ASSOCIATION FOR VASCULAR ACCESS

Position Statement

The Use of Ultrasound Guidance by Registered Nurses for Central Venous Catheter Insertion

POSITION

It is the position of the Association for Vascular Access that:

- Registered nurses (RNs) who insert Central Vascular Access Devices (CVADs) must be allowed access to and use of ultrasound technology guidance as a standard procedural component of safe and optimal insertion of CVADs;
- Ultrasound guidance improves catheter insertion success rates, reduces the occurrence of multiple venipuncture attempts before successful insertion, and thereby reduces complications associated with CVAD insertion;
- Recommendations of the Agency for Healthcare Research and Quality (AHRQ), the U.S. Centers for Disease Control and Prevention (CDC), and the U.K.'s National Institute for Clinical Excellence (NICE) establish ultrasound guidance as the current state of the art for the placement of central CVADs;
- When used to guide CVAD insertion, ultrasound is non-diagnostic, non-invasive, and does not involve radiation exposure to either patients or the person performing the procedure.

RATIONALE

Many medical therapies involve administration of fluids and medications with chemical properties that make them unsafe to administer into small superficial veins. CVADs, developed and introduced over a half-century ago, are now used to deliver these life-saving fluids and medications directly to large veins and arteries. Within these vascular structures, dilution of irritating and damaging chemical properties of these agents occurs, thereby reducing short and long-term complications linked to their infusion.

Historically, CVAD insertion and placement was carried out by clinicians relying on external anatomical landmarks. Due to normal human anatomical variances, landmarks cannot be trusted to offer accurate guidance in vascular selection and device insertion, and their use results in complication rates exceeding 15%, including inadvertent puncture of lungs and arteries, nerve damage and subsequent chronic pain syndromes, and local and systemic infection.[1]

Since the advent of portable ultrasound units, the vast majority of peripherally inserted central catheter insertions are accomplished with the aid of ultrasound guidance, a technologic advance that increased insertion success from less than 80% without ultrasound, to greater than 90% using ultrasound, [2] reducing patients'

The Association for Vascular Access
Promoting excellence and patient safety in vascular access since 1985
5526 West 13400 South
Suite #229, Herriman, Utah 84096
Phone: 801-792-9079

distress and trauma associated with multiple venipuncture attempts,[3] insertion-related complications,[4] and savings of healthcare fiscal resources.[5]

Today, registered nurses (RNs) place approximately 70% of the nearly three million peripherally inserted central catheters (PICCs) inserted annually in the United States.[6] Physicians, technologists, physician assistants, and others are largely responsible for placement of the remaining 30% of PICCs.[6]

The U.S. Agency for Healthcare Research and Quality (AHRQ) identified use of ultrasound to guide placement of PICCs and other CVADs as one of eleven patient safety practices that warrant widespread adoption.[4] Use of ultrasound guidance during PICC and other CVAD insertion is an essential element of safe and cost-effective care in any setting.[1,7,8]

REFERENCES

1. Feller-Kopman D. Ultrasound-guided internal jugular access: a proposed standardized approach and implications for training and practice. *Chest.* 2007; 132:302-309.
2. Anstett M, Royer T. The impact of ultrasound on PICC placement. *Jour Assoc for Vascular Access*. 2003; 8(3): 24-28.
3. Johnson MA, Mckenzie L, Tussey S, Jacobs H, Couch C. Portable ultrasound: a cost effective process improvement tool for PICC placement. *Nurs Manage.* 2009; 40(1): 47-50.
4. Agency for Healthcare Research and Quality. Making health care safer: a critical analysis of patient safety practices. 2001. Web site: http://archive.ahrq.gov/clinic/tp/ptsaftp.htm. Accessed June 5, 2010.
5. National Institute for Clinical Excellence. Technology Appraisal Mo 49. Guidance on the use of ultrasound locating devices for placing central venous catheters. http://www.nice.org.uk/nicemedia/pdf/Ultrasound_49_GUIDANCE.pdf#nullAccessed June 14, 2010.
6. Millennium Research Group. Short Peripheral Intravenous Catheter Market. MRG. 2006. Ch 2; 12
7. Calvert N, Hind D, McWilliams RG, Thomas SM, Bereley C, Davidson A. The effectiveness and cost-effectiveness of ultrasound locating devices for central venous access: a systematic review and economic evaluation. *Health Technology Assessment* .2003; 7(12). http://www.ncchta.org/execsumm/summ712.htm. Accessed June 14, 2010
8. Gallieni M, Pittiruti M, Biffi R. Vascular access in oncology patients. *CA – Cancer J Clin.* 2008; 58:323-346.

APPROVED BY THE AVA BOARD OF DIRECTORS

June 17, 2010

The Association for Vascular Access
Promoting excellence and patient safety in vascular access since 1985
5526 West 13400 South
Suite #229, Herriman, Utah 84096
Phone: 801-792-9079