

**PERIPHERALLY INSERTED CENTRAL CATHETER (PICC)
INSERTION PROCEDURE**

PURPOSE:

To outline the nursing responsibility in Peripherally Inserted Central Catheter (PICC) procedure.

SUPPORTIVE DATA:

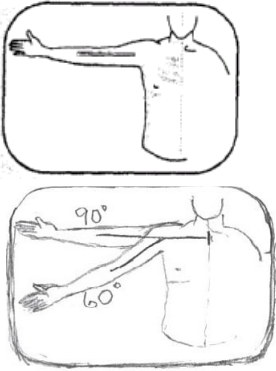
PICCs are inserted by Registered Nurses (RNs) who are certified for PICC insertion and approved by the Department of Nursing Services.

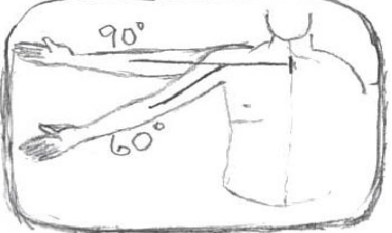
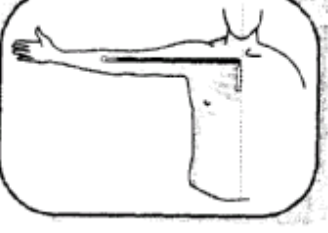
PICC insertion sites: Basilic, brachial, cephalic and median cubital (rarely).

EQUIPMENT LIST:

- PICC tray
- Sterile ultrasound probe sheath
- Water soluble ultrasound gel
- 1 large chlorhexidine scrub with wings
- 1 bag 150 mL 0.9% Sodium Chloride (NS) (optional)
- 1 secondary intravenous (IV) tubing (optional)
- 2-3 positive reflux valves
- 1 Biopatch™
- 1 ampule 1% Lidocaine (50 mg/5 mL)
- 1 pair sterile gloves
- Tourniquet
- Tape measure
- Face mask
- Bouffant hat
- Eye protection
- Electric clippers with disposable heads (if required)

<u>STEPS</u>	<u>KEY POINTS</u>
1. Complete Central Line Insertion Practice Adherence Monitoring checklist and check for the following information before entering patient's room: <ul style="list-style-type: none">• Informed Consent• Afebrile for 24 hours or more• Platelets, PT, INR, creatinine• If patient has a pacemaker, internal defibrillator (AICD), documented clots• Allergy history	

<u>STEPS</u>	<u>KEY POINTS</u>
2. Wash hands prior to / upon entering room.	Observe appropriate isolation protocol, if applicable.
3. Obtain baseline Vital Signs (VS) prior to starting procedure.	Notify provider any abnormal findings.
4. Remove lot number label from outer package and place on Central Line Insertion Practice Adherence Monitoring checklist	
5. Perform hand hygiene and don clean gloves.	
6. Clean bedside table with approved cleaning agents.	
7. Doff gloves and perform hand hygiene.	
8. Don a clean pair of gloves.	
9. Place patient supine with selected arm turned up and extended 60 - 90 degrees from the body.	<p>Optimum arm positioning for PICC insertion is 90 degrees. 60 degrees is acceptable for patients who are unable to maintain arm at 90 degrees.</p> 
10. Measure circumference of the mid upper arm in centimeters (cm).	Establish a baseline in cm.
11. Measure to estimate the length of the catheter.	Just under clavicle measure from site to mid-sternum then down to the patient's 4th intercostal space.

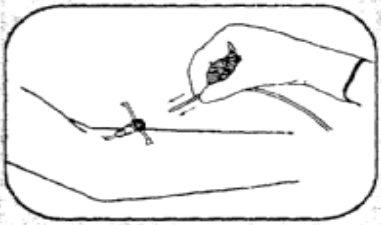
<u>STEPS</u>	<u>KEY POINTS</u>
12. Apply tourniquet.	
13. Use ultrasound machine to assess veins after applying a tourniquet.	Catheter should not occupy more than 40% of selected vessel to help prevent thrombus formation. Use ultrasound probe to compress vein and to ensure it is 5 french size on ultrasound machine or larger.
14. Apply an adequate amount of water soluble gel to patient's arm.	
15. Locate brachial artery using the ultrasound machine.	Also locate 1 - 2 alternate veins in case the brachial vein is inaccessible.
16. Determine catheter length to be inserted: <ul style="list-style-type: none"> • Use tape measure to measure from the point of insertion, along the selected vein tract to the right side of the sternal notch (angle of Louis). • Count along the right sternal border down to the third intercostal space [Use this method for both right and left arm placements. Note length of catheter to be inserted in cm] • Mark selected vessel between 3 inches below the axilla and 2 inches above the antecubital. 	A catheter inserted into the left arm will have a slightly longer measurement. Prevents arterial puncture. Placement of catheter within noted parameters prevents trauma due to arm movement and decreases risk of infection.
	
17. Unfasten/loosen tourniquet and leave in place under arm near axilla.	
18. Wipe water soluble gel from arm.	
19. Remove excess hair from insertion site using electric clippers with single use disposable heads. <u>Do Not use a razor</u> , if applicable.	Removal of hair decreases risk of infection. Micro-abrasions from razors increase risk of infection.

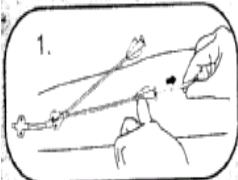
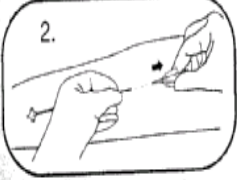
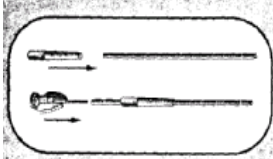
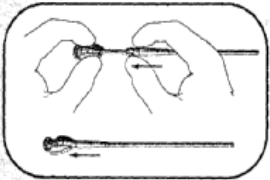
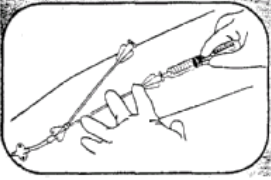
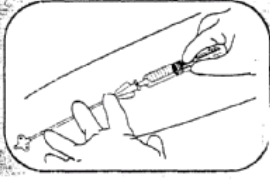
<u>STEPS</u>	<u>KEY POINTS</u>
20. Place Sherlock magnetic sensor device on the patient's chest and electrodes for 3cg PICC placement then pre-calibrate.	Magnetic sensor will sense magnet in catheter tip as it enters the superior vena cava (SVC) and helps to ensure proper positioning of PICC catheter.
21. Instruct patient to practice turning head toward insertion arm and dropping chin to shoulder.	During the procedure this technique can help close off the internal jugular vein and help guide catheter to the superior vena cava (SVC) and prevent malposition.
22. Doff gloves and perform hand hygiene.	
23. Post STOP sign outside door / curtain.	Alerts staff to sterile procedure being performed.
24. Place face mask on patient.	
25. Don face mask, bouffant hat, eye protection and wash hands per hospital protocol. All other staff in room should abide by this protocol.	This step applies to ALL staff in the room.
26. Place PICC tray on bedside table. Remove lot number label from outer package and place on ID card.	Sterile gloves to be used for prepping patient.
27. Give information booklet and ID card to patient/family.	Provides patient/family with information regarding care and maintenance of catheter.
28. Don sterile gloves from outer wrapping.	
29. Have patient raise arm, grasp drape from outer wrapping and place under patient's arm (glossy side down) maintaining sterile technique.	Creates a clean area between the patient's arm and the patient's bed/gurney. If patient cannot lift own arm, lift patient's arm with one hand and apply the sterile field with the other. Be sure to doff gloves and don a new pair gloves before proceeding to next step.
30. Activate 2 chlorhexidine scrubs (3 mL) from the outer wrapping by pinching wings while holding sponge in a downward position and allowing sponge to become saturated.	


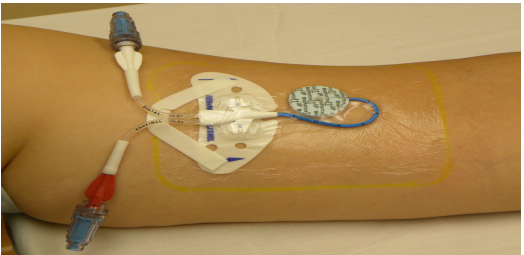
<u>STEPS</u>	<u>KEY POINTS</u>
<p>31. Scrub arm insertion site using one of the chlorhexidine applicators from the PICC tray:</p> <ul style="list-style-type: none"> • Use vigorous back-and- forth motion for 30 seconds • Include 5 inches above and 5 inches below insertion site • Allow to air dry for 30 seconds. • Immediately repeat with the second chlorhexidine applicator from the PICC tray. <p style="text-align: center;">OR</p> <p>Scrub arm with a povidone-iodine swab:</p> <ul style="list-style-type: none"> • Use circular motion. Begin in the center and move outward to 5 inches above and 5 inches below insertion site. • Allow area to dry for 30 seconds. Repeat this 2 more times with a second and third povidone-iodine swab. 	<p>If patient is hypersensitive to chlorhexidine use povidone-iodine swabs.</p>
<p>32. Open inner wrapping of tray using sterile technique to create a sterile field which completely covers the procedure table.</p>	<p>Completely covering table with sterile drape ensures sterility of contents.</p>
<p>33. Count all sharps and syringes on the tray.</p>	<p>A count is performed at the beginning and end of the procedure to ensure no sharps or syringes are lost.</p>
<p>34. Place the following supplies onto the sterile field using sterile technique:</p> <ul style="list-style-type: none"> • Sterile ultrasound probe sheath • 1 chlorhexidine scrub • 2-3 positive pressure reflux valves • 1 Biopatch™ • 1 ampule 1% Lidocaine (50 mg/5 mL) • 1 pair of sterile gloves • 2 prefilled 10 mL sterile NS syringes from the outer package of the PICC Tray 	<p>Use 2 valves for Groshong™ catheters and 3 valves for Power PICCs.</p>

<u>STEPS</u>	<u>KEY POINTS</u>
35. Prepare fluid for flushing if preferred, by having a second nurse: <ul style="list-style-type: none"> • Connect secondary tubing to bag of 150 mL 0.9% NS • Empty contents into syringe bin within the tray 	The Lidocaine and prefilled NS syringes already have labels.
36. Don clean gloves.	
37. Fasten tourniquet on patient.	
38. Remove gloves and perform hand hygiene.	
39. Remove sterile gown from tray and don using sterile technique.	
40. Don 2 nd pair of sterile gloves in tray using over the gown sterile technique.	Using the cloth part of the sterile gown to handle the sterile gloves helps ensure that the fingers only touch the inside of the sterile gown. 2 nd staff member to assist in tying back of sterile gown. This will help with maintaining sterility of gloves.
41. Place maximal sterile barrier drape contained in tray over patient.	Provides sterile field for procedure.
42. Attach filter needle to 5 mL syringe with Lidocaine on label and aspirate 1% Lidocaine (50 mg/5 mL) into syringe.	Check lot number and expiration date on Lidocaine ampule prior to usage. Label clearly identifies Lidocaine syringe.
43. Detach filter and connect a 25 gauge - 5/8 inch needle to syringe and remove air.	
44. Attach positive pressure reflux valves to pre-filled 10 mL NS syringes in tray and prime to remove all air.	Prevents air emboli from entering patient.
45. Connect NS syringes with positive pressure reflux valves to each lumen of the catheter and prime.	Prevents air emboli from entering patient.
46. Open sterile ultrasound probe sheath and place on probe using sterile technique and secure with sterile tape from tray.	Sleeve maintains sterility of procedure and tape prevents sleeve from migrating off sterile field.

<u>STEPS</u>	<u>KEY POINTS</u>
47. Place 4x4 gauzes (4) on exposed area of skin around insertion site.	Minimizes contact of sterile items with skin.
48. Use ultrasound to re-check vein for insertion and mark site.	
49. Administer 10 mg (1 mL) of Lidocaine 1% subcutaneous/intradermal to insertion site and wait 1-2 minutes.	Minimizes pain during procedure.
50. Perform ultrasound guided venipuncture using the safety needle contained in tray and check for blood return (use caution not to double puncture vessel wall).	Ecchymosis and hematoma may occur with double puncture.
51. Remove guidewire from spool and inspect end to ensure it is intact.	
52. Insert soft ribbed tip guidewire through safety needle. If resistance encountered in the first 12-14 cm remove guidewire and try alternate vessel.	Inserted to this length helps to avoid advancing guidewire past tourniquet while it is fastened and prevents trauma to vessel wall. If unable to use safety needle, insertion may be attempted using the 20-gauge angiocath that is included in the tray.
53. Advance guidewire to 25 cm. [Do Not advance the guidewire more than 25 cm (guidewire is 50 cm long).]	25 cm are sufficient to secure venous access and insert micro-introducer (dilator/introducer). This will also help prevent vessel wall trauma and dislodgement of hidden thrombi in vessel.
54. Remove safety needle over the guidewire and activate safety lock on needle.	Prevents needle stick to staff and patient.
55. Release tourniquet by using the sterile drape to keep hands sterile.	Maintains sterility of procedure.
56. Administer additional 10 mg (1 mL) of Lidocaine 1%subcutaneous/intradermal at insertion site and wait 1-2 minutes.	Minimizes pain during insertion of micro-introducer.
57. Insert introducer over the guidewire by pushing and pulling introducer while keeping the guidewire visible at all times.	Resistance during insertion of the introducer should be minimal.

<u>STEPS</u>	<u>KEY POINTS</u>
58. Use the flat side of a # 11 scalpel make a small, 0.3 cm, incision in the skin directly over the Guidewire, if necessary.	Allows for easier insertion of micro-introducer.
59. Remove guidewire (ensure it is intact, the tip is present and measures 50 cm) and immediately place clear cap on introducer.	Ensures guidewire is removed intact. Prevents air embolus and reduces blood loss.
60. Insert guidewire into spool.	
61. Trim Power PICC, if needed, prior to inserting: a. Pull back stylet at least 10 cm more than planned cut. b. Make a straight cut with scissors contained in tray (NO diagonal cuts) c. Reinsert stylet back into catheter to at least 3 mm from the catheter tip. d. Once within the catheter, lock the clamp on the lumen containing the stylet.	Power PICCs are the only central catheters that may be trimmed. Do Not trim all other PICCs.
62. Using the US probe turn on the 3cg Tip Location System (TLS) on the US machine.	
63. Remove dilator with cap on it and insert catheter through introducer.  (Insert catheter and advance)	
64. Advance catheter slowly in increments of 2-3 centimeters with patient's head turned towards insertion site.	Helps guide catheter towards superior vena cava (SVC) and prevents vessel wall trauma.
65. Continue inserting catheter until pre-procedure measurement length is reached. (If there is resistance pull catheter out and attempt to re-insert.)	Helps prevent malposition of catheter. Sherlock device will verify insertion into the superior vena cava.

<p>Ensure 3cg TLS show PT wave on the US screen.</p>	
<p>66. Verify placement by aspirating blood and flushing with NS.</p>	
<p>67. Remove introducer by breaking T-Handle and peeling sheath apart.</p>	
<p>68. Remove stylet from catheter and check for orange magnet tip to ensure it is intact.</p>	<p>Ensures no fragment of stylet remains inside patient.</p>
<p>69. Attach primed positive pressure reflux valve, aspirate and flush with 20 mL NS. (Syringe must be 10 mL or larger).</p> <p>Repeat for each lumen present.</p>	<p>(Remove the Stylet/Assembly)</p>   <p>(Attach connector to single lumen catheter)</p>   <p>Aspirate and Flush</p>  

<u>STEPS</u>	<u>KEY POINTS</u>
<p>70. Clean insertion site using chlorhexidine applicator:</p> <ul style="list-style-type: none"> • Use vigorous back-and- forth motion for 30 seconds • Allow to air dry for 30 seconds. <p style="text-align: center;">OR</p> <p>Scrub arm with a povidone-iodine swab:</p> <ul style="list-style-type: none"> • Use circular motion. Begin in the center and move outward to 5 inches above and 5 inches below insertion site. • Allow area to dry for 30 seconds. Repeat this 2 more times with a second and third povidone-iodine swab. 	<p>Cleans site of blood.</p> <p>If hypersensitive to chlorhexidine use 3 alcohol pads and 3 betadine swabs.</p>
<p>71. Wipe area around insertion site with skin prep.</p>	<p>Helps secure Statlock™ and transparent dressing in place.</p>
<p>72. Secure hub of catheter with Statlock™.</p>	
<p>73. Apply Biopatch™, printed side up with slip rotated slightly under the catheter (see picture to right)</p>	 <p>APPLICATION of BioPATCH®: Apply BIOPATCH® printed side up with radial slit approximated and aligned no more than 5° from catheter tubing exiting the body (for ease of removal).</p>
<p>74. Place transparent dressing over insertion site covering Biopatch and Statlock.</p>	<p>Site with Biopatch and Statlock should be treated as one unit covered with the transparent dressing.</p> 

<u>STEPS</u>	<u>KEY POINTS</u>
75. Place alcohol caps on tips of positive pressure reflux valves.	
76. Count to ensure all sharps and syringes are discarded.	Prevents needle sticks to patient and staff, and ensures all sharps and syringes have been removed.
77. Doff gloves and discard.	
78. Perform hand hygiene.	
79. Date and initial dressing.	
80. Obtain vital signs post procedure.	Notify provider of any complications. Document vital signs and any significant changes.
81. Don clean gloves.	
82. Clean ultrasound machine with approved cleaning agent.	
83. Doff gloves and perform hand hygiene.	
84. Notify provider to order chest X- ray and document once procedure is complete	Do Not use catheter until placement has been confirmed by chest x-ray and a provider has placed an order in ORCHID that it is OK to use the catheter.
85. Print the ECG strip.	The ultrasound machine prints out a strip verifying peaked P waves which indicates cavio-atrial junction placement of PICC catheter tip. This will confirm correct placement of PICC.

Initial date approved: 01/2006	Reviewed and approved by: Professional Practice Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date: 02/18, 2/20, 10/21
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