

## **SUBJECT: IV: Ultrasound Guided Peripheral IV Starts**

**Number:**  
**Effective:**  
**Reviewed:**  
**Revised:**

### **DEFINITION:**

1. Patients with difficult venous access may be candidates for US guided starts.
2. Only specially trained RN's may utilize US for placement.

### **SPECIAL CONSIDERATION:**

1. The deeper veins generally utilized for US guided starts are associated with a greater risk of complication from infiltration due to later recognition of infiltration and proximity of nerves and arteries.
2. Use of veins in the upper arm should be avoided if possible, and only the lower 1/3 of the upper arm is appropriate for use.
3. The Brachial vein is not to be used for PIV placement due to the proximity of the Brachial Artery and Nerve.
4. The Cephalic and Basilic veins may be considered if no other options are available.
5. Special consideration needs to be given to catheter selection based on the depth of the chosen target vessel. At least ½ of catheter length should reside in the vessel in final position.
6. Local anesthetic should be utilized for all US guided starts.
7. Special care must be taken to avoid possible infection during the procedure.

### **DIRECTIONS:**

#### **Gather Equipment**

1. Portable US machine and gel.
2. IV supplies as per PIV protocol.
3. Appropriate IV safety catheter for selected target vessel.
4. Sterile US gel.
5. Sterile 4X4 gauze pads.
6. Local Anesthetic.

#### **Preparation for Insertion**

1. Prepare as per standard PIV procedure #
2. Position US machine for clear view with patients arm in comfortable position.
3. Open additional supplies; sterile 4X4's, sterile gel.
4. Draw up local anesthetic in labeled syringe and attach 25-30g needle.

#### **Site Selection**

1. Apply PPE.

2. Apply non-Latex tourniquet snugly on upper arm.
3. Assess extremity for possible sites.
  - a.) Consider range of motion/restricted movement in selecting sites. Avoid joints (wrist/elbow) if possible.
  - b.) Consider purpose and duration of therapy. (*e.g. phlebogenic solutions/drugs*)
  - c.) Using non-sterile US gel, explore forearm for suitable target vessels. If no suitable veins are located, check other arm before proceeding to upper arm.
  - d.) If upper arm presents the only suitable vessels, use only lower 1/3. Cephalic vein is best, followed by Basilic. Do not attempt Brachial vein due to risk of arterial or nerve compromise should infiltration occur.
4. When appropriate target is selected, release tourniquet.
5. If no appropriate target vessel is identified discuss consideration of a PICC or other type of access for the patient with the physician.

### Catheter Selection

1. Consider purpose and duration of therapy i.e. volume vs. multiple intermittent meds and/or isotonic fluids vs. phlebogenic drugs/solutions.
2. Catheter size selection should reflect size of available vessel and type of therapy to minimize/prevent complications and maintain adequate access.  
**NOTE: Phlebogenic drugs are best given through a small catheter in the largest available vessel.**
3. Catheter length should be adequate to ensure that ½ of the catheter will reside in the lumen of the vessel. Be sure to take the angle of approach into consideration when determining vessel depth (scale available on US screen).

### Site Preparation

1. Prep Site;
  - a.) Using friction and approved skin antiseptics scrub the selected site about 3 inches in diameter for 30 sec and allow to dry. *Do not blot, wipe or blow on site to speed drying.*
  - b.) Reapply tourniquet or inflate B/P cuff.
  - c.) prep surface of transducer using chloraprep sponge (once prepped, do not allow probe to contact non-prepped areas.
  - d.) Apply a small amount of sterile gel above selected insertion site.
  - e.) Visualize vein with transducer and administer local anesthetic as per protocol # \_\_\_\_\_
3. Venipuncture/Insertion of Catheter.
  - a.) Remove cover of safety catheter and inspect catheter condition.
  - b.) Maintain sterility of catheter and integrity of prepared site during venipuncture.  
**NOTE: Do not touch the site with your fingers once it has been prepped.**
  - c.) Using center mark of transducer aligned with vessel as guide, advance catheter into target vessel while watching/guiding tip progress with US. Adjust probe as needed, but do not overrun insertion site.
  - d.) Once a blood return is visualized, lower angle of catheter and slide catheter off stylet into vessel to hub of catheter. Activate safety device.
  - e.) Set aside transducer, and release tourniquet.
  - f.) Apply enough pressure above the end of the catheter to occlude it momentarily while attaching the extension set. Ensure good blood return. Slowly flush with NS, observing for swelling, then close clamp on the connector.
  - g.) Wipe gel from around catheter using sterile 4X4's.
  - h.) Apply transparent dressing to cover insertion site and catheter hub.
  - i.) Apply tape as needed to secure catheter/tubing. *Do not place any tape under the dressing.*
  - j.) Write the date, type and gauge of catheter on the transparent dressing with a felt marker.

### Documentation

1. Document IV site location and preparation, gauge of catheter, number of attempts, type of dressing, and numbing agent, in the medical record. Use of Ultrasound for guidance should be entered as a note.

**APPROVED BY:**

**CROSS REFERENCE:** Regional Nursing # PT-001-06-V1 “IV Maintenance Standards: Adult”

**REFERENCES/RESOURCES:**

1. (Jan/Feb. 2006) Journal of Infusion Nursing. Vol 29. No. 18.
2. Centers for Disease Control and Prevention. (Aug 9, 2002) “Guidelines for the Prevention of Intravascular Catheter-Related Infection”, MMWR. Vol. 51. No. RR-10
3. Infusion Nurses Society. (2006) “Policies and Procedures for Infusion Nursing”. 3<sup>rd</sup> Ed. Cambridge, MA.
4. Infusion Nurses Society. (2006) “Infusion Nursing Standards of Practice”. Journal of Intravenous Nursing Supplement Vol.29: 1S

**Authority:**