

CHEO Medical Directive

1. Name of the Medical Directive: Central Venous Access Management by Vascular Access Team

Approval Status (Dates)

Version/Revision	MDC Submission	MDC Approval
New	August 2019	August 2019
Revision	June 2025	September 2025

Effective Date: September 2025

Directive Number: 2200

Renewal Frequency: ☒ 3 years ☐ Other (may not exceed 3 years)

2. Purpose Statement

- This medical directive authorizes the Vascular Access Team (VAT) to order and administer specific medications and diagnostic procedures required for the insertion, verification, maintenance, and troubleshooting of central venous access devices (CVADs).

3. Personnel Authorized to Implement the Medical Directive

- Nurses assigned to the Vascular Access Team (VAT) who have completed training and demonstrate knowledge, skills and judgement related to the procedure prior to the applying the medical directive.

4. Patient Population and Indications

- Patients requiring peripherally inserted central catheter (PICC) insertion and verification of placement
- Inpatients and outpatients followed by CHEO Physicians with central venous access devices (CVAD) requiring troubleshooting/management of complications related to a CVAD

5. Contraindications

- Patient/family refusing intervention.
- Sensitivity or allergy to lidocaine, other amide("caine") local anesthetics or alteplase
- Patients scheduled for cardiovascular surgery within the next month, or who are within two months after such surgery
- Nurses assigned to VAT must be aware of the risk-benefit of imaging using ionizing radiation and will limit the number of studies/number of views to those medically necessary

6. Description of the Procedure

Intervention	Procedure Summary
PICC Insertion	<ol style="list-style-type: none"> Administer Lidocaine 1% Buffered SC (1 mL; max 4 mL / 4.5 mg/kg/dose). <ol style="list-style-type: none"> The provider will choose an appropriate site and will clean the skin, as per standard procedure. Using a 30 gauge, ½ inch needle 1% buffered lidocaine will be slowly injected subcutaneously while slowly advancing the needle along the side of the intended vein). Slight tissue distension may occur. After needle removal wait at least 60 seconds to allow the anesthetic to take effect. Additional time, or gentle rubbing, may be needed if the lidocaine wheal obscures the site. Confirm PICC tip placement: <ol style="list-style-type: none"> Order and perform Sherlock ECG for 3CG PICC lines when P-wave present/identifiable or; Order chest X-ray (1 view) when ECG contraindicated or unclear. Review radiology report within 24 hrs to determine correct PICC tip

	<p>placement before use.</p> <p>4) Lock lines with 4% KiteLock (Hematology/Oncology and long term TPN only) or Heparin 100 units/ml</p> <p>a. 4% KiteLock (hematology/oncology, TPN, long term access) for:</p> <ul style="list-style-type: none"> i. PICC 1.9 Fr. Single Lumen: edetate (KiteLock) 4% catheter lock solution 0.5 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). ii. PICC 3 Fr. Single Lumen: edetate (KiteLock) 4% catheter lock solution 1 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). iii. PICC 4 - 5 Fr. Single Lumen: edetate (KiteLock) 4% catheter lock solution 2 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). iv. PICC 2.6 Fr. Double Lumen: edetate (KiteLock) 4% catheter lock solution 1 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). v. PICC 4 - 5 Fr. Double Lumen: edetate (KiteLock) 4% catheter lock solution 2 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). <p>b. Heparin 100 units/mL</p> <ul style="list-style-type: none"> i. PICC 1.2 Fr.: heparin in 0.45% NaCl 0.5 units/mL infusion 1 mL/hr, Intravenous, Continuous. ii. PICC 1.9 Fr. Single Lumen: heparin 100 units/mL lock flush solution (syringe) 1 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours).. iii. PICC 1.9 Fr. Double Lumen: DO NOT heparin - use infusion to maintain patency iv. PICC 2.6 Fr. Double Lumen: heparin 100 units/mL lock flush solution (syringe) 1 mL, intracatheter, 1 mL q24h or after each use (MAX: 2 instillations per 24 hours). v. PICC 3 Fr. Single Lumen: heparin 100 units/mL lock flush solution (syringe) 2 mL, q24h or after each use (MAX: 2 instillations per 24 hours). vi. PICC 4-5 Fr.: Single or Double Lumen: heparin 100 units/mL lock flush solution (syringe) 2 mL, q24h or after each use (MAX: 2 instillations per 24 hours).
CVAD Troubleshooting – suspected malposition or complication	<ul style="list-style-type: none"> 1) Order Chest X-ray, 1 view, to verify placement <ul style="list-style-type: none"> a. Review prior imaging results, if available b. Review imaging and consult Radiologist if placement uncertain. 2) Administer Alteplase. May repeat 2 doses per encounter (max 2 administrations/week). <ul style="list-style-type: none"> a. Dosage of 1 mg for PICC, tunneled/non-tunneled CVADs. b. Dosage of 2 mg for implanted ports.
CVAD Maintenance	<ul style="list-style-type: none"> 1) Lock unused CVAD lumens with 4%

	<p>KiteLock/Edetate(Hematology/Oncology and long term TPN only) or Heparin 100 units/ml</p> <p>a. 4% KiteLock (hematology/oncology, TPN, long term access) or;</p> <ol style="list-style-type: none"> PICC 1.9 Fr. Single Lumen: edetate (KiteLock) 4% catheter lock solution 0.5 mL, intracatheter, q24h or after each use (MAX: 2 instillations in 24 hours -). PICC 3 Fr. Single Lumen: edetate (KiteLock) 4% catheter lock solution 1 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). PICC 4 - 5 Fr. Single Lumen: edetate (KiteLock) 4% catheter lock solution 2 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). PICC 2.6 Fr. Double Lumen: edetate (KiteLock) 4% catheter lock solution 1 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). PICC 4 - 5 Fr. Double Lumen: edetate (KiteLock) 4% catheter lock solution 2 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). <p>b. Heparin 100 units/mL</p> <ol style="list-style-type: none"> PICC 1.2 Fr.: heparin in 0.45% NaCl 0.5 units/mL infusion 1 mL/hr, intravenous, continuous. PICC 1.9 Fr. Single Lumen: heparin 100 units/mL lock flush solution (syringe) 1 mL, intracatheter, q24h or after each use (MAX: 2 instillations per 24 hours). PICC 1.9 Fr. Double Lumen. DO NOT heplock - use infusion to maintain patency PICC 2.6 Fr. Double Lumen: heparin 100 units/mL lock flush solution (syringe) 1 mL, intracatheter, 1 mL q24h or after each use (MAX: 2 times/day). PICC 3Fr. Single Lumen: heparin 100 units/mL lock flush solution (syringe) 2 mL, q24h or after each use (Max: 2 instillations per 24 hours). PICC 4-5 Fr. Single or Double Lumen: heparin 100 units/mL lock flush solution (syringe) 2 mL, q24h or after each use (MAX: 2 instillations per 24 hours)
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7. Consent and Documentation

- Verbal consent will be obtained. Any refusal of interventions will be documented in the patient's electronic medical record
- Document the procedure in the appropriate section of the patient's health record:
 - Order Mode:
 - Choose Medical Directive and document No 2200 in comment field
 - Choose Ordering provider and Authorizing Provider

8. Quality Management Process

- This medical directive will be part of the Vascular Access Team orientation (education and training)
- All incidents related to the use of this medical directive will be communicated to the Director of Nursing Practice, Education & Clinical Technology and Chair of Medical Directive Committee. An event in the

Safety Reporting System (SRS) will also be logged.

- The Director of Nursing Practice, Education & Clinical Technology will address issues related to process and outcomes related to this medical directive.
- Prior to the renewal of this medical directive, an audit will be conducted to verify that the directive is being applied correctly.

9. References and Resources

- CHEO:
 - Consent Policy #005 (November 2016)
 - Patient/Client Safety Event Reporting # 354 (last revised October 2016)
 - Medical Directives Policy No OTH-1 (2017)
 - Pharmacy Parenteral Manual
 - Management of Blocked Central Venous Access Devices (revisions in progress fall 2018)
 - Heparin Order Set (*Electronic health record system*)
 - Lidocaine 1% Buffered Order Set for Peripherally Inserted Central Catheter (*Electronic health record system*)
 - 4% KiteLock Order Set
- College of Nurses of Ontario (CNO):
 - Practice Guidelines:
 - Authorizing Mechanisms (revised. November 2018)
 - Consent (updated 2017)
 - Directives (updated November 2018)
 - Practice Standards:
 - Decisions About Procedures and Authority, Updated 2018
 - Documentation, Revised 2008 (updated 2017)
 - Nurse Practitioner, Revised 2018
 - Professional Standards, Revised 2002 (updated 2015)
 - The Regulated Health Professions Act (RHPA): Scope of Practice, Controlled Acts Model (2018)
- Infusion Therapy Standard of Practice 2016, Policies and Procedures for Infusion Nursing of the Pediatric Patients
- Cynthia A. Frazer, MS, RN , March/April 2017, Heparin- Induced Thrombocytopenia, Journal of Infusion Nursing, Volume 40, page 98
- Dia Byrne, MSN, RN, March/April 2018, Selection of single versus double lumen PICC and influence on Alteplase use, Journal of Infusion Nursing, Volume 41, page 118
- College of Physicians and Surgeons of Ontario: Delegation of Controlled Acts 2012
- Jull Jones, MD, Improving Quality of Chest Radiographs After Placement of Peripherally Inserted Central Catheter, November-December 2017, Journal of Infusion Nursing, Volume 40, page 359

10. Contact Information

Area of Practice: Vascular Access Team

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