Nursing Management of Venous Access Devices: Peripherally Inserted Central Catheter (PICC)

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Peripherally Inserted Central Catheter (PICC)

- Benefits
  - Long-term access - dwell time varies (can be > one year)
  - Decreased length of stay in hospital – allows for IV therapy in non-acute settings i.e. home care /hospice/ skilled nursing facility (SNF)
  - Cost effective compared to all other central VADs
  - Decreased infection rate, as compared with other non-tunneled CVADs
  - Patient satisfaction and comfort
  - Fewer interruptions in IV therapy

PICCs

- Risks:
  - Air embolism
  - Infection
  - Deep vein thrombosis (DVT)
  - Nerve damage
  - Increased heparin usage in some PICCs
- Other considerations:
  - Blood withdrawal can be difficult; may be dependent on catheter length.
  - Over time, multiple insertions can cause venous scarring and decrease the ability to reuse the site

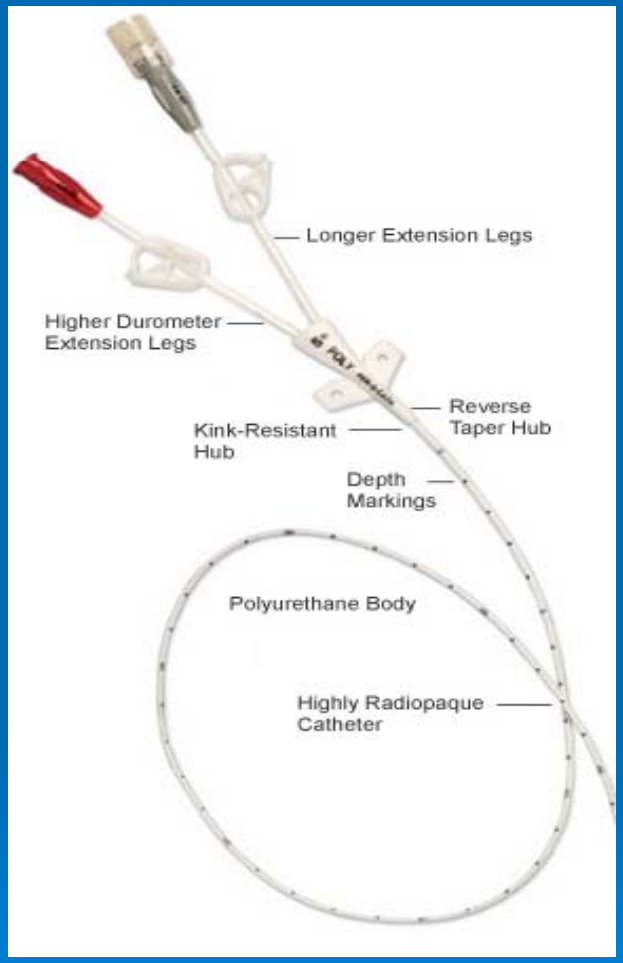
PICC Characteristics

- Catheter types:
  - single lumen (SL)
  - double lumen (DL)
  - triple lumen (TL)
  - quad lumen (QL)
- Catheter sizes:
  - 2F to 6F
- Catheter styles:
  - non-Power PICC
  - Power PICC®
  - saline-only or valved PICC (Solo®)
- Catheter lengths: cut to specific patient-dependent length

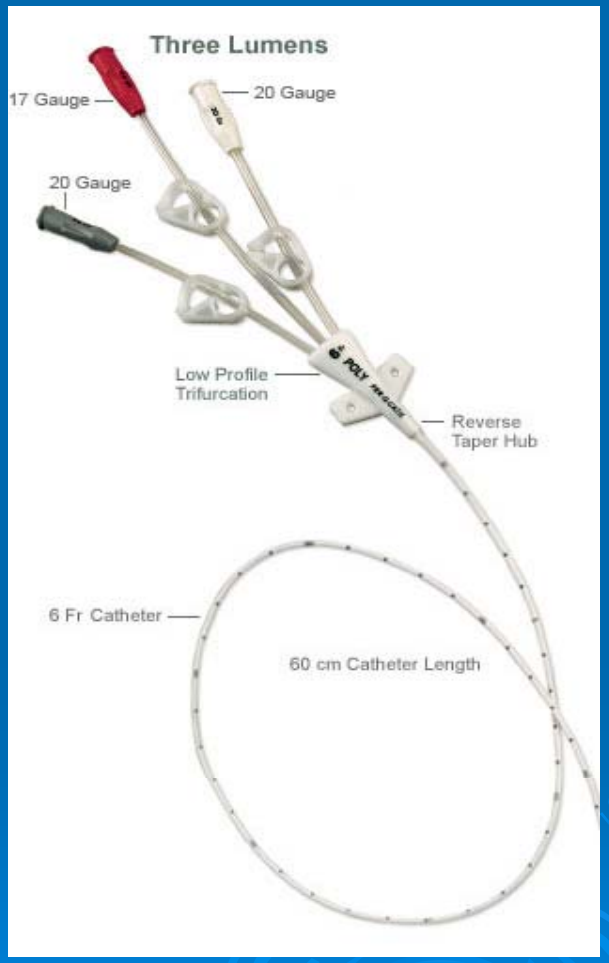
PICC Placement

- Placement
  - Successful placement is highly technique-dependent; requires formal training.
  - A sterile procedure performed at bedside by specially trained IV nurse or in Interventional Radiology.
  - Requires x-ray verification of tip location.
- Contraindicated in extremities affected by
  - Lymph node dissection
  - Tissue damage such as burns, cellulitis, fracture, rotator cuff tear
  - Vessel occlusion / DVT
  - Dialysis catheter (AVF) in same arm or need to preserve veins for future dialysis access
  - Newly implanted pacemaker or defibrillator
  - Affected arm s/p stroke

Multi-lumen PICCs



Double Lumen PICC



Triple Lumen PICC

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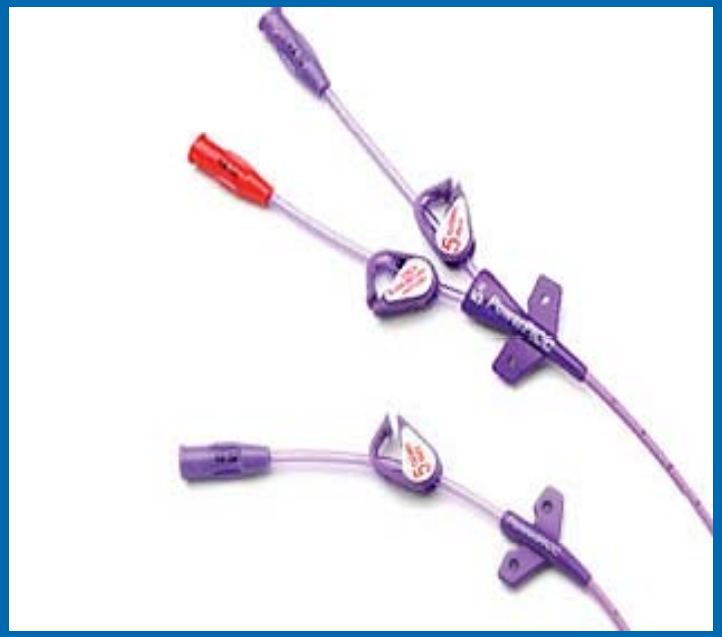
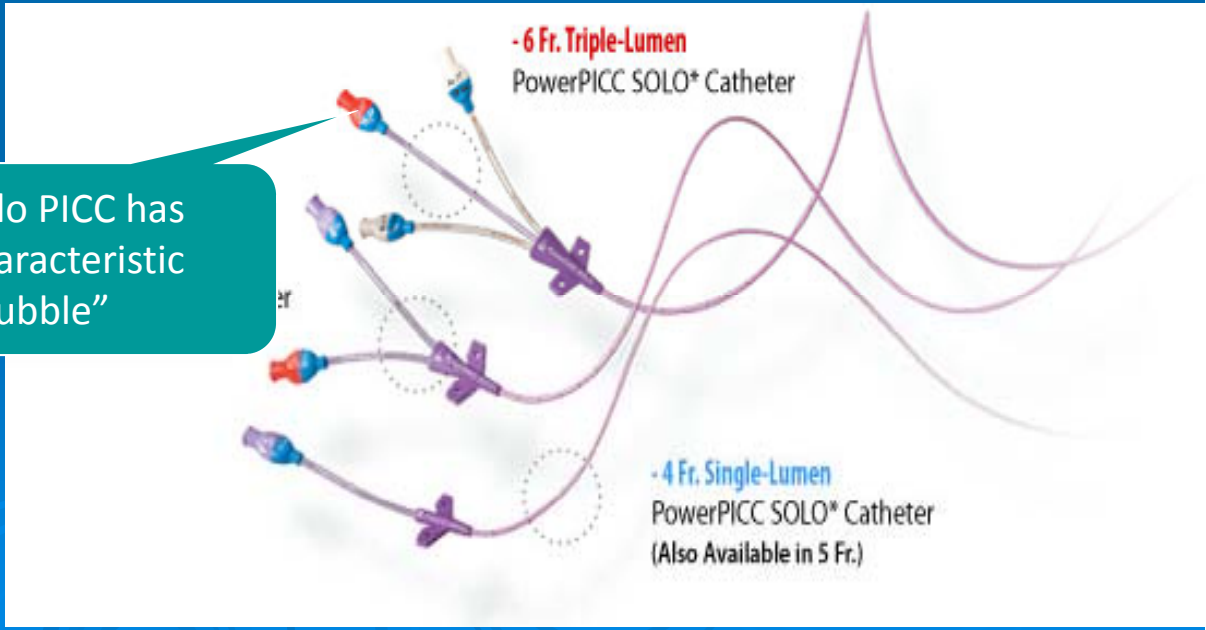
Other PICCs



Bard Solo PICC
(valved, saline flush only PICC)

Bard Power PICC

Solo PICC has characteristic "bubble"



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Flushing PICCs

- Adults/Adolescents:
  - 10ml saline per lumen
  - 5ml heparin (10 units/ml) per lumen = 50 units
  - Valved PICCs do not require heparin
  - Flush after completion of any infusion or blood sampling, at least every 24 hours when not in use
- Pediatrics:
  - 2F catheter
    - 1ml heparin (10 units/ml) per lumen = 10 units
    - Flush after completion of any infusion or blood sampling, at least every 6 hours when not in use
  - 2.6F catheter or larger:
    - 2-3ml heparin (10 units/ml) per lumen = 20-30 units
    - Flush after completion of any infusion or blood sampling, at least every 12 hours when not in use

PICC Assessment

- Patient comments/complaints (e.g., pain, palpitations, hears something when catheter flushed)
- New cardiac irritability: repeat CXR to verify catheter tip location
- Extremity edema
  - Is extremity cold or mottled in appearance?
  - Do arms appear to be same size? If not…
    - Assess for dependent edema
    - Assess whether patient is 'favoring' that arm
    - Check bicep circumferences
    - Rule out DVT
    - Rule out catheter fracture
- Catheter migration (more catheter visible outside insertion site):
  - CXR to verify new catheter tip location
  - Hold central-concentration infusates until confirmation of central placement
- Consult with IV Team for any issues or symptoms

PICC Line Care: Flushing

Refer to MGH Nursing Policies and Procedures Trove 05-03-06

Type of Catheter	*Routine Flushing*	*Frequency of Flush*
PICCs and power-injectable PICCs (e.g. Bard Power PICC)	**Adults/Adolescents:** Heparin 10 units/ml; flush with 5ml (50 units).	**Intermittent use:** After completion of any infusion or blood sampling. **Maintenance:** Every 24 hours when not in use.
	Pedi/Toddlers/Infants: ***-2F catheter:*** Heparin 10 units/ml; flush with 1ml (10 units).	After completion of any infusion or blood sampling, every 6 hours when not in use.
	-2.6F catheter or larger: Heparin 10 units/ml; flush with 2-3ml (20-30 units).	After completion of any infusion or blood sampling, every 12 hours not in use.
	Neonates/NICU: Single lumen PICCs are not heplocked. Unused lumens of multi-lumen PICCs may be heplocked in certain situations, such as fluid restriction.	All neonate/NICU infusions, including central line flushes, should be administered using a pump to reduce the risk of catheter fracture.

PICCs: Miscellaneous

- Maximum infusion rate: as patient condition warrants
- Pumps are mandatory for **any** infusion!
- NO blood pressure cuff or tourniquet on or above PICC dressing
- A new Stat-lok securement device should be applied with dressing and needleless connector change
- Please notify IV Team if patient admitted to MGH with a PICC
- Designate dedicated lumen for TPN. Please be sure to flush and maintain prior to TPN initiation.
- For multilumen power PICCs, always have a power-injectable lumen available for ordered contrast studies.

Discontinuing a PICC

- Physician/provider order required to discontinue PICC
- IV team will remove all inpatient PICC lines
  - For ambulatory settings, if removal needs to be performed by a staff nurse, must demonstrate & complete PICC removal competency first
- Procedure:
  - Patient should be recumbent in bed
  - Apply slow, steady traction when sliding catheter out
  - Have patient perform Valsalva maneuver
  - Place petroleum-based ointment, a sterile gauze, and occlusive dressing over insertion site. Dressing should remain on for at least 24 hours, or longer until epithelialization occurs
  - Inspect catheter; check tip integrity and length
  - Consider tip culture if infection is suspected
- If difficulty removing catheter, apply warm compresses to arm, shoulder, and chest to decrease venospasm. If catheter remains steadfast, DO NOT FORCE. Secure catheter and notify physician.
- Refer to MGH Nursing Policies and Procedures Trove 05-03-14