**NOTE 5 Using A Hand Held Doppler To Assist With PICC Placement**

**HOW TO USE THIS APPLICATION NOTE**

- **DOPPLEX® EQUIPMENT REQUIRED**  Select the most appropriate Dopplex® Pocket unit to perform the examination. For suggestion of suitable Dopplex® equipment, refer to Figure 1.

- **PROCEDURE**  Peripherally Inserted Central Catheters (PICCs) are placed via cannulation of one of the patient’s antecubital fossa veins. Follow the procedure in Figure 3.

- **LOCATING VEINS**  Figure 4 suggests the ideal probe position for locating veins.

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**FIGURE 1  EQUIPMENT REQUIRED**

- Bi-directional Doppler, Super Dopplex® II, Multi Dopplex® II or Maxi Dopplex® with VP8 probe.
- Coupling gel
- Tourniquet
- Surgical marker

**FIGURE 2  IDENTIFYING VEINS**

Veins generate low velocity Doppler signals which can be described as sounding like ‘wind’; arteries generate pulsatile multi-phasic signals.

**FIGURE 3  PROCEDURE**

- Adequate skin preparation should always be performed prior to venipuncture. The person placing the PICC should always wear appropriate clothing to provide personal protection, to create and maintain a sterile environment, e.g. sterile gloves, gowns, etc.
- The area surrounding the site should be draped to ensure that a sterile environment is created and maintained.
- NOTE - Always clean the probe tip with an alcohol dampened wipe or a damp cloth dampened with a mild detergent before and after use. Remove excess gel before storing the probe.

**FIGURE 4  TESTING POSITION**
It is important to be able to differentiate between the sounds generated by the Arteries and Veins. Arteries generate high frequency multi-phasic sounds, whereas veins usually generate low velocity monophasic signals. If using a Bi-directional Doppler, vessel type can be confirmed by the information displayed on the bar graph. See examples below.

The bar graph display should always be coincident with the sounds.

References: Gabriel J, PICCs: How Doppler ultrasound can extend their use. Nursing Times, volume 95 No. 6:1999
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