritumomab Y-90 is a radiopharmaceutical which is capable of delivering therapeutic doses of radiation. | 22,23 |
| Ifosfamide (Ifex®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |

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|------------------------------------|--|--|--------------|
| Irinotecan (Camptosar®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Irinotecan Liposomal (Onivyde®) | Unknown <i>No data available - suggest treating as for irinotecan extravasation</i> | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | None |
| Lorazepam (Ativan®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 36,64 |
| Mannitol (≥15%) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) 6. Consider surgical consult to evaluate need for fasciotomy in case of compartment syndrome | 36,49,65,66 |
| Mechlorethamine (Mustargen®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider injecting sodium thiosulfate through IV if line is still in place; if IV line has been removed, consider local infiltration of affected area with sodium thiosulfate (see dosing guidelines at end of document for details) 6. Consider plastic surgery consult | 2,3,9,24 |

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|---|---|--|---------------------|
| Melphalan (Alkeran®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Minocycline (Minocin®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug | 67 |
| Mitomycin, Mitomycin-C (Mutamycin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider topical administration of DMSO (see dosing guidelines at end of document for details) 6. Consider plastic surgery consult | 2,3,15,25 |
| Mitoxantrone (Novantrone®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the VAD to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of mitoxantrone infusion: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after mitoxantrone infusion: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p>*<u>Concurrent use of dexrazoxane and DMSO is NOT recommended.</u></p> | 2,3,11-13 |
| Nelarabine (Arranon®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2 |
| Nafcillin (Nallpen®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Apply cold compress 4. Consider local infiltration with hyaluronidase. | 36,49,68-70 |

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|---|---|--|---------------------|
| Nicardipine (Cardene IV®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug | 71 |
| Norepinephrine (Levophed®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days | 36,38,49,72,73 |
| Oxaliplatin (Eloxatin®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Apply dry, warm (if concern for oxaliplatin-induced cold neuropathy) or cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Paclitaxel (Taxol®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3,26,27 |
| Paclitaxel Protein-Bound (Abraxane®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin markingpen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3,5,26-28 |
| Pentamidine (Pentam®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration 2. Aspirate back through VAD to remove any accessible extravasated drug | 74 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|---|--|--|----------------------|
| Phenylephrine (Neo-Synephrine®, Vazculep®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with phentolamine (see dosing guidelines at end of document for details) 6. (Alternative to 5) Apply topical nitroglycerin ointment (see dosing guidelines at end of document for details) | 36,38,49,75,76 |
| Phenytoin (Dilantin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) 6. Alternative to 5) Apply topical nitroglycerin ointment (see dosing guidelines at end of document for details) | 36,38,49,77-81 |
| Porfimer (PhotoFrin®) | Non-irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Protect affected area from exposure to light for 30-60 days. | 29 |
| Potassium Chloride (High doses or concentrations) | Vesicant at concentration > 0.1mEq/mL | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) | 36,38,49,51,63,82-84 |
| Promethazine (Phenergan®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 36,38,49,85,86 |
| Propofol (Diprivan®, Propoven®) | Irritant with vesicant properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug Outline area of extravasation with a skin marking pen | 36,87 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|---|---|--|----------------------|
| Streptozocin, (Zanosar®) | Irritant with Vesicant Properties | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3,30 |
| Sodium Bicarbonate | Vesicant at concentrations $\geq 8.4\%$ | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) 6. Consider surgical consult | 36,38,49,51,63,82,88 |
| Sodium Chloride ($\geq 2\%$) | Vesicant at concentrations $\geq 2\%$ | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) | 49,89 |
| Quinupristin and Dalfopristin (Synercid®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen | 90 |
| Temozolomide (Temodar®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2 |
| Teniposide (Vumon®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |
| Topotecan (Hycamtin®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 2,3 |

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|---|--------------------------|--|-------------------|
| TPN <i>(Note that PPN solutions are not the same as TPN, and are not considered vesicants)</i> | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 5. Consider plastic surgery consult 6. Consider hyaluronidase injections (see dosing guidelines at end of document for details) | 36,38,49,53,91-94 |
| Trabectedin (Yondelis®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Consider plastic surgery consult 5. Apply dry, cold compress for 20 minutes four times daily for 1-2 days | 31,32 |
| Valrubicin (Valstar®) <i>Valrubicin is NOT for intravenous administration - this entry listed in case of inadvertent extravasation or tissue infiltration</i> | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through the catheter to remove any accessible extravasated drug 3. Apply dry, cold compress for 20 minutes four times daily for 1-2 days 4. If extravasation is noted within 6 hours of valrubicin extravasation: administer dexrazoxane (see dosing guidelines at end of document for details)* 5. If extravasation is noted more than 6 hours after valrubicin extravasation: administer topical DMSO (see dosing guidelines at end of document for details)* 6. Avoid applying pressure to the extravasation site 7. Elevate the extremity 8. Consider plastic surgery consult <p>*Concurrent use of dexrazoxane and DMSO is NOT recommended.</p> | 2,3,11-13 |
| Vancomycin (Vancocin®) | Irritant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen <p>Apply dry, cold compress for 20 minutes four times daily for 1-2 days</p> | 36,38,49,95 |

| Drug (Brand Name) | Classification | Extravasation Management | Reference(s) |
|---------------------------------------|--------------------------|--|----------------|
| Vasopressin (Pitressin®, Vasostrict®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry, warm compress for 20 minutes four times daily for 1-2 days 5. Consider local infiltration with phentolamine (see dosing guidelines at end of document for details) 6. (Alternative to 5) Apply topical nitroglycerin ointment (see dosing guidelines at end of document for details) | 36,49,51,96-98 |
| Vinblastine (Velban®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry warm compress for 20-30 minutes four times daily for 24-48hours 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) 6. Consider plastic surgery consult | 2,3,33 |
| Vincristine (Oncovin®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry warm compress for 20-30 minutes four times daily for 24-48hours 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) 6. Consider plastic surgery consult | 2,3,33 |
| Vinorelbine (Navelbine®) | Vesicant | <ol style="list-style-type: none"> 1. Immediately stop drug administration, disconnect drug from patient 2. Aspirate back through VAD to remove any accessible extravasated drug 3. Outline area of extravasation with a skin marking pen 4. Apply dry warm compress for 20-30 minutes four times daily for 24-48hours 5. Consider local infiltration with hyaluronidase (see dosing guidelines at end of document for details) 6. Consider plastic surgery consult | 2,3,33 |

Dosing Guidelines for Drugs Used to Manage Extravasations:

Dexrazoxane: 1000mg/m² (maximum dose= 2000mg/day) by intravenous infusion on days 1 and 2, followed by 500mg/m² (maximum dose = 1000mg/day) by intravenous infusion on day 3. Do not administer into same limb or site at which extravasation occurred. Cease cooling procedures at least 15 minutes prior to the administration of dexrazoxane in order to allow sufficient blood flow to the affected site.

DMSO (Dimethyl Sulfoxide): 99% DMSO, applied topically at a dose of 10 drops per 10 cm², applied to an area twice the size of the affected area every 8 hours for 7 days.

Hyaluronidase:

- A) For most drugs: 15 units in 1mL of solution given as five 0.2mL subcutaneous injections into the site and around the circumference of extravasation.
- B) For vinca alkaloids: May consider using a 150 unit/mL solution for treating vinca alkaloid extravasations. A total dose of 150 – 900 units of hyaluronidase is usually administered (administer 1mL of hyaluronidase solution for each mL of extravasated vinca alkaloid-containing solution, to a max of 900 units)

Nitroglycerin Ointment: 2% topical ointment: Apply a 1 to 2-inch ribbon of ointment, and then spread to cover affected area.

Phentolamine: 5mg to 10mg in 10mL to 20mL of 0.9% sodium chloride given as a series of small subcutaneous injections into and around the site of extravasation. May repeat administration if symptoms do not resolve.

Sodium Thiosulfate: Dilute 4mL of sodium thiosulfate, 10% with 6mL of sterile water for injection. Inject through IV line at extravasation site, if line is still in place. If not, may administer as a series of small subcutaneous injections into the site of extravasation.

Definitions:

Irritant: A drug which is known to cause blood vessel irritation or other local inflammatory reactions at the infusion site, but is not associated with severe tissue reactions in the event of extravasation.

Vesicant: A drug which is known to cause significant tissue damage, including blistering, sloughing, and necrosis, when it leaks from the intravascular space into the surrounding tissues.

Irritant with Vesicant Properties: A drug which usually causes irritant-like reactions when administered or upon extravasation, but which has been reported in a small number of cases to cause severe tissue damage more consistent with vesicant drugs.

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