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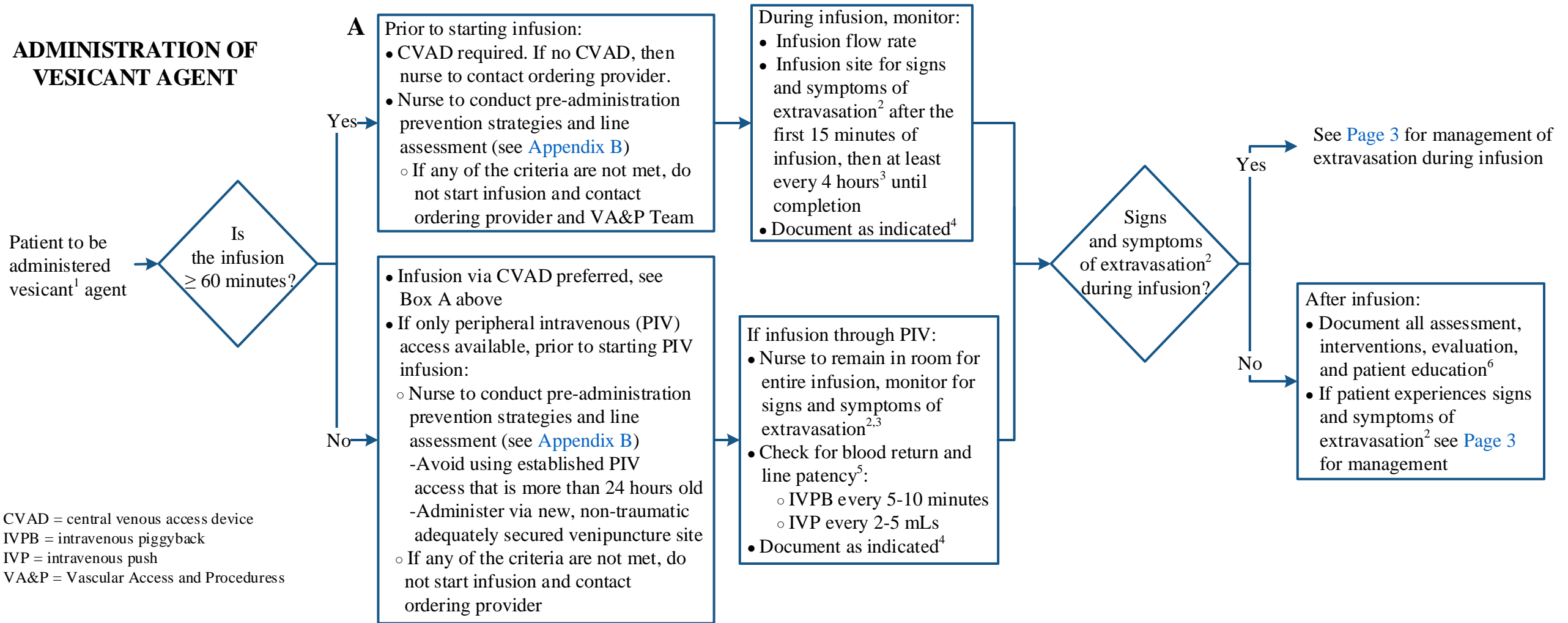
TABLE OF CONTENTS

Administration of Vesicant Agent.....	Page 2
Management of Vesicant Extravasation.....	Page 3
Diagnostic Imaging Extravasation Management.....	Page 4
APPENDIX A: Extravasation Management of Vesicants.....	Page 5
APPENDIX B: Pre-Administration Prevention Strategies.....	Page 6
APPENDIX C: Signs and Symptoms of Vesicant Extravasation.....	Page 7
APPENDIX D: Grading of Infusion Site Extravasation and Injection Site Reaction CTCAE v5.....	Page 7
APPENDIX E: Suspected Vesicant Extravasation Documentation.....	Page 7
APPENDIX F: Antidote Treatments.....	Pages 8-9
APPENDIX G: Techniques for Administration of IV Contrast Agents.....	Page 10
Suggested Readings.....	Page 11
Development Credits.....	Page 12

¹Unintentional instillation, leakage, passage or escape of a vesicant out of a blood vessel into surrounding tissue. This may result in varying degrees of impairment including pain, necrosis, and tissue sloughing.

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ADMINISTRATION OF VESICANT AGENT



CVAD = central venous access device
 IVPB = intravenous piggyback
 IVP = intravenous push
 VA&P = Vascular Access and Procedures

¹ Vesicant is any agent that has the potential to cause tissue destruction, blistering, severe tissue injury, or tissue necrosis when extravasated. Refer to current institutional list of [vesicant agents](#).

² See [Appendix C](#) for signs and symptoms of extravasation

³ This does not apply to patients who are going home with a CVAD other than an implanted venous port. Refer to Vascular Vesicant/Irritant Administration and Extravasation Policy (#CLN0986).

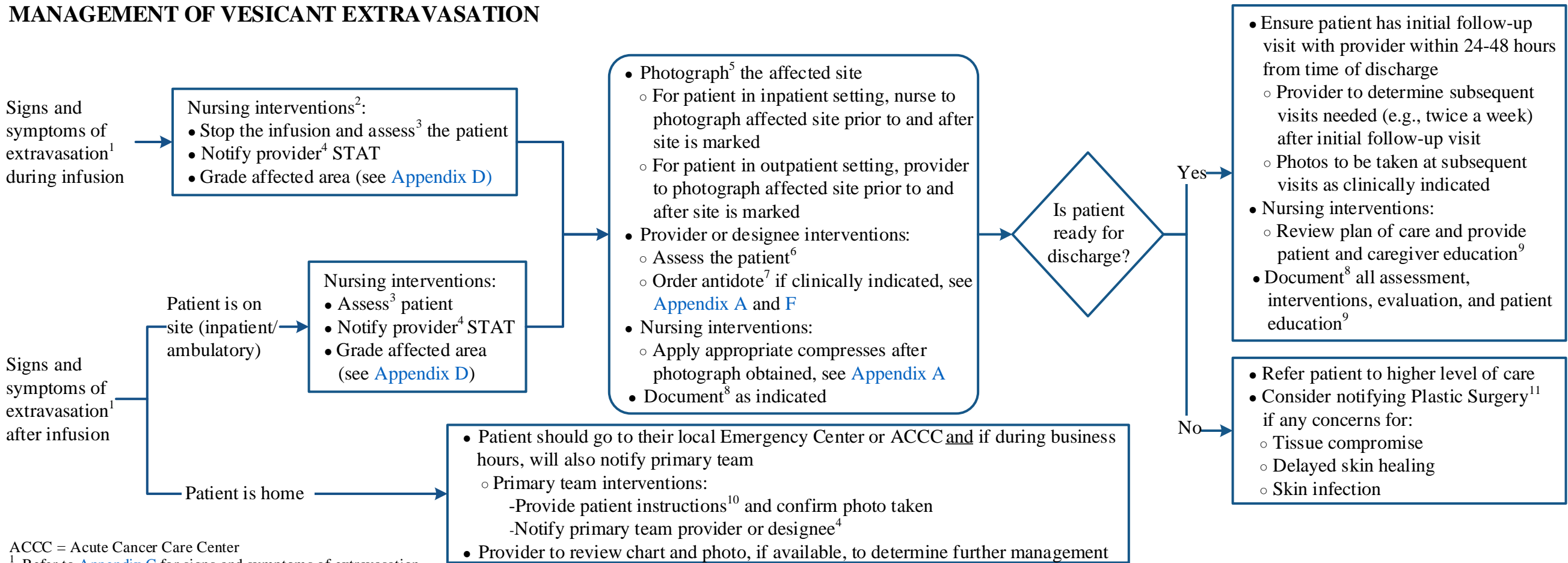
⁴ Refer to Medication Administration Record (MAR) Policy (#CLN0648)

⁵ If blood return and/or line patency cannot be established and there is no sign of infiltration, the infusion must be stopped and a PIV access must be restarted using a new site. Refer to Vascular Vesicant/Irritant Administration and Extravasation Policy (#CLN0986).

⁶ Refer to patient education [Chemotherapy Vesicant Administration Special Instructions](#)

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MANAGEMENT OF VESICANT EXTRAVASATION



ACCC = Acute Cancer Care Center

¹ Refer to [Appendix C](#) for signs and symptoms of extravasation

² **SLAPP** – Stop infusion. Do not flush. Leave IV in place. Assess and aspirate with 1-3 mL syringe (document description and volume aspirated). Pull IV/implanted port needle. **P**rovider notification.

³ Nursing assessment to include checking capillary refill, motor function and sensation

⁴ For the main campus, the primary team/ordering provider is notified first. For after hours, holidays or weekends, contact the on-call advanced practice provider (APP), nocturnal team or the on-call provider for the ordering physician. For Houston Area Locations (HALs), contact site-specific on-call provider or the primary team. For after hours and the weekend, contact the appropriate covering provider.

⁵ Subsequent photos to be obtained as clinically indicated. For medical photography, refer to Photographs – HIPAA Authorizations General Reference Tool (ATT1597)

⁶ Consider transfer of patient to ACCC based on clinical assessment and medical history. For patient at a HAL, consider calling 911 if appropriate.

⁷ Antidote to be ordered by provider after assessment and evaluation are completed

⁸ For additional documentation, see [Appendix E](#)

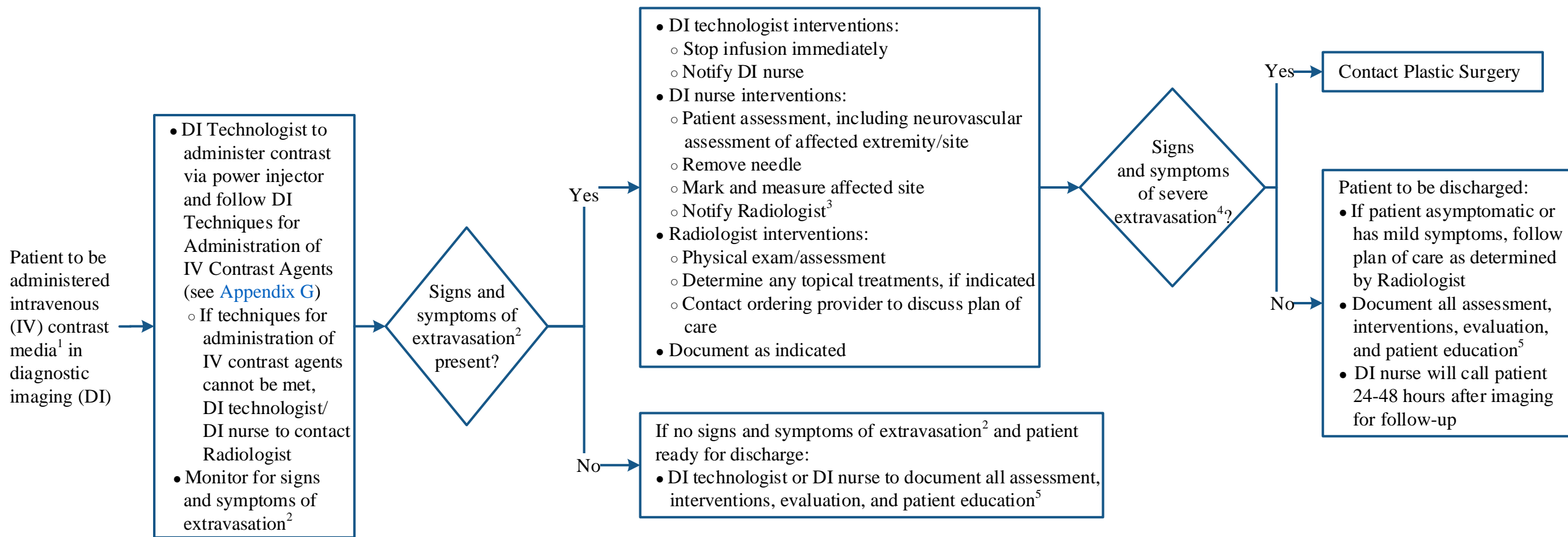
⁹ Refer to patient education [Chemotherapy Vesicant Administration Special Instructions](#)

¹⁰ Nurse to confirm patient is en route to ACCC or local Emergency Center. Recommend patient/caregiver to mark the boundary of the erythema with a pen and photograph the affected site, include time taken, and if photo taken using a mirror and upload via MyChart. Instruct patient to elevate affected extremity; do not apply any pressure on the affected area. If photo confirmed in MyChart, instruct patient to apply appropriate compress (see [Appendix D](#)).

¹¹ If notifying Plastic Surgery, consider ordering MRI of the affected area and if MRI is contraindicated, order CT scan with and without contrast; preferably prior to notifying Plastic Surgery

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DIAGNOSTIC IMAGING EXTRAVASATION MANAGEMENT



¹ Refer to Administration of Contrast Media in Diagnostic Imaging Policy (#CLN1268)

² Signs and symptoms of extravasation may include pain, tenderness, swelling, itching, skin tightness, redness

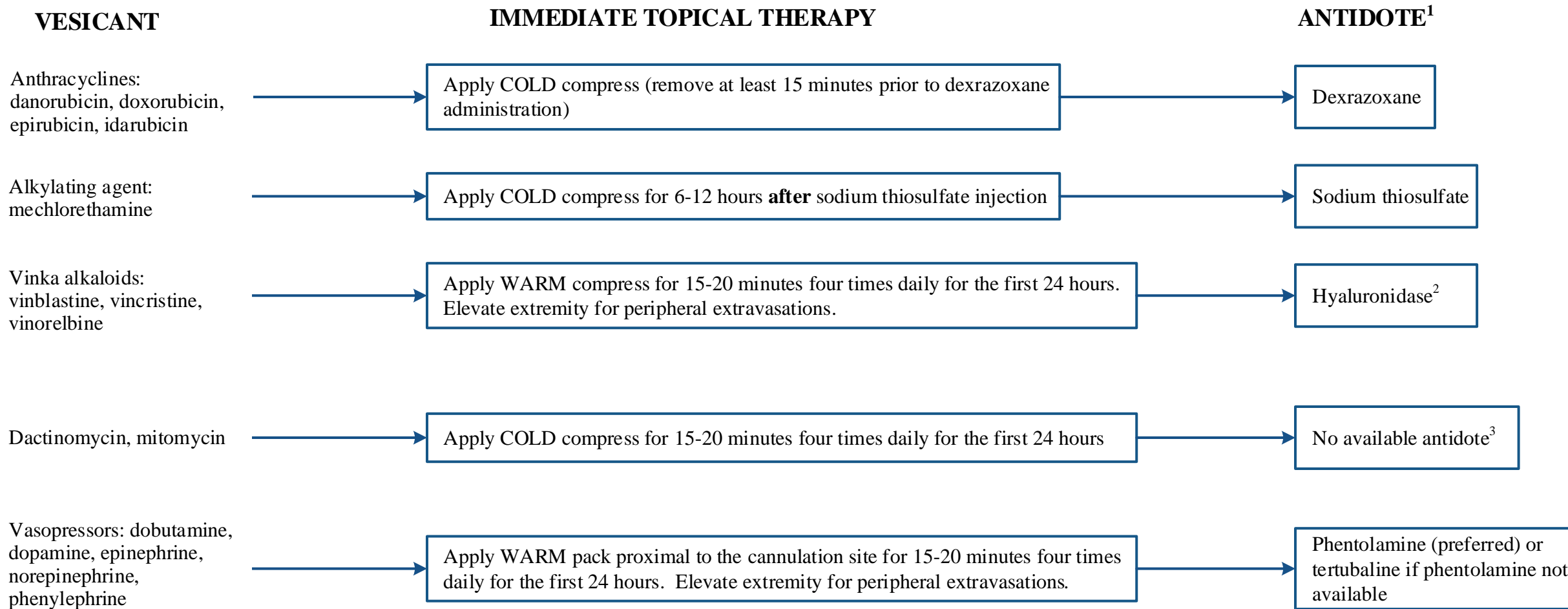
³ If after hours, contact DI on-call resident

⁴ Severe extravasation requires immediate surgical consult and includes one or more of the following signs or symptoms: progressive swelling or pain, altered tissue perfusion, change in sensation in the affected limb, worsening passive or active range of motion of the elbow, wrist, or fingers, and skin ulceration or blistering

⁵ Refer to patient education

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APPENDIX A: Extravasation Management of Vesicants



¹ Refer to [Appendix F](#) for Antidote Dosing and Administration

² Hyaluronidase should be avoided with vasopressor and taxane related extravasations as it may worsen outcomes

³ For extravasated vesicants that do not have effective antidotes available, local non-pharmacologic measures and close monitoring are important.

Non-cytotoxic vesicant extravasations typically are best managed with WARM packs (e.g., vasopressors, hyperosmolar solutions).

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APPENDIX B: Pre-Administration Prevention Strategies

Vesicant Administration Strategies	Line Assessment
<p>CVAD Vesicant Administration:</p> <ul style="list-style-type: none"> • All medications classified as vascular vesicants will be dispensed from pharmacy with an extravasation warning label • Verify patient has received education materials¹ regarding specific drug being infused • Recommended to be infused through a central vascular access device • If infused over 60 minutes or greater, vesicant must be administered through a CVAD • Avoid continuous infusions of vesicants through a femoral-placed implanted venous ports • Continuous infusions of vascular vesicant through implanted venous ports are permitted only on inpatient units • Short term infusions of vesicant agents through implanted venous ports may be administered in the Ambulatory Treatment Center (ATC), Clinical Translation Research Center (CTRC), or Houston Area Locations (HALs). Continuous infusion of vascular vesicant agents, <i>e.g.</i>, home infusions, are prohibited for out-of-hospital/out-of-clinic treatment. • If an infusion pump is required for administration of a vesicant drug, it must be administered through a CVAD 	<p>CVAD and PIV Line Assessment Include:</p> <ol style="list-style-type: none"> Site assessment Patency status (<i>i.e.</i>, no resistance and presence of blood return during the flushing procedure) Placement verification Dressing status Needleless connector status Line necessity Any deviation in care Hand hygiene Care plan, as appropriate <p>Needle Length Selection for Implanted Venous Ports</p>
<p>Peripheral IV Vesicant Administration:</p> <ul style="list-style-type: none"> • All medications classified as vascular vesicants will be dispensed from pharmacy with an extravasation warning label • Verify patient has received education materials¹ regarding specific drug being infused • Must be infused in less than 60 minutes • Will be administered via new, non-traumatic (“clean stick”) adequately secured venipuncture site • Avoid using an established PIV access that is more than 24 hours old • Administration in the dorsum of the hand, any joint space or lower extremity require a physician order. Ensure adequate PIV securement and use joint stabilization device. • Avoid using small, fragile veins, an extremity with previous multiple venipuncture sites, a vein below a recent (less than 24 hours) venipuncture site and/or venous access site • Avoid using an extremity with altered sensation or recent/non-healed vesicant extravasation or infiltration site • Administer with caution in patients with impaired cognition/mental status • Must be administered via gravity drip or IV push (<i>e.g.</i>, no pump administration). If the medication is administered via a pump, it must be infused through a CVAD. Vasopressors during an emergent situation will be an allowed exception and may be infused via a PIV through a pump, if deemed medically necessary. 	<ul style="list-style-type: none"> • Needle length selection is dependent on nursing assessment of the depth of the reservoir (distance of the diaphragm from the skin) • The needle length selected should allow for the non-coring needle tip to come in contact with the base of the port reservoir and to rest as closely to the skin as possible

¹ Refer to patient education [Chemotherapy Vesicant Administration Special Instructions](#)

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APPENDIX C: Signs and Symptoms of Vesicant Extravasation

Signs and symptoms of extravasation include but are not limited to the following:

Immediate extravasation: Refers to those reactions typically occurring during or shortly after vesicant administration

- Pain, redness, or swelling on or around the injection/infusion site
- Resistance when performing IVP
- No blood return
- Leakage of infusion around injection/infusion site
- Infusion flow that slows or stops

Delayed extravasation: Depending on the vesicant drug, reactions can occur up to 1-2 weeks after vesicant administration

- Persistent, worsening pain, redness on or around the injection/infusion site
- Blistering, sloughing off, ulceration

APPENDIX D: Grading of Infusion Site for Extravasation and Injection Site Reaction CTCAE v5

Adverse Event	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Infusion Site Extravasation	Painless edema	Erythema with associated symptoms (e.g., edema, pain, induration, phlebitis)	Ulceration or necrosis; severe tissue damage; operative intervention indicated	Life-threatening consequences; urgent intervention indicated	Death

APPENDIX E: Suspected Extravasation Documentation

- Date and time event occurred
- Estimated amount of vesicant infused
- Signs/Symptoms observed or reported by patient
- Site assessment (range of motion, if applicable), include images of affected site, if available. Every attempt to obtain photographs should be taken in order to better assess extent and progression of tissue damage in the area.
- Physician/designee notification
- Nursing interventions implemented
- Description and volume aspirated
- Antidote administration, if ordered
- Discharge instructions (include consults, follow-up care, and wound management, if applicable)

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APPENDIX F: Antidote Treatments¹

Drug (antidote)	Use With	Dose	Administration	Comments
Dexrazoxane	Anthracyclines	Day 1: 1000 mg/m ² (maximum dose 2000 mg) Day 2: 1000 mg/m ² (maximum dose 2000 mg) Day 3: 500 mg/m ² (maximum dose 1000 mg) • Reduce dose by 50% in patients with creatinine clearance < 40 mL/min	<ul style="list-style-type: none"> • Withhold cold pack 15 minutes prior to dexrazoxane infusion • Begin infusion as soon as possible and within 6 hours² of anthracycline extravasation • Administer over 1 to 2 hours in a large vein in an area remote from the extravasation • Treatment on day 2 and 3 should start at the same hour (± 3 hours) as on day 1 	<ul style="list-style-type: none"> • Efficacy is optimal when administered within 6 hours of extravasation, although patients may still derive some benefit if received after this time² • Avoid other topical antidotes (e.g., DMSO) as they may diminish dexrazoxane efficacy • Dexrazoxane may diminish antitumor response to anthracyclines. Clinical evaluation is required to fully assess the risk and determine whether re-dosing of the chemotherapy is warranted. • Use with other chemotherapy agents is untested
Hyaluronidase	Vinca alkaloids	150 units-250 units	<ul style="list-style-type: none"> • Dosing based on the size of the affected area and can be repeated up to a total dose of 250 units • Inject the total dose subcutaneously (SQ) with a 25-gauge (G) needle using the pentagon approach <ul style="list-style-type: none"> ◦ Divide the total dose into 5 injections³ ◦ Administer across the affected area 	Avoid use with taxanes and vasopressors due to potential for delayed healing
Phentolamine	Vasopressors	5-10 mg	<ul style="list-style-type: none"> • Administer as soon as possible and within 12 hours² of vasopressor extravasation • Inject total dose SQ with a 25G needle using the pentagon approach <ul style="list-style-type: none"> ◦ Divide the total dose into 5 injections³ ◦ Administer across the affected area 	<ul style="list-style-type: none"> • Efficacy is optimal when administered within 12 hours of extravasation, although patients may still derive some benefit if received after this time² • FDA-approved with norepinephrine; off-label use with phenylephrine, dopamine, and epinephrine

¹ Providers should contact pharmacy to coordinate therapy

² If more than the recommended time has passed for when to give the antidote, it is still recommended that it be administered, although efficacy may be compromised

³ Change needle with each injection

Continued on next page

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APPENDIX F: Antidote Treatments¹ – continued

Drug (antidote)	Use With	Dose	Administration	Comments
Sodium thiosulfate	Mechlorethamine	4 % solution (1/6 molar) solution	<ul style="list-style-type: none"> • Order 2 mL of 4% solution for each 1 mg of drug • Inject the total dose SQ with a 25G needle using the pentagon approach <ul style="list-style-type: none"> ◦ Divide the total dose into 5 injections² ◦ Administer across the affected area 	Use with cisplatin and bendamustine are less substantiated
Terbutaline	Vasopressors, if phentolamine is not readily available	1 mg	<ul style="list-style-type: none"> • Volume administered will be 3-10 mL for large extravasations and 0.5-1 mL for small/distal extravasations • Inject the total dose SQ with a 25G needle or smaller using the pentagon approach <ul style="list-style-type: none"> ◦ Divide the total dose into 5 injections² ◦ Administer across the affected area 	Used off-label with sympathomimetic vasoconstrictors

¹ Providers should contact pharmacy to coordinate therapy

² Change needle with each injection

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APPENDIX G: Techniques for Administration of IV Contrast Agents

CT Procedures with Power Injected IV contrast ¹ :	Additional Instructions for Administering Contrast Agents
<ul style="list-style-type: none"> • 18G needle is the preferred catheter to utilize for PIV and not the 20G needle • 20G or 22G Diffusics™ may be used in routine protocols for difficult access patients • If utilizing power port and/or Power PICC line, ensure it is accessed with 19G Power Needle 	<ul style="list-style-type: none"> • Placement of IV catheters should be at least above patients' wrist and if possible, utilize antecubital site when using power injection • Avoid placing the IV on the hand with power injection • If unable to get access in the arms and in need of a foot access, a Radiologist order is required and the rate should be 2 mL/sec or less to minimize risk of extravasation • If patient's primary cancer is breast cancer, utilize contra-lateral side of breast cancer • IV contrast media should be administered by power injector through a flexible plastic cannula <ul style="list-style-type: none"> ◦ Use of metal needles for power injection should be avoided whenever possible • Flow rate should be appropriate for the gauge of the catheter used <ul style="list-style-type: none"> ◦ Although 22G catheters may be able to tolerate flow rates up to 5 mL/sec, a 20G or larger catheter is preferable for flow rates of 3 mL/sec or greater • An antecubital or large forearm vein is the preferred venous access site for power injection. <ul style="list-style-type: none"> ◦ If a more peripheral (e.g., hand or wrist) venipuncture site must be used, flow rates should be reduced if feasible (e.g., 1-2 mL/sec)
<p>MRI Procedures with Power Injected IV contrast¹:</p> <ul style="list-style-type: none"> • 20G is preferred catheter to utilize for PIV verses with power injection • 22G Diffusics™ may be used with power injection for difficult access patients • If utilizing power port and/or Power PICC line, ensure it is accessed with 19G Power Needle • Hand access is allowed when hand injecting only and/or using a 22G 	

¹ Pediatric access may require a smaller gauge, along with a lower rate depending on age and protocol

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SUGGESTED READINGS

- ACR Committee on Drugs and Contrast Media. (2021). *ACR manual on contrast media*. American College of Radiology.
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