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Type of Policy:	**PATIENT CARE**	Category:	**PROVISION OF CARE, TREATMENT AND SERVICES (PC)**

Title:	***Intravenous Therapy: Peripheral Line Insertion, Maintenance, Discontinuation, and Management of Complications***	Policy #:	**2059**
		Replaces #:	4222, 4280, 4718-6168, 4718-6172, 5725-0701, 5280
Page:	1 of 8	Developed By:	Infection Prevention & Control, Nursing
Issue Date:	**12/19**	Approved By:	Patient Care Executive
Revision Dates:	1/22, 3/22, 5/22, 1/23		KEdmondson MSN, RN, NEA-BC

I. PURPOSE:

This policy establishes a consistent method for insertion, maintenance, and discontinuation of peripheral venous lines.

II. DEFINITION:

When used in this policy these terms have the following meanings:

A. Peripheral IV (PIV) catheter devices: Short (1/2 inch to 1¼ inch), Long (Accucath® 2.25 inches; PowerGlide® 8cm to 10 cm) and Midline (20cm). A midline catheter tip terminates in either the basilic, cephalic or brachial vein, distal to the shoulder.

B. Field starts: Insertion of an IV device outside of Orlando Health hospital facilities and settings (e.g., home health, ambulance, community physician office, community surgical or urgent care, etc.).

C. Neutral valve: A neutral displacement connector used as an access port on intravenous (IV) tubing.

D. Vesicant: Agent capable of causing injury when it escapes into surrounding tissue.

E. Nonvesicant: Agent that does not cause tissue damage or sloughing of tissue if infiltrated.

F. Non-cytoxic medication: Any non-chemotherapeutic or non-radioactive medication.

G. Phlebitis: Inflammation of the vein (includes pain, tenderness, erythema, warmth, swelling, indurations or purulence).

H. Infiltrate: The inadvertent administration of NONVESICANT medication or solution into the surrounding tissue.

I. Extravasation: The inadvertent administration of VESICANT medication or solution into the surrounding tissue.

J. Tissue injury: Skin discoloration (redness/purple), blistering, or partial/full thickness skin loss.

K. Alcohol impregnated protective cap or tip: An IV cap or tip (e.g., Curos ® Cap or Tip) that contains an inner sponge impregnated with 70% isopropyl alcohol used on IV tubing access ports (e.g. Y-sites) or end of IV tubing when disconnected from patient.

L. Lymphedema: an abnormal accumulation of protein-rich fluid in tissues with inadequate lymphatic drainage.

III. POLICY:

It is the policy of Orlando Health that:

A. A physician's order for intravenous medications, fluids, blood products, peripheral parenteral nutrition is required for initiating peripheral intravenous (PIV) access. EXCEPTION: Patient's condition warrants immediate and/or anticipated peripheral infusion therapy(s), physician's clinical judgment and discretion warrants insertion.

B. Absence of intravenous medications, fluids, blood products, peripheral parenteral nutrition is no longer in the current and/or anticipated plan of care is an indication for discontinuing peripheral intravenous (PIV) access. Before removal, contact and document the discussion with physician regarding the patient's plan of care. EXCEPTION: Patient's condition is unstable and/or warrants immediate and/or anticipated peripheral infusion therapy(s), physician's clinical judgment and discretion warrants not removing peripheral IV.

C. Blood specimen collection alone is not an indication for any peripheral IV insertion.

D. All peripheral IV catheters will be removed when insertion site is symptomatic: infection, infiltrated, extravasated, reddened, painful, etc. See Attachment C- Criteria for Management of IV Complications in Pediatrics and Adults. EXCEPTION: Vesicant drug infiltration when an antidote will be administered through the same peripheral IV catheter prior to removal. See Attachment D - Adult and Pediatric Extravasation Guidelines

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E. Prior to initiation of a peripheral IV insertion, verify that the site chosen is not being considered for shunt placement for renal patients or for Peripherally Inserted Central Catheter (PICC) line placement. If the site is being considered for shunt placement or the patient has a history of existing, lymphedema, upper extremity deep vein thrombosis (DVT) or arteriovenous (AV) fistula, an orange arm preservation wristband will be applied to the arm being preserved.
   1. Place an orange arm preservation sign above the bed of all patients being considered for arm preservation.
   2. Place an orange preservation sticker on the chart of all patients being considered for arm preservation.

F. Insertion and discontinuation of peripheral IV sites will be performed by:
   1. Registered Nurses (RN's)
   2. Licensed Practical Nurses (LPN's) who have completed the Florida State required IV Therapy course.
   3. Radiology and Nuclear Medicine Technologists, Cardiac and Vascular sonographers, and Emergency Department Paramedics, who have demonstrated and maintained competency.
   4. Certified Phlebotomists who have demonstrated and maintained competency. .
   5. Respiratory therapists working in or training for Free Standing Emergency Department.

G. Nursing Assistants and Medical Assistants can remove a peripheral IV lock after instruction and demonstration of competency.

H. Peripheral IV lines will only be used for continuous vasoactive medication administration during a period of cardiovascular collapse while central venous access is being obtained.

I. The use of peripheral IV sites to administer hypertonic solutions shall be avoided if, or until other central IV access options are available.

J. Peripheral IV insertions utilizing ultrasound and or Modified Seldinger Technique will only be attempted by a trained RN, trained (ED) Paramedic (PMD) or Medical Doctor (MD), who has demonstrated and maintained annual competency with this skill.

K. An assessment will be completed upon admission for appropriate type of vascular access [(e.g., peripheral versus central) (See Attachment A)]. If the duration of IV therapy will likely exceed six days and/or type of infusion/medication indicated central infusion, contact the physician for consultation of Vascular Access Nurse to assess and recommend appropriate IV device for insertion.

IV. PROCEDURE:

A. Insertion:
   1. Adult and Pediatric Patients: Prepare the site with 2% Chlorhexidine/alcohol product (ChloraPrep®). If patient is allergic to chlorhexidine, an alcohol/povidone iodine product will be used. Allow to air dry completely prior to insertion.
   2. Injectable Lidocaine (plain or buffered) or topical anesthetic agent will be used for insertion procedure with physician order.
   3. Adult Patients: Sites other than the upper extremities require a physician order.
   4. Pediatric and Newborn Patients: Sites include scalp (exception: child with ventriculoperitoneal shunt) and all four extremities.
   5. Precautions:

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a. Areas of flexion (e.g., wrist and antecubital fossa), existing phlebitis, bruises, previous areas of infiltration, shall be avoided.
b. Pharmacy will identify hypertonic solutions, especially those greater than 900 mOsm/liter, that are more likely to cause adverse effects when administered via a peripheral site. The nurse and or prescriber will be consulted to consider a central line. If a central line cannot be used, peripheral site must be assessed daily for necessity of rotation of site.

B. Insertion attempts:
1. If unable to gain access after a maximum of two attempts, a colleague with the highest proficiency for subsequent attempts to gain access will be consulted. If unable to gain peripheral IV access after two additional attempts, or one attempt for a mastectomy arm, consult with Vascular Access Team (VAT) Registered Nurse, Rapid Response Team (RRT) RN and/or physician for other options.
2. For patients with mastectomy with or without lymph node biopsy and/or node dissection and no presence of lymphedema and/or infection:
a. Unilateral mastectomy: Use of the non-mastectomy arm is preferred. May use mastectomy arm if non-mastectomy arm cannot be used.
b. Bilateral mastectomy: May use the mastectomy arm with the least number of lymph node dissection if possible. Discuss with patient, surgeon and/or review surgical record, if available, for extent of surgical lymph node dissection and removal.
c. If a mastectomy arm with lymph node biopsy and/or dissection arm is to be used, a colleague with the highest proficiency for initial attempt to gain access will be consulted. If unable to gain peripheral IV access after one attempt, consult with Vascular Access Team (VAT) Registered Nurse, Rapid Response Team (RRT) RN and/or physician for other options.
3. Adult and Pediatric - If the physician recommends further attempts to obtain peripheral access:
a. A visual assessment of the patient must be performed by a physician or resident to determine if there is a viable peripheral venous site.
b. The physician will consult for central line access or attempt the peripheral IV start.
4. Documentation in the medical record must include number of attempts with corresponding sites attempted and the name of clinician.

C. IV dressings and dressing changes:
1. Sterile, occlusive transparent dressing is used unless otherwise ordered by a physician, or as clinically indicated.
2. Adult: occlusive transparent dressings are changed every seven (7) days, when IV site is changed or when dressing integrity is compromised. If the integrity of the dressing is compromised by moisture, drainage, blood or no longer occlusive at the insertion site, the entire dressing must be changed.
3. Non-occlusive dressings (e.g., tape and gauze) are to be changed every 24 hours or when not pristine.
4. Adult: All peripheral IVs must be labeled with gauge of catheter, date inserted, and initials of clinician.

D. Adult peripheral IV site assessment and change:

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1. IV sites are assessed at least every four hours and/or more frequently as determined by the RN and as clinically indicated.
2. No blood pressures or IV starts in the arm with a mid-line or power injectable extended-dwell catheter.
3. Sites are changed when complications are observed (not patent, unable to flush or has signs or symptoms of edema, redness or pain).
4. Extravasations/infiltrations of specified vesicants shall be managed according to Chemotherapy Policy or Phentolamine mesylate (Regitine®) guidelines (*Attachment D*).
5. The nurse will take steps to assess the patency of the IV catheter (edema, pain, redness, and difficulty flushing) prior to and during administration of IV solutions and medications. The catheter must not be forcibly flushed.
6. Peripheral IV sites that are from the field (inserted outside any hospital facility) are to be changed within 12 hours of admission. If the patient is unstable, discontinue original site only after another site has been started. Field starts are not to be used for any blood draws to minimize potential complications or infections.
7. Outpatients obtaining multiple scans on the same day at different Orlando Health locations can retain the IV catheter until all procedures are completed, then the IV catheter is discontinued/removed before the patient is discharged home.
8. Peripheral IV catheters inserted by Radiology or Nuclear Medicine Technologist, Cardiac and Vascular sonographers, or Nurses must be discontinued/removed after the all the procedures are completed within the same business day for outpatients, who are discharged to home and will remain in place for inpatients unless signs of infiltration, pain, redness, leaking, etc.
9. Peripheral IV sites obtained by nursing and utilized by radiology technologist for power injection must be assessed for patency prior to use.
10. Peripheral IV sites utilized for vasoactive infusions must be observed at least every two (2) hours and findings documented.
11. All IV complications will be assessed, documented, and treated according to the attached recommendations for complication management for adults (*Attachment F*).
12. Consultation with VAT RNs is available for assistance and guidance to manage complications.
13. Consultation with pharmacy department is available for other vesicant infiltrations management and recommendations for treatment.
14. Contact prescriber for physician orders as necessary to manage complications.
15. Adult extravasations of specified vesicants shall be managed according to the Extravasations Guidelines (*Attachment D*)**.**
16. Document interventions in the patient's medical record.
17. Complete an incident report for all adult IV complications.
18. All peripheral IV devices will be removed prior to discharge unless a physician order states to discharge patient with IV device. If any patient leaves the hospital prior to the IV catheter being discontinued / /removed, contact the patient and instruct them to come back to the hospital to remove it. If all efforts to contact the patient or the patient refuse to return, a local law enforcement agency (e.g., Orlando Police Department, Sherriff, etc.) will need to intervene to facilitate the patient's return in order to remove the IV catheter.

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E. Pediatric and Newborn peripheral IV sites assessment and change (excluding NICU):
   a. Pediatric and newborn sites are assessed at least every two hours and/or more frequently as determined by the RN and as clinically indicated.
   b. Assess infusing PIV using a standardized assessment called "Touch, Look, Compare" or "TLC"
      a. Touch: PIV must be touched and validated as soft, warm, and dry
      b. Look: PIV site must be seen as uncovered, dry, and visible
      c. Compare: PIV site must be the same size as the other extremity
   c. The nurse will take steps to assess patency of the IV catheter prior to administration of medications and solutions. The IV catheter must not be forcibly flushed.
   d. Sites are changed when complications are observed (not patent, unable to flush or has signs or symptoms of edema, redness or pain).
   e. If Peripheral IV Infiltration or Extravasation (PIVIE) is suspected, charge nurse and provider are to be notified for ongoing injury assessment and adequate treatment. The charge nurse or provider will go to the bedside real-time for bedside assessment.
   f. Provider assists in starting appropriate treatment and management according to The Criteria for Management of IV Complications in Pediatrics (*Attachment C*).
   g. Pediatric extravasations of specified vesicants shall be managed according to the Pediatric Extravasations Guidelines (*Attachment D*).
   h. Document interventions in the patient's comprehensive health record.
   i. Consultation with VAT RNs is available for assistance and guidance to manage complications. Consultation with pharmacy department is available for other infiltrate or extravasate management and recommendations for treatment.
   j. For any PIVIE, a standardized measurement-based assessment tool is to be used to calculate the percent affected using the maximum dimension of swelling and the area of the affected limb or head.
      a. X is the measured maximum dimension (length or width) of swelling
      b. Y is the measured tip of the longest finger to anterior/inferior skin fold of axilla with arm as straight as possible or tip of toes to anterior/inferior skin fold of groin with leg and foot as straight as possible. For head, use head circumference.
         Exception: For limb deletions, malformations or contractures, use an estimated length measurement of the extremity
   k. Documentation of a PIVIE must be continued every shift and PRN (e.g., pain, fever, drainage) until healed.
   l. Complete an incident report for all pediatric IV complications.
   m. Patient and family education should be provided by the nurse every day that the line is present. Education includes the importance of "TLC" and when to notify the nurse if any changes to the PIV are recognized by the patient or family.
   n. All peripheral IV devices will be removed prior to discharge. If any patient leaves the hospital prior to the IV catheter being discontinued/removed, contact the patient or patient's representative and instruct them to come back to the hospital to remove it. If all efforts to contact the patient/patient's representative or the patient/patient's representative refuses to return, a local law enforcement agency (e.g., Orlando Police

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Department, Sherriff, etc.) will need to intervene to facilitate the patient's return in order to remove the IV catheter.

F. Access ports on IV tubing:
   1. Before accessing any port of entry:
      a. Wash hands and don clean gloves
      b. Clean IV injection entry ports using either:
         1) Alcohol impregnated protective cap (Curos ® cap) having initial contact on IV tubing port access for at least 5 minutes or
         2) 70% isopropyl alcohol, scrub for 15 seconds and let air dry for 15 seconds.
   2. All IV injection entry ports must have a neutral valve (exception: surgical areas) and do not need to be clamped when not in use.
   3. Do not use sterile entry port covers (red caps) on the end of the neutral valve since this will cause reflux of blood into the catheter.
   4. Neutral valves will be used on any entry port that has the potential for backflow of blood. If there is visible blood in the valve, the valve must be replaced.
   5. Alcohol impregnated IV tips (Curos®) are used only on any IV tubing ends (primary and/or secondary) not connected to the patient. Replace the tip after each use.

G. Irrigation/Flush:
   a. Adult peripheral IV lines with IV locks are flushed with 3 – 5mL of 0.9% Sodium Chloride (NaCL) for injection (normal saline).
   b. Pediatric peripheral IV lines with IV locks are flushed with 1 – 3mL of 0.9% NaCL for injection (normal saline).
   c. Newborn peripheral IV lines with IV locks are flushed with 1-3mL of sterile saline.
   d. IV locks are flushed following the administration of all medications and at least once a shift if no medications are administered.

H. Container and Tubing Changes:
   a. Prior to using any newly inserted PIV or midline, all previous IV tubing must be discarded and new IV tubing (primary and secondary) must be used for connection to the new PIV. EXCEPTION: where the infusions cannot be interrupted for IV tubing change.
   b. IV containers (bags, bottles or syringes) are changed every 24 hours. (Exception: PCA).
   c. IV bags are dated and timed when initiated and tubing labeled with change date.
   d. Filters and small bore extension tubing are changed with main tubing.
   e. Any IV tubing (primary or secondary attached to a primary) that is not continuously connected to the patient (disconnected), must be changed within 24 hours.
   f. Tubing and neutral displacement valve changes are performed as described in Table 1. (*Attachment B*).
   g. Home Health Exception: Per Home Health standard of practice procedure manual.

I. Infiltration/Extravasation:
   a. Chemotherapy: stop infusion, notify physician and follow management of Chemotherapy Infiltration Protocol as ordered.

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b. Non-chemotherapy in adults: *Attachment D* provides guidance for initial management. Contact prescriber for orders as necessary.
c. Pediatric IV complications of vasopressors and chemotherapy must be managed according to policy.

V. DOCUMENTATION:

A. As appropriate in the comprehensive health record.
B. Number of attempts to start peripheral IV and sites attempted in the patient's comprehensive health record.
C. Infiltrations/extravasations are documented as incident reports (with Pharmacy designated as a secondary department).
D. Infiltrations/extravasations documented as Event Reports will also be reported via the Adverse Drug Event Reporting Program.

VI. REFERENCES:

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VII. ATTACHMENTS:

A. Criteria for Insertion and Necessity of Need, one page.
B. Tubing Change Schedule, one page.
C. Criteria for Management of IV Complications in Pediatrics, one page.
D. Adults and Pediatrics Extravasations Management Guidelines, one page.
E. Adult and Pediatric Extravasations Management Procedure Using Hyaluronidase, one page.
F. Guidelines for Management of IV Complications in Adults (Excluding Chemotherapy), three pages.

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Attachment A-Criteria for Peripheral IV Device Insertion and Necessity of Need

Peripheral IV Devices: Infusion of medication and fluids that do not meet these requirements must be infused through a central IV catheter device.

1. Short IV Catheters (1/2 inch, ¾ inch, 1 inch, 1 ¼ inch)

- **Infusion therapy less than 5 days (pediatrics) or 7 days (adults)**
- **Infusion therapies that do not require central line infusion: pH within 3 – 5 and osmolality < 600mOsm/L.**
    - **Note: Infusion therapies requiring central line infusions include:**
        - Continuous vesicant therapy
        - Total parenteral nutrition (with dextrose > 10% or osmolarity > 900mOsm/L; TPN Policy #2800)
        - Infusates with pH < 5 or > 9 Concentrated electrolytes (Electrolyte Policy #5070)
        - Infusates with an osmolarity > 900mOsm/L.

2. Long IV Catheters (i.e. Accucath® 2.25 inch) (PowerGlide® 8cm and 10cm)

3. Midline IV Catheters (20cm)

- **Same as above and infusion therapy duration anticipated 1 to 4 weeks**
- **Short IV catheter lengths are insufficient to access to peripheral veins.**

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Attachment B-Tubing Change Schedule

Attachment B – IV Tubing and Neutral Displacement Valve Change Schedule

Device	Every 12 hours	Every 24 hours	Every 96 hours
IV Tubing	Propofol (Diprivan**)** Clevidipine butyrate (Cleviprex)	Primary or Secondary that is disconnected from the patient (does not remain continuously connected to the patient).	Primary or Secondary that is continuously connected to the patient. Syringe pump infusions that is continuously connected to the patient.
Neutral Displacement Valve	Propofol (Diprivan**)** Clevidipine butyrate (Cleviprex)		Or more often if visible signs of blood and immediately prior to CVL blood culture collection.

- All and any IV tubing (primary and secondary) is changed prior to connecting a any newly inserted PIV and/or midline. EXEPTION: infusions that cannot be interrupted.
-
- Blood tubing is to be changed after every 2 units (exception Massive Transfusion Protocol use).
- Chemotherapy tubing (Chemotherapy tubing is attached by Pharmacy and is not changed or removed. Tubing is disposed of with IV bag after infusion completed.)
- Change Neutral valve immediately prior to blood culture collection

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Attachment C-Criteria for Management of IV Complications in Pediatrics and Adults

	Phlebitis Management	
Grade	**Criteria**	**Intervention**
0	No Symptoms	Routine IV site care & use
1	Erythema at access site *with or without* pain	Observe more frequently & document until erythema resolved ~ instruct patient and family to notify you with worsening redness or pain
2	PAIN at site with erythema AND/OR edema	Stop IV Fluids/Medications, remove catheter, observe site with routine assessments, and document until resolved.
3	Pain at access site with erythema AND/OR edema, streak formation	Stop IV Fluids/Medications, remove catheter, elevate, notify provider, observe site frequently, avoid pressure to site & document assessments until resolved
4	Pain at access site with erythema AND/OR edema, streak formation or purulent drainage	Stop IV Fluids/Medications, remove catheter, elevate, notify provider, obtain order for treatment if indicated , observe site with routine assessments, avoid pressure to site & document assessments until resolved

	Infiltration Management	
Grade	**Criteria**	**Intervention**
0	No symptoms	Routine IV care & use.
1	Skin blanched Edema less than 1 inch in any direction Cool to touch With or without pain	Stop IV Fluids/Medications, identify type of fluid/medication infusing, remove IV catheter unless obvious site signs of extravasation, avoid pressure to site, and observe site frequently & document assessments until resolved.
2	Skin blanched Edema of 1- 6 inches in any direction Cool to touch With or without pain.	Stop IV Fluids/Medications, identify type of fluid/medication infusing, remove IV catheter unless obvious site signs of extravasation, notify provider for further orders, avoid pressure to site, and observe site frequently & document assessments until resolved.
3	Skin blanched, translucent Gross edema greater > 6 inches in any direction Cool to touch Mild to moderate pain Possible numbness.	Stop IV Fluids/Medications, identify type of fluid/medication infusing, remove IV catheter unless obvious site signs of extravasation, identify type of fluid/med infusing, notify provider for further orders, avoid pressure to site, and observe site frequently. Document site assessments; signs & sensation, and movement until resolved**.**
4	Skin blanched translucent, Skin tight, leaking, Discolored, bruised, swollen Gross edema, > 6 inches in any direction Deep pitting edema, circulatory impairment Moderate to severe pain	Stop IV Fluids/Medications, identify type of fluid/medication infusing, remove IV catheter unless obvious site signs of extravasation, notify provider, and elevate extremity x48 hrs. avoid pressure to site, observe site frequently. Document site assessments, signs & sensation, and movement until resolved. Notify provider and monitor frequently. Consult with provider and obtain orders for treatment of extravasation.

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Title: ***INTRAVENOUS THERAPY: PERIPHERAL LINE INSERTION, MAINTENANCE, AND DISCONTINUATION*** Policy #: **2059**

Attachment D– Adults and Pediatric Extravasations Management Guidelines

Adult and Pediatric Extravasations Guidelines

Exceptions:

1. For chemotherapy extravasations, refer to Patient Care Policy #5020.
2. For vasopressor extravasations refer to Patient Care Policy #5200.

Common Vesicant List for Hyaluronidase

Hyaluronidase		
Antibiotics/Antivirals	**Hyperosmolar Agents/Electrolytes**	**Miscellaneous**
Acyclovir Amphotericin B Cefoxitin Chloramephenicol Fluoroquinolones Foscarnet Ganciclovir Gentamicin Nafcillin Oxacillin Penicillin Vancomycin	Calcium gluconate Calcium chloride Dextrose ≥10% Magnesium sulfate Mannitol Potassium chloride Sodium bicarbonate TPN - Total Parenteral Nutrition Radiographic contrast media	Allopurinol Aminophylline Amiodarone Blood Diazepam Digoxin Fat emulsion ~ Lipids/Lipid based solution Human immunoglobulin (IVIG) Phenytoin (Dilantin) Promethazine (Phenergan) Propofol (Diprivan) *Selected chemotherapy agents

* See Chemotherapy Policy and Procedure (#5020) for specific recommendations.

Procedure:

1. Assess site for complications. Remove peripheral IV catheter unless immediately needed for antidote administration based on presence of tissue injury (e.g. phentolamine administration for vasoactive medications).
2. Notify provider according of site assessment and or any other concerns.
3. If ordered, administer antidote according to the type of vesicant and evidence of tissue injury [(redness/purplish discoloration, blistering, partial/full thickness skin loss) (refer to policy # 5020 for chemotherapy or # 5200 for vasoactive medications)].Will refer Provider to utilize Pediatric IV Infiltration/ Extravasations Order Set within electronic information system or to reference Lexicomp for further information.
4. Consider consulting Wound Management for follow-up for all peripheral extravasations with suspected and actual and tissue injuries.
5. Document ongoing monitoring of IV site signs and symptoms, including perfusion, sensation, and circulation until resolved.

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Title:	***INTRAVENOUS THERAPY: PERIPHERAL LINE INSERTION, MAINTENANCE, AND DISCONTINUATION***	Policy #:	**2059**
	Attachment E – Adult and Pediatric Extravasations Management Procedure Using Hyaluronidase		

Extravasation Management Procedure Using Hyaluronidase
* for use with Physician order based on severity of injury of extravasation

Note: Hyaluronidase is **not** indicated for treatment of vasoactive agents (e.g. dopamine, dobutamine, and epinephrine).

A. If catheter has been removed:

- Cleanse site- Drip povidone-iodine onto infiltrate site (unless allergy or lack of skin integrity) and allow to dry. Cleanse with sterile water.
- Use tuberculin syringe/25 g needle to inject 1mL (150units/mL) as five separate 0.2mL subcutaneous injections around the periphery of the extravasation site.
- Use a separate syringe and needle for each injection.

Or

B. If catheter is still in place:

- Pull back the catheter 1-2mm, removing from vein, but leaving in subcutaneous tissue
- Inject 1ml of hyaluronidase (150units/mL) into the subcutaneous tissue via the catheter, and then remove the catheter.
- Remove catheter, cleanse the site with betadine and allow to dry, then rinse and dress site.

C. Cleanse with normal saline and apply topical Hydrogel (e.g., Duoderm gel) every 12 hours to extravasation site.

D. Cover with non-adherent dressing (e.g., Mepilex Lite) dressing stretch net bandage

E. Continue to monitor site for motion, sensation, circulation, tissue integrity until re-epithelialized and document assessments.

F. If increased redness, swelling, induration or purulent drainage is noted at infiltrated site, notify physician to obtain order for antibiotic ointment in place of topical Hydrogel (i.e. Duoderm gel).

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Attachment F - Guidelines for Management of IV Complications in Adults (Excluding Chemotherapy)

For all infiltrations/extravasations:

- Stop infusion immediately
- Elevate affected extremity
- Contact physician

Vasoactive Agents (*See Patient Care Policy #5200 for additional information regarding phentolamine administration)

Drug	Non Pharmacological Management	Pharmacologic Intervention	Alternative Treatments
Dobutamine (Vesicant)	• Do NOT remove IV catheter • Elevate arm • Do NOT cool area	• Phentolamine *	• Topical nitroglycerin 2% 1 –inch strip applied to site of ischemia; may redose every 8 hours as necessary
Dopamine (Vesicant)	• Do NOT remove IV catheter • Elevate arm • Do NOT cool area	• Phentolamine *	• Topical nitroglycerin 2% 1 –inch strip applied to site of ischemia; may redose every 8 hours as necessary • Terbutaline 1mg diluted in 10 mL of NS subcutaneously in 5 divided doses around the area
Epinephrine (Vesicant)	• Do NOT remove IV catheter • Elevate arm • Do NOT cool area	• Phentolamine *	• Topical nitroglycerin 2% 1 –inch strip applied to site of ischemia; may redose every 8 hours as necessary
Norepinephrine (Vesicant)	• Do NOT remove IV catheter • Elevate arm • Do NOT cool area	• Phentolamine *	• Topical nitroglycerin 2% 1 –inch strip applied to site of ischemia; may redose every 8 hours as necessary
Phenylephrine (Vesicant)	• Do NOT remove IV catheter • Elevate arm • Do NOT cool area	• Phentolamine *	• Topical nitroglycerin 2% 1 –inch strip applied to site of ischemia; may redose every 8 hours as necessary
Vasopressin (Vesicant)	• Do NOT remove IV catheter • Elevate arm • Do NOT cool area	• Phentolamine *	• Topical nitroglycerin 2% 1 –inch strip applied to site of ischemia; may redose every 8 hours as necessary

Osmotically Active Agents

Drug	Non Pharmacological Management	Pharmacologic Intervention	Alternative Treatments
Total Parenteral Nutrition (TPN) (Vesicant)	• Cold Compress • Elevate arm	• Hyaluronidase	• Topical nitroglycerin use reported, but tissue sloughing still occurred despite treatment with 1 inch of 2% nitroglycerin ointment
Radiographic Contrast Media (Vesicant)	• Warm OR cold compress (both have shown efficacy but no	• Often managed with non-pharmacological measures	• No specific data reported

	head to head comparisons)	• Mostly NEGATIVE results with hyaluronidase	

Osmotically Active Agents (continued)			
Drug	**Non Pharmacological Management**	**Pharmacologic Intervention**	**Alternative Treatments**
Calcium Salts – e.g. Chloride, Gluconate (Vesicant)	• Warm compress	• Hyaluronidase (should be given within 60 minutes of extravasation)	• For refractory/limb threatening extravasation, may consider sodium thiosulfate 12.5-25g IV 3 times/week
Dextrose > 10% (Vesicant)	• No specific data reported	• Hyaluronidase	• No specific data reported
Magnesium sulfate (Irritant)	• No specific data reported	• No specific data reported	• No specific data reported
Mannitol (Irritant and/or vesicant)	• Cold compress	• Often managed with non-pharmacological measures • If non-pharmacologic management insufficient, hyaluronidase	• No specific data reported
Potassium salts (Irritant and/or vesicant)	• Warm compress	• Often managed with non-pharmacological measures • If non-pharmacologic management insufficient, hyaluronidase	• No specific data reported
Sodium bicarbonate (Vesicant)	• Warm/dry compress	• Often managed with non-pharmacological measures • If non-pharmacologic management insufficient, hyaluronidase	• No specific data reported
Sodium chloride, hypertonic: > 0.9% (Irritant and/or vesicant)	• Warm/dry compress	• Often managed with non-pharmacological measures • If non-pharmacologic management insufficient, hyaluronidase	• No specific data reported

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Acidic and Alkaline Agents

Drug	Non Pharmacological Management	Pharmacologic Intervention	Alternative Treatments
Amiodarone (Irritant)	• Cold compress	• Only 1 case report available, but per case report, manufacturer recommended topical steroid (e.g., hydrocortisone 1% cream)	• No specific data reported
Diazepam (Vesicant)	• Warm compress	• No specific data reported	• No specific data reported
Phenytoin (Vesicant)	• Warm compress • Elevate arm	• Hyaluronidase	• Use of topical nitroglycerin reported, but tissue sloughing still occurred despite treatment
Promethazine (Vesicant)	• No specific data reported	• No specific data reported	• No specific data reported

Anti-infectives

Drug	Non Pharmacological Management	Pharmacologic Intervention	Alternative Treatments
Acyclovir	• Cold compress	• No specific data reported	• No specific data reported
Amphotericin B	• Cold compress x 24 hours followed by warm compress x 24 hours	• No specific data reported	• No specific data reported
Nafcillin	• Cold compress	• Often managed with non-pharmacological measures • If non-pharmacologic management insufficient, hyaluronidase	• No specific data reported
Vancomycin	• No specific data available	• No specific data reported	• No specific data reported

Exemptions:

1. For chemotherapy extravasations, refer to Patient Care Policy #5020.
2. For vasoactive/vasopressor extravasations, refer to Patient Care Policy #5200.