PERIPHERALLY INSERTED CENTRAL CATHETERS (PICC)

CARE AND MAINTENANCE

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What is a PICC catheter?

- Primary vascular access device since their introduction in the mid-1970s,
- Placed via a peripheral vein, such as basilic vein of the anterior forearm, the open-ended catheter tip lying in the superior vena cava.
- Catheter introduction technique with fluoroscopy and ultrasound guidance.
- Safer and economics to alternative types of catheters
- Use for drawing blood and for giving iv fluids, blood products, medication, chemotherapy, or nutrition.
Veins of the Upper Extremity and Thorax

- Brachial veins
- Cephalic vein
- Brachial artery
- Median nerve
- Ulnar Nerve
- Basilic vein
- Medial Cutaneous nerve
- Brachial artery
Catheter: thin blue flexible tube lies under the skin

Entrance to vein
Line secured to skin
Bung

Tip (Groshong Valve)
Types of PICC

Dual Lumen with Clamps

Single Lumen with Clamp
PASV™ Technology

Pressure Actuated Safety Valve

Proximal three-way valve remains closed
- acts as a clamp, except during infusion and aspiration
Complications

- Phlebitis
- Thrombophlebitis
- Thrombosis
- Migration
- Malposition
- Fibrin sheath
- Infiltration
- Rupture
- Breakage
- Leaking
- Vessel thrombus
- Occlusion
  - Blood
  - Chemical
  - Mechanic
- Air Embolism
Observations

Watch for:
- Fever or chills (a temperature over 37.5 °C)
- Redness, bleeding, or swelling
- Leakage from the catheter
- Change in length of catheter visible on your arm
- Bleeding
- Swelling of the arm, shoulder, or neck

Feel for:
- Pain
- Heat
- Tenderness in the arm, jaw, neck, or ears
Care and maintenance

Cleaning
Dressing
Patency
Cleaning the device

- Acetone – cause damage!
- Alcohol
  - Not on polyurethane
  - Do not prolong rubbing
  - causes crazing leading to brittleness and increased potential for cracking
- Povidone-iodine lotion
  - Solution – let it dry
  - May damage some silicone

Clean the exit site twice weekly, and daily if infection occur
Dressing the device

- Removing the dressing
  - Lift edges and always work toward center (point of entry)
  - Your goal: prevent catheter migration or dislodged
- Verify base-line length of exposed catheter
- Monitor insertion site for drainage and redness
- NEVER use scissors or clamps on or near the catheter
Dressing the device

Never push the catheter back into the skin if it is accidentally pulled out any distance.

If malpositioned catheter is detected (>2cm), check for blood return and get chest x-ray.

Make sure there are no kinks in catheter or tubing.

Dressing material

- Gauze & tape
  - not on PICC’s
- Transparent semi-permeable membrane (TSM)
Dressing the device

End cap

- Apply a sterile end cap on the hub
- Change weekly or soiled with strict aseptic technique using Povodine-iodine lotion

PosiFlow

- positive pressure cap
- needleless multi-injection port
- Can be swabbed by Alcohol wipes

Protect from wet during shower by plastic wrap e.g. Tegaderm
Flushes

- Confirm free aspiration of venous blood after catheter placement and prior to use.
- Catheter should be flushed after every use and at least weekly using 10ml or larger syringe.
- Positive pressure Heparin lock should be re-established after every use.
- Lumen should be flushed with twice the indicated lumen volume using NS and then heparinised saline 10 units/ml to 100 units/ml (using push-pause technique).
- Flush weekly if not in use.
Drawing Blood(1)

- Use large lumen
- Not suitable if used for TPN administration
- Flush the catheter with NS prior withdrawal
- Discard 5ml blood before obtaining the blood sample
- Smaller syringe or vacutainer is not suitable as it may cause the catheter to collapse
If any difficulty in aspiration, instruct patient to:

- Reposition the arms by flexion, extension and elevation above the level of the head
- Attempt to flush and aspirate the catheter again

Flush the catheter with NS and then heparinised saline 10 units/ml to 100 units/ml (using push-pause technique) after drawing blood.
Patency

- Ensure there is no kinked tubing
- Do not let intravenous fluids run dry
- Make sure no incompatible drug delivery
  - Can try with hydrochloric acid or ammonium chloride
- Do not measure the patient’s BP on the catheterized arm
- Positive pressure technique - PosiFlow
- Following blood draw - 20 cc’s
Declotting obstructed catheters

- Verify there is no kinked tubing
- Reposition the patient and let cough
- Flush the catheter vigorously with NS if there is no resistant. Use a 10ml or larger syringe
- No excessive force to an obstructed lumen
Problems (1)

- A small red bump
  - Normal after insertion

- Infection
  - Fever, chills, sweating & flu-like signs
  - Local signs of swelling, tenderness or fluid leaking

- Breakage or Leaking from the catheter
  - First fold the catheter above the break then secure the catheter. Repair kit is not available

- “Stopped-up” catheter
  - Do not attempt to force fluid into the catheter if unable to push fluid in.
Problems (2)

- **Swelling of the Arm, Shoulder or neck**
  - Suspicious of vessels thrombus

- **Pain**
  - Abnormal when occur along the catheter or when receiving fluids via catheter

- **Air in the bloodstream**
  - If the catheter is broken, torn or any tubing connections are open
  - Signs – SOB and chest pain

- **Bleeding**
  - Apply pressure and correct clotting profile
WARNING

- Do not exceed 40psi on infusion pumps when administering fluids
- PICC are not designed for power injection of contrast medium as Catheter rupture may occur.
THANK YOU