TITLE: Insertion of Peripherally Inserted Central Catheter (PICC) line
NUMBER: CC 80-090

Section: Parenteral/Line Care
Source: Interventional Radiology

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Scope of Practice – CPSNS & CRNNS

THIS IS A DELEGATED MEDICAL FUNCTION FOR REGISTERED NURSES THAT REQUIRES ASSESSMENT OF COMPETENCY PRIOR TO PERFORMING

POLICY

1. Registered Nurses in Diagnostic Imaging at the QEII site - Capital Health, may insert Peripherally Inserted Central Catheters (PICC) lines if the following criteria have been met:

   1.1. successful completion of the Basic Self-Study PICC Insertion Program self-module and inclusive post-tests -

   Note - The following sections of the self-study module may be omitted:
   - Section 1 - Reimbursement Info for PICC (pgs 19-30)
   - Section 2 - Measurement for PICC (pgs 44–45)
   - Section 3 - Insertion Procedure (pgs 54–57)
   - Radiological Tips (pgs 59–61)
   - Section 4 - Catheter Repair (pg 70)

   1.2. establishment of an adequate knowledge base about the procedure as demonstrated by successfully answering any questions posed by the interventional radiologist concerning the underlying theory and practice of PICC insertions;
1.3. successful insertion of a minimum of three PICC lines under the supervision of an interventional radiologist.
1.4. recent working experience in Diagnostic Imaging at the QEII for a minimum of six (6) months prior to inserting PICC lines

2. Competency is to be reassessed annually and will consist of successfully meeting the requirements of Policy Statement 1.2.

3. A physician’s order is required before a PICC line can be inserted by a qualified RN.

4. Catheter position is to be confirmed under fluoroscopy by the radiologist. Fluoroscopy is to be completed under the guidance of a Radiology Technologist or an Interventional Radiologist.

5. If one reposition attempt is not successful, the interventional radiologist is to be consulted about the catheter repositioning. A radiologist must be available for consultation at all times throughout the PICC insertion procedure.

   Note: If a radiologist is not readily available throughout the entire procedure, then the nurse is not to initiate or perform any PICC insertions.

6. The final decision to proceed is to be made by the PICC nurse who performs the assessment and/or procedure

Criteria for PICC Placement

7. Prior to insertion of a PICC line, the patient is to be assessed by the PICC-certified RN to ensure the following criteria are met:

   7.1. Must have viable basilic or cephalic veins as determined by the PICC-certified RN.

   7.2. No history of surgery and/or injury to desired arm or shoulder that would result in large vein damage.

   7.3. No history of axillary, subclavian and/or SVC occlusion or thrombus, unless patency has been established by diagnostic testing.

   7.4. No open wounds or skin disorders at or near desired insertion site.

   7.5. No history of failed PICC insertions in the past that suggest anatomical abnormalities that would make another attempt futile unless patency has been determined by diagnostic testing (i.e. venogram, ultrasound).

   7.6. No AV graft in desired arm nor mastectomy on that side of the body.
GUIDING PRINCIPLES AND VALUES

1. The indication for the use of the PICC line includes, but is not limited to, the following:
   1.1. the need for reliable venous access,
   1.2. total parenteral nutrition (TPN),
   1.3. chemotherapy,
   1.4. long-term drug and antibiotic therapies,
   1.5. blood transfusion,
   1.6. blood draw,
   1.7. pain management and hydration.

2. Although the length of dwell can be from days to years, it is generally used in situations where access is needed for fourteen (14) days or longer.

DEFINITIONS

**Peripherally inserted central catheter (PICC)** - is a venous access device that is inserted by accessing one of the large veins of the upper extremities, usually in the area of the basilic vein, then advancing a small, flexible catheter until the tip is in the superior vena cava (SVC), which provides central venous access.

EQUIPMENT

- PICC line set
- 2-10cc syringes
- 1-control syringe
- 1-mepore dressing
- 1- 2-0 ethilon suture
- Heparinized saline 1000u/500ml
- 1-image cover
- 1-sterile gel
- 1-sterile ultrasound probe cover
- 1-sterile tourniquet
- Sterile gown
- Sterile drapes
- Sterile gloves
- 1-angio tray
- 2% xylocaine local anesthesia
- 1-18 gauge needle
- 1-25 gauge needle
- 1-#11 surgical blade
- Betadine
PROCEDURE

INSERTION OF PICC

1. Ensure that the radiologist is available and accessible throughout the entire procedure.
   1.1. If it is evident that a radiologist will not be readily available for consultation at any point throughout the procedure, do not proceed.
   1.2. Be prepared to consult the radiologist immediately if at any point throughout the procedure, a problem or complication occurs.

2. Check the physician’s order requesting PICC placement.

3. Assess if a PICC is the appropriate access device to meet the patient’s needs and if patient is a candidate (assess patency of arm veins under ultrasound).

4. Validate:
   4.1. Correct patient identity
   4.2. Agreement on the procedure
   4.3. Correct patient position

5. Gather all the supplies and equipment needed.

6. Place the patient in a supine position, extending the arm away from the body.

7. Don mask.

8. Scrub hands and don sterile gloves and gown

9. Establish sterile field and have another staff drop or pass any additional supplies (if applicable), on to field.

10. Arrange supplies on sterile field.

11. Place sterile drape under arm.

12. Prep selected site with betadine solution. Allow to dry. Prep site from distal portion of arm to below the antecubital area. Prep around the entire circumference of arm.

13. Drape patient’s arm with sterile drapes, leaving area of intended insertion exposed. Place sterile tourniquet and tighten to assess vein under ultrasound.

14. Inject 2% lidocaine without epinephrine intradermally at intended insertion site using a small gauge needle (25 gauge).

15. Access desired vein with the appropriate needle using ultrasound.

16. Place the guide wire.
17. Gently advance the guide wire through the needle/IV catheter into vessel. At no time should the wire be forced if resistance is met. Remove the needle/IV catheter, leaving the wire in place, with 4-5” of the wire exposed. Release the tourniquet at this point.

18. Enlarge the insertion site using the #11 blade to allow the introducer to easily pass through the skin.

19. Gently insert the dilator and peel apart introducer over the guide wire, making sure the guide wire is always visible at the proximal end of the introducer. If unable to advance the dilator/introducer together, first use the dilator to enlarge the area before the introducer is added.

20. Place the wire in the desired position under fluoroscopy. Remove and measure the wire then cut the catheter to the desired length (less 3 cm).

21. Remove the dilator and guide wire. Apply the non-dominant thumb over the opening of the introducer to reduce blood spillage.

22. Insert the tip of the catheter into the introducer; gently advance approximately 8-10 inches.

23. Instruct the patient turn his/her head toward the cannulated arm and tuck chin onto clavicle; gently advance the rest of the catheter into the SVC, as determined under fluoroscopy. Encourage the patient to hold his/her breath or use the valsalva maneuver to encourage the catheter downward into the SVC.

24. Once catheter is in the correct position, peel apart the introducer and remove introductor.

25. Remove the guide wire, if applicable. Immediately clamp the catheter to prevent ingress of air.

26. Attach the syringe containing heparinized saline. Open the clamp and pull back to assess for blood return. If positive, flush the catheter with 3-5 mL heparinized saline and close the clamp. Place the cap on the catheter.

27. Have a physician/radiologist confirm the catheter tip placement. Do not use the catheter until placement has been confirmed.

28. Suture the catheter in place using local anesthetic as indicated. (See suturing procedure).

29. Cleanse the site with NS. Allow to dry. Cover with a sterile dressing.

30. Review the basic care instructions with patient.

31. Document the following:

   31.1. Time Out Procedure
   31.2. Date and time of PICC insertion
   31.3. Type of catheter
31.4. Length and gauge of catheter
31.5. Lot number of catheter
31.6. Insertion site (vein) used
31.7. Patient’s tolerance of procedure
31.8. Number of sutures
31.9. Type of sutures (optional)

31.10. Patient education
31.11. Amount and type of flush solution
31.12. Problems encountered during insertion
31.13. Blood return
31.14. Tip position of catheter by M.D. reading including the name of physician in History and Physical notes

SUTURING IN PLACE

1. Add the following to the suture placement tray using strict aseptic technique:
   1.1. Betadine
   1.2. Suture # 2-0 ethilon
   1.3. #11 surgical blade
   If local anesthetic is required, also add:
   1.4. control syringe
   1.5. 1 – 18 gauge needle 1 inch (or appropriate size to draw up anaesthetic)
   1.6. 1 – 25 gauge needle 5/8 inch

2. Wash hands.
3. Assess the catheter to ensure it has not migrated out of position.
4. Glove (sterile).
5. If local anesthetic is required:
   5.1. Draw up 2 mL of local anaesthetic using a 18 gauge needle.
   5.2. Change the needle to 25 gauge 5/8 inch.
   5.4. Aspirate slightly to ensure a blood vessel has not been entered; inject 2 mL intradernally at the planned suture site.
   5.5. Check that area is anaesthetized.
6. Suture as per the following steps:
   6.1. Using a needle driver and ethilon suture with curved needle, pierce the subcutaneous layer of the skin and bring the needle back through the skin surface.
   6.2. Pass the suture needle through the eye on the catheter wing.
6.3. Secure the suture by tying 3 square knots.
6.4. Cut the excess ethilon with a #11 surgical blade.
6.5. Ensure the suture is not so tight as to constrict the catheter.

7. Dress the catheter as per Care of Peripherally Inserted Central Catheter (PICC) Lines CC 80-018(SC) – *Section D – Dressing Change*, and document the suture placement in the patient’s health record.

**REFERENCES**


Placement of Peripherally Inserted Central Catheters (PICC). (July 2006). St. Luke’s Episcopal Hospital, Texas Medical Center.

Suture Replacement for Hemodialysis Catheters (Delegated Medical Function). (October 2006). Hemodialysis Unit(s) and Home Dialysis Unit – QEII and DGH

**RELATED CAPITAL HEALTH DOCUMENTS**

Care of Peripherally Inserted Central Catheter (PICC) Lines CC 80-018(SC)

Basic Self-Study PICC Insertion Program self-module and inclusive post-tests (available in the QEII Diagnostic Imaging Department.)

**HISTORICAL DATES**

New