

Ultrasound Guided Peripheral
Intravenous Access
Magnet Certification and Masters
Capstone

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Usages of Bedside ultrasound

- When attempts to obtain peripheral intravenous access by standard methods have failed
- Useful in patients with known difficult PIV access without palpable peripheral vessels

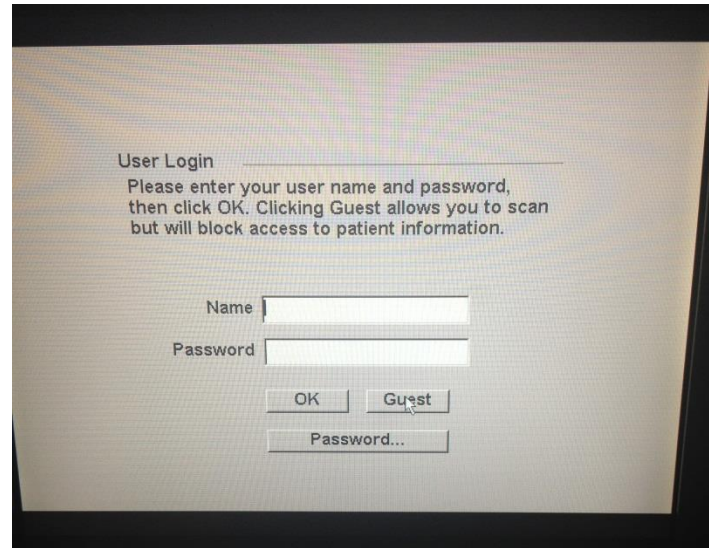
Benefits of Ultrasound

- Real time ultrasound can assist in obtaining difficult access

In-hospital usage



Logging on



User Login

Please enter your user name and password, then click OK. Clicking Guest allows you to scan but will block access to patient information.

Name

Password

For our ultrasound machine, hover on guest with the touch pad mouse, and then select “Guest” logon and hit select below the touchpad. This will log you onto the machine.

Getting to know the machine



Small Probe

Medium Probe



Large Probe;
High Frequency Linear Probe



Ultrasound Machine

- Step 1: Probe selection:
 - The high-frequency linear array probe should be used, as it provides higher resolution of the superficial areas of soft tissue. The flat footprint of the linear array probe is less cumbersome and less prone to slip off of the vessel of interest than the curved footprint of the high-frequency endocavitary probe.
- Step 2: Prepare patient
 - Clean skin
 - Apply tourniquet

- Step 3: Identify Vessel

- Begin in antecubital fossa (the AC)
- Locate vessel
- Follow proximal and distal

- Brachial or basilic veins often are larger proximally

In the above photo the larger vessel is the brachial vein (smaller is artery)



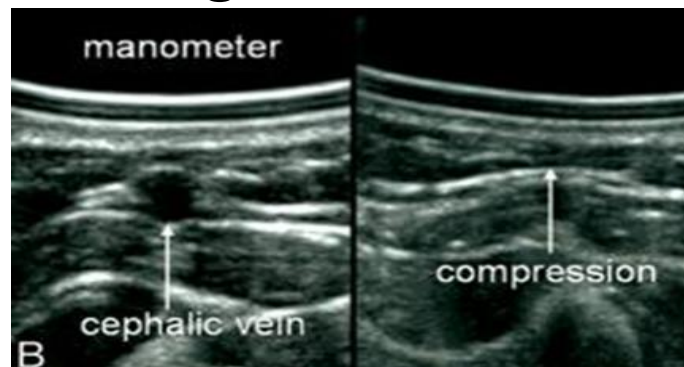
- Step 4: Follow path of vessel

- Most superficial location
- Larger diameter

Ensure Vessel is a Vein

- Compressible
 - Vein collapses with pressure
 - Lack of arterial pulsations with partial compression

To do this: apply light pressure with the probe on top of the skin. This pressure will collapse the vein, ensuring you have a good vessel for cannulation.



Cross section vs. Longitudinal

- Cross Section
 - Determine spatial relationships
 - View tenting of vessel by needle
 - Posterior wall penetration possible
- Longitudinal
 - Follow the needle path
 - If probe moves slightly, artery will appear similar to vein
 - Technically more challenging; thus cross-section best for beginners

Step 4. Cannulation

- The probe should be 90 degrees Placement to the patient. The Catheter (needle) will go in at a 30 degree angle to the skin.

Hold the probe with your non-dominant hand and needle in dominant hand:



Cannulation

- Center catheter with probe
- View

Exam technique

- **Patient positioning:** The most common area for UGPIV placement will be the antecubital fossa region. The patient's forearm should be extended to maximize accessibility for the ultrasound probe. In a supine patient, the easiest area to attempt UGPIV placement will most likely be on the volar aspect of the patient's forearm.

Exam technique

- Vessel selection: After cleaning the skin with an alcohol swab, apply an adequate amount of sterile ultrasound gel to the area where the attempt will be made. Consider the use of local anesthetic when attempting cannulation of deeper veins.

Exam technique

- Short and long axis techniques will be described for placing UGPIV

Exam technique

- <http://www.youtube.com/watch?v=-fduljQ8EH4>

Post-test