SUGGESTED INSERTION PROCEDURE FOR THE NEO♥PICC® CATHETER

General Guidelines:

For proper use, clinicians must be familiar with, and trained in the use of the Neo♥PICC® catheter.

Use of this device should be preceded by an established institutional protocol, and performed by persons knowledgeable of the inherent risks. Clinicians should be aware of individual state board of nursing guidelines regarding the insertion of PICC catheters.

Always thoroughly read the manufacturer’s instructions for use prior to insertion of any medical device.

Utilize aseptic technique per CDC and OSHA policy. Aseptic technique and proper skin preparation are essential for proper use. Observe universal precautions on all patients. Utilization of maximum barrier precautions with this product is essential, to reduce the potential exposure to blood and bloodborne pathogens.

Refer to appropriate institutional, CDC and OSHA guidelines for handling and discarding needles and other sharps, and proper disposal of all potentially contaminated items. Sharps containers and biohazard trash bags should be available during the insertions procedure.

The insertion of a neonatal or infant PICC may necessitate the use of an introduce needle larger than those commonly used in this patient population for peripheral I.V.s, and may necessitate practice.

Site preparation may vary according to institutional policies. The Neo♥PICC® catheter insertion tray contains alcohol and iodophor prep sticks. Some neonatal units may not use one or the other of these products. Please follow your institutional policy regarding prepping of skin prior to catheter insertion. Most neonatal clinicians will cleanse the insertion site with sterile water and sterile gauze following the insertion and prior to dressing to avoid leaving the prep solution on the infants skin.

The use of a tourniquet is not common with the preterm infant as tourniquet use may result in a backflow of blood forceful enough to eject the catheter from the introducer, preventing the treading of the catheter. If used, remember to loosen the tourniquet as soon as possible after venipuncture is made. Tourniquet-induced hematomas may prevent advancement of the catheter.

Neo♥PICC® catheters do not contain a wire stylet. Historically, stainless-steel wires used in infants younger than eighteen month of age have been shown to cause perforation of delicate vessels or organs. Because there is no wire, the Neo♥PICC® catheter must be flushed prior to insertion with either preservative-free sterile normal saline or sterile heparinized saline solution. When advancing a catheter without a wire it is necessary to advance the catheter in small “bytes” of approximately of 1/8 to 1/4 inch at time, using forceps.

When applying a transparent dressing, take care that the dressing does not completely encircle the extremity as it could then act as a tourniquet.
The following is a recommended insertion procedure utilizing the Neo♥PICC® catheter. Note: Instruction for both the Break-Away Needle and the Peel-Away Cannula are included.

1. **Obtain a physician’s order for PICC placement.** The order should include:
   - Intended final tip location of the catheter
   - Size of the catheter
   - Routine flushing solution, amount, and frequencies
   - Radiographic confirmation, if required

2. **Conduct pre-insertion family teaching, and obtain informed-consent per institutional policy.**

3. **Identify the appropriate vein.**
   - Use of tourniquet is optional
   - Select a vein based on the best presentation
   - Assess all extremities

4. **Measure for proper tip placement.**
   - External measurement can never exactly duplicate the internal venous anatomy
   - Remember: Advancement of the catheter tip into the right atrium may cause cardiac arrhythmia, or myocardial erosion with the risk of cardiac tamponade
   - When using antecubital access sites, measure and document the circumference of both upper arms, to establish a baseline for future reference. This measurement is taken at a consistent distance from the insertion site, with arms extended
   - Measurement:
     - **Superior vena cava:** Measure from the insertion site, along the proposed venous pathway, to the termination of the right clavicle, and down to the third intercostal space
     - **Inferior vena cava:** Measure from the insertion site, along the proposed venous pathway, to the midpoint of the body, at the level of the diaphragm

The Neo♥PICC® catheter has a skin reference marking. This “O” marking should be at the skin entrance site. This will leave 3cm. of catheter tubing exposed externally, which should decrease the chance of skin erosion, pistoning of the catheter at the entrance site, and catheter kinking.

5. **Set up the sterile field.**
   - Don face mask
   - Wash hands
   - Open the CSR wrap to expose the contents of the tray
   - Don sterile gloves
   - Open sterile drape
   - Properly position patient’s extremity on drape

6. **Prep the insertion site.**
   - Prep solutions per institutional policy
   - Prep a generous area to include all of the skin which will be covered with the transparent dressing
   - Prep from insertion site, working outward in concentric circles
   - Allow prep solution to dry thoroughly
7. Prepare the necessary equipment using sterile technique
   - Discard first pair of sterile gloves
   - Don eye protection, waterproof gown, and sterile gloves according to OSHA guidelines
   - Apply fenestrated drape
   - Assemble equipment using aseptic technique
   - Fill syringe with sterile normal saline and disconnect filter-needle

8. Trim the catheter to length.
   - Remove catheter from protective bag
   - Trim the distal end of the catheter tip to the desired length
   - Attach pre-filled syringe of sterile normal saline and prime the catheter tubing

9. Apply tourniquet (optional)

   Please Note: The following procedural steps will be slightly different when using a break-away needle versus a peel-away cannula. These steps will be detailed for each type of introducer:

   WHEN USING A BREAK-AWAY NEEDLE INTRODUCER:

10. Perform venipuncture.
    - Remove protective cover from needle
• With non-dominated hand, provide slight skin traction. Grasping the needle by one “wing”, or with index finger in front of one “wing” and thumb behind flash chamber, enter the skin at a low insertion angle.

When flashback is obtained, lower the insertion angle if possible, and advance the introducer approximately 1/8 to 1/4 inch, to ensure that the whole needle bevel is within the vein.

11. Insert catheter into the introducer.
   • With forceps, gently grasp the catheter close to the tip and begin advancing through the introducer needle.

CAUTION: Do not grasp the catheter tightly with the forceps. Forceps and clamps can damage silicone tubing.

CAUTION: Never advance the needle or retract the catheter after inserting the catheter into the needle. Such action could result in a sheared or severed catheter.

Remove tourniquet if used.

12. Advance the catheter.
   • Continue to advance the catheter with small, gentle strokes
   • If the upper extremity is used for access, position the patient’s head toward the insertion site to help prevent possible malposition into the jugular vein.
13. **Withdraw the introducer needle.**
   - Stabilize the catheter position by applying digital pressure to the vein distal to the introducer needle
   - Withdraw the introducer needle from the vein and away from the site

14. **Split and remove the introducer needle.**
   - Split the introducer needle and peel it away from the indwelling catheter
   - Use care to maintain catheter position while removing introducer needle
   - Complete catheter advancement until the skin reference line is reached

**WHEN USING PEEL-AWAY CANNULA INTRODUCER:**

10. **Perform venipuncture.**
    - Remove protective cover from the introducer sheath
• Perform venipuncture, entering vein from low insertion angle
• After flashback, reduce the angle and advance the introducer sheath to ensure that the introducer tip is within the vein
**CAUTION:** Never reinsert the needle into the introducer sheath if the venipuncture is unsuccessful. Such action could result in a sheared or severed introducer sheath.

11. Withdraw the introducer needle from the sheath.
   • Support the introducer sheath to avoid displacement.
   • Apply digital pressure on the vessel above the insertion site to minimize blood flow
   • Withdraw the needle from the introducer sheath

12. Insert the catheter into the introducer sheath.
   • With forceps, gently grasp the catheter close to the tip and begin advancing through the introducer sheath
   • Remove tourniquet, if used

   **CAUTION:** Do not grasp the catheter tightly with the forceps. Forceps and clamps can damage the silicone.
13. **Withdraw the introducer sheath.**
   - Stabilize the catheter position by applying digital pressure to the vein distal to the introducer sheath
   - Withdraw the introducer sheath from the vein and away from the site

14. **Split and remove the introducer sheath.**
   - Split the introducer sheath and peel it away from the indwelling catheter
   - Use care to maintain catheter position while removing introducer sheath
   - Compare catheter advancement until the skin reference line is reached

**NEXT STEP FOR ALL CATHETERS:**

15. **Aspirate and flush the catheter.**
   - Attach saline-filled syringe and aspirate to visualize blood return and flush to ensure patency
   - Attach add-on devices and flush with heparinized saline per institutional policy
16. Clean insertion site.
   - Split fenestrated drape to better expose insertion site
   - Cleanse site per institutional policy using aseptic technique

17. Secure catheter and apply sterile dressing.

NOTE: The external portion of the catheter must be adequately secured. Any movement of the external portion of the catheter at the insertion site indicates the tip location may have been altered as well.

NOTE: It is very important to dress PICC catheters per manufacturer’s guidelines. Failure to do so could result in leakage, breakage, increased infection potential, or embolus.

CAUTION: Never place tape over the delicate catheter tubing. This will compromise the strength and integrity of the tubing.

18. Confirm catheter tip placement radiographically.