Removal of Peripherally Inserted Catheter

Educator Notes and Checklist

Expectations of nurse that is to remove on mock model has completed the self- read package and will be prepared to perform the Mock PICC removal with the educator.

The educator will have PICC arm from Chester Chest prepped with PICC in situ with Dressing applied (if enough supplies available if not enough supplies let the nurse know that they are to explain what they would do as if presenting to a patient that requires the PICC removal and is dressed as per policy)

Before beginning, facilitator asks:

When should a PICC line be removed?

Expected response: *when therapy is completed, in the presence of unresolved complications or when no longer necessary for the plan of care deemed.*

Does a PICC need to be removed if a catheter related deep vein thrombus has developed?

Expected response: *Discussion with the authorized prescriber should occur. The PICC does not need to be removed if the device is functional, tip is correctly positioned, is still required for therapy, and there is absence of severe catheter related deep vein thrombosis symptoms (threat of loss of limb due to swelling impairing circulation). It is advised that a vascular access nurse be notified to assist with decision making regarding line preservation. Appropriate therapy for the treatment of the DVT should be initiated by an authorized prescribing practitioner.*

Facilitator will have the following available:

Non-sterile gloves
Packages of 2x2 gauze
Petroleum-based dressing (Adaptic)
Transparent semi- permeable dressing
Water proof pad (blue pad)
Alcohol swabs
2% CHG with 70% alcohol swabs

Nursing Action	Observer Script/*Expected Response*
1. Review patient chart and reason for PICC removal. Verify authorized prescriber's order for PICC removal.	What things would you want to review the chart for? *Consideration should be given to patient's coagulation status (INR, Platelets) prior to removal as increased time may be needed for hemostasis to occur. Discuss any concerns with authorized prescriber.*
2. Check the patient's chart for the exact trimmed length of the PICC upon insertion.	What in particular would you want to know about the PICC line? *Would want to know if it was a Groshong close ended or open ended. The length the PICC line was trimmed to at insertion is needed to compare when removed.*
3. Verify correct patient using two identifiers.	This is required according to policy
4. Explain procedure to patient.	What would you tell your patient prior to removing the PICC line? *Educate the patient on the Valsalva maneuver and an overview of procedure.* When is the Valsalva maneuver contraindicated? *Aortic stenosis, recent MI, glaucoma, retinopathy, increased intracranial pressure.* What should these patients do instead? *The patient should hold their breath at end of exhalation when last 15 cm being removed.*
5. Perform hand hygiene.	
6. Prep working area, clean table with disinfectant wipe. Arrange supplies and open sterile dressings.	
7. Perform hand hygiene.	
8. Remove IV administration set and clamp lumens if necessary. Use gloves if exposure to body fluids is likely. Dispose of IV administration set in appropriate receptacle, remove gloves and perform hand hygiene.	When would it be necessary to clamp the lumen? *If the PICC is non-valved then the lumens must be clamped prior to disconnecting from the IV admin set.*
9. Position the patient.	What position would you have your patient in? *Patient should be supine with their arm abducted out but below the level of the heart.*
10. Place waterproof pad underneath the arm.	

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<table>
<tr><td>11. Perform hand hygiene.</td><td></td></tr>
<tr><td>12. Don non-sterile gloves</td><td></td></tr>
<tr><td>13. Removes dressing from insertion site taking care not to dislodge the PICC.</td><td></td></tr>
<tr><td>14. Remove stabilization device from skin using an alcohol swab.</td><td>Why is an alcohol swab used? The alcohol helps to loosen the adhesive making removal easier and prevent skin tears on fragile skin.</td></tr>
<tr><td>15. Inspect the insertion site for signs of infection.</td><td>When would a swab for C & S be taken? If a local cellulitis is suspected take a swab and send for C & S.</td></tr>
<tr><td>16. Cleanse the exit site with the CHG/alcohol swab stick and allow to air dry completely, 2 minutes.</td><td>Why is it important for the cleanser to dry? Drying time is important for antiseptic effect and to minimize skin reaction when adhesive from dressing comes in contact with antiseptic.</td></tr>
<tr><td>17. Remove gloves and perform hand hygiene.</td><td></td></tr>
<tr><td>18. Don new non-sterile gloves.</td><td></td></tr>
<tr><td>19. Place folded petroleum gauze directly over site and cover with a sterile 2x2 gauze.</td><td>What is the purpose of the Petroleum gauze? Petroleum gauze will seal the skin/vein tract and reduce the risk of air embolism.</td></tr>
<tr><td>20. Review the understanding of the patient that they will be performing Valsalva or exhaling and holding breath.</td><td>Why is this step needed? During inspiration, negative intrathoracic pressure can encourage air to enter the exit site and cause an air embolism.
If the patient was unable to cooperate with instructions or is on mechanical ventilation, remove the PICC during exhalation.</td></tr>
<tr><td>21. Hold 2x2 gauze (with petroleum-based gauze underneath) directly to exit site with non- dominant hand. Pressure is not to be applied over site while removing. With dominant hand, using gentle even pressure slowly pull the catheter out, keeping the catheter parallel to the skin and re-grasping catheter at exit site as the catheter is removed. (Facilitator to hold PICC to create sense of resistance while nurse removing)</td><td>When resistance is met what is your action? If resistance is met, stop removal immediately.
What could be some of the causes of the resistance? Venous spasm, vasoconstriction, valve inflammation, malposition or coiling of the catheter, thrombus formation.
What are some trouble shooting techniques you could attempt if resistance is met?
<table>
<tr><th>Action</th><th>Rationale</th></tr>
<tr><td>Apply warm compress to the entire arm for 20-30 minutes.</td><td>Warmth will encourage vasodilation.</td></tr>
<tr><td>Ensure patient is placed supine (shoulders on bed) and</td><td>This will help to straighten out the venous pathway.</td></tr>
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</td></tr>
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	abduct arm away from body. Mental relaxation and distraction of patient. Perform chest x-ray to assess location of catheter. Cover with a sterile dressing and re-attempt after 24 hours. **If the above actions are not successful, the authorized prescriber should be notified as a referral to vascular surgery or interventional radiology may be required to assist in removal**	Helps to decrease venous spasm. Ensure that the catheter has not coiled or knotted within the vasculature. Allows the vessel to relax and alleviate any possible spasm.
22. Apply pressure to exit site with the petroleum-based gauze dressing until hemostasis is achieved when line has been removed (minimum 30 seconds).	Do you check the site at this point? *The dressing should not be removed to directly assess insertion site.*	
23. Apply a transparent semi-permeable dressing to the site on top of the gauze once bleeding has stopped. If gauze is bloody replace with clean gauze before applying transparent dressing.	How long should the dressing remain in place? *Dressing should remain in place for at least 24 hours. After 24-48 hours, dressing may be removed. If exit site has not closed over, cover with a sterile adhesive dressing and change every 24 hours until healed.*	
24. Measure the length of the removed PICC for comparison with the insertion record. Inspect for an intact tip and not jagged.	What would your action be if you found a jagged end or length was shorter than anticipated? *If the catheter is shorter than expected, save catheter (place in biohazard bag) and call the authorized prescriber immediately, so that a follow-up chest x-ray and physical examination can be done.*	
25. Dispose of PICC.		

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26. Remove gloves and perform hand hygiene.	
27. Leave patient in a supine position for 30 minutes post removal.	What is the reason that the patient remains supine? *The supine position with head of the bed flat is preferred to prevent an air embolus. If the patient is unable to lay flat, raise the head of the bed until the patient is comfortable.*
28. During this time, the patient should be observed for symptoms of air embolus.	What would be symptoms of an air embolus? *Shortness of breath, chest pain, dizziness, hypotension, change in level of consciousness.* If an air embolus is suspected what action should be taken? *Immediately place patient on their left side in Trendelenburg position, administer Oxygen and call for medical assistance or code team as needed.*
29. Document the PICC removal	What would you document? *Date and time of removal, position of patient for procedure, the length of time the patient remained supine, site appearance, catheter measurement upon removal and if the tip is intact, patient tolerance to the procedure, any complications or concerns with removal process, dressing application, If a skin swab was sent for culture, all teaching and patient instructions.*

Culturing a Catheter Tip: Practice Review

Prior to the removal of a PICC from a patient who has a suspected catheter related bloodstream infection (CRBSI), a discussion with the authorized prescriber should occur. Removing a PICC solely on temperature elevation alone without confirmatory evidence of catheter-associated infection is not recommended. Check with authorized prescriber about obtaining blood cultures (one set from the line and a peripheral site).

Sending the PICC tip for culture should not be routinely done. Recent literature indicates that when a line infection is suspected, obtaining blood cultures from both the line and a peripheral site is a more sensitive test. If the tip is ordered for culture, complete the following:

Prepare for PICC removal as per procedure; however add a sterile dressing tray. When removing PICC avoid contact with surrounding skin, and place on sterile dressing tray ensuring that the tip of the catheter does not come in contact with the part of the PICC that was external to the patient. Dress the site before preparing tip for culture.

Uncap culture container. Using sterile scissors trim catheter 5 cm from the distal tip being careful only to handle the trimmed piece with sterile utensils. Using sterile forceps transfer the trimmed 5 cm piece into the culture container and apply cap. Label culture container with the type of specimen, date and time of removal and initials

References:

Prairie Mountain Health. (2014) Removal of a Non-tunnelled Venous Access Device Competency Checklist. PMH Regional Policy & Procedure Manual.

Winnipeg Regional Health Authority. (2017). Removal of a Peripheral Inserted Central Catheter (PICC). Clinical Practice Guideline

Covenant Health. (2017). Care and Removal of Peripherally Inserted Central Catheters (PICC) for Adults. Corporate Policy & Procedure Manual.

Performance Criteria PICC Removal Checklist

Nursing Action	MET	NOT MET
Verify authorized prescriber's order for PICC removal, and relevant patient information		
Check the patient's chart for the exact trimmed length of the PICC upon insertion		
Verify correct patient using two identifiers.		
Explain procedure to patient.		
Perform hand hygiene.		
Prep working area, clean table with disinfectant wipe. Arrange supplies and open sterile dressings.		
Remove IV administration set and clamp lumens if necessary. Use gloves if exposure to body fluids is likely. Dispose of IV administration set in appropriate receptacle, remove gloves and perform hand hygiene.		
Position the patient so that PICC exit site is at or below level of the heart (supine) arm is abducted.		
Place waterproof pad underneath the arm.		
Perform hand hygiene		
Don non-sterile gloves		
Removes dressing and stabilization device, taking care not to dislodge the PICC.		
Remove stabilization device from skin using an alcohol swab.		
Inspect the insertion site		
Cleanse the exit site with the CHG/alcohol swab stick and allow to air dry completely		
Remove gloves and perform hand hygiene.		
Don new non-sterile gloves.		
Place folded petroleum gauze directly over site and cover with a sterile 2x2 gauze.		
Review the understanding of the patient that they will be performing Valsalva or exhaling and holding breath		
Hold 2x2 gauze (with petroleum-based gauze underneath) directly to exit site with non- dominant hand. Pressure is not to be applied over site while removing. With dominant hand, using gentle even pressure slowly pull the catheter out, keeping the catheter parallel to the skin and re-grasping catheter at exit site as the catheter is removed.		

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Apply pressure to exit site with the petroleum-based gauze dressing until hemostasis is achieved when line has been removed (minimum 30 seconds).		
Apply a transparent semi-permeable dressing to the site on top of the gauze once bleeding has stopped. If gauze is bloody replace with clean gauze before applying transparent dressing		
Measure the length of the removed PICC for comparison with the insertion record. Inspect for an intact tip and not jagged.		
Dispose of PICC		
Remove gloves and perform hand hygiene.		
Leave patient in a supine position for 30 minutes post removal. During this time, the patient should be observed for symptoms of air embolus.		
Document the PICC removal and teaching outcomes		

Comments____

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This acknowledges I have observed the participant listed below and have indicated that they either (check appropriate box):

☐ May perform skill independently ☐ Must repeat the requirements

Evaluator: ____ Date: ________________________

Print Name Signature

This acknowledges I have reviewed the information provided and understand the completed assessment of the evaluator (check appropriate box):

☐ May perform skill independently ☐ Indicated date to have the requirements repeated

Confirmed Date: ______________________

Nurse: ____ Date: _________________________

Print Name Signature