

Equipment needed:^{1,2,3}

- Personal Protective Equipment (PPE)
 - Gloves (non-sterile gloves are sufficient for a peripheral IV insertion)
 - Mask with face shield
- Catheters
 - 18g or 20g are the size typically selected for most adults
 - Length is approximately 32mm
 - 14g or 16g typically used where large volume infusions are anticipated
 - Length is approximately 45mm

If inserting an ultrasound guided IV a longer length catheter should be used, at least 2 inch (50mm)

Longer length is important to ensure that enough catheter remains in the vein as your accessing deeper veins typically when using ultrasound

IV access supplies^{1,4}

Alcohol swabs or chlorhexidine swabs

Iodine may need to used allergies exist to these other agents

Tourniquet

- Materials to dress the PIV after insertion
 - Transparent occlusive dressing
 - Tapes, gauze
- Saline flush to test the PIV after insertion and to saline lock
- Prime IV solution lines (if any infusions need to be started after PIV is inserted)
- Other supplies to consider
 - Vein finder
 - Ultrasound
 - Local or topical anesthetic

Procedure for insertion:^{1,4}

- Perform hand hygiene
- Prepare all your supplies on a clean surface and don PPE
- Identify the Vein
 - You begin by visually inspecting for suitable veins for canulation, ideally you want to identify a vein that is large in diameter and has a straight segment
 - If a patient's veins are difficult to visualize you can apply a warm compress prior to assessing the veins
 - You apply a tourniquet above the anticipated insertion site
 - Tourniquet helps engorge the veins
 - If using local or topical anesthetic for PIV insertion, make sure it is applied/given with enough time to have maximal effect
 - Cleanse the skin at and around the insertion site with the antiseptic solution of choice
 - Allow solution to fully dry prior to puncture

- Use your non dominant hand to help steady the area
 - Traction can be applied to help keep the vein from moving, asking someone to help with this can make it easier
- The angiocatheter should be held in your dominant hand between your thumb and index finger
 - Bevel should be facing upwards
- Prior to the puncture it is important to inform the patient that you are about to “poke” them
- The vein puncture angle should be relatively shallow, approximately 10 to 30 degrees and approximately 1 to 2 cm from your intended entry point
- It is important to use slow and controlled movement as you move the angiocatheter towards the vein
- When the angiocatheter enters the vein you will see blood in the chamber of the angiocatheter, at this point it is important to slowly lower the angle of approach and to advance the angiocatheter further 1-2mm
 - This further advancement is done to ensure that the plastic canula is completely in the vein, as the plastic canula is slightly shorter than the needle it is possible to have flashback and blood flow but not have the plastic canula fully in the vein
- The next step is to advance the catheter into the vein, the needle should be kept steady while advancing the catheter over the needle and into the vein
 - The catheter should slide into the vein with ease and it should not be painful for the patient, if not then it is not in the vein
- The PIV should now be flushed and saline locked, the flush should flow without resistance and should not extravasate the surrounding tissue
 - If this resistance is met or unable to flush then the catheter is not in vein
- At this point you can secure the PIV with a transparent occlusive dressing
 - Prior to applying the dressing ensure the area that will be under the dressing is clear of blood or other fluids
 - The saline lock tubing can be looped away from the insertion site and taped to the patient

References

1. How To Do Peripheral Vein Cannulation - Critical Care Medicine [Internet]. [cited 2024 Nov 2]. Available from: <https://www.merckmanuals.com/en-ca/professional/critical-care-medicine/how-to-do-peripheral-vascular-procedures/how-to-do-peripheral-vein-cannulation>
2. Peripheral IV Catheter Chart [Internet]. [cited 2024 Nov 2]. Available from: <https://pedagogyeducation.com/Resources/Infusion/Peripheral-IV-Catheter-Chart>
3. Moy DM, Keeyapaj W. Importance of Catheter Length for Ultrasound-Guided Cannulation of Peripheral Veins. Anesthesia & Analgesia [Internet]. 2017 Jul [cited 2024 Nov 2];125(1):363. Available from: https://journals.lww.com/anesthesia-analgesia/fulltext/2017/07000/importance_of_catheter_length_for.69.aspx#

4. Beecham GB, Tackling G. Peripheral Line Placement. In Treasure Island (FL): StatPearls Publishing; 2024 [cited 2024 Nov 2]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK539795/>