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**OPINION: VASCULAR ACCESS DEVICE AND
ARTERIAL CATHETER INSERTION AND
REMOVAL BY REGISTERED NURSE
APPROVED: 11/02
REVISED DATE:03/06, 11/09, 09/12, 01/16, 03/19, 01/24
1/25
ORIGINATING COMMITTEE:
SCOPE OF PRACTICE**

Within the Scope of Practice of RN LPN

ADVISORY OPINION CENTRAL VASCULAR ACCESS DEVICE, ARTERIAL CATHETER INSERTION, AND REMOVAL BY REGISTERED NURSES

It is within the scope of practice for a Registered Nurse (RN) with additional training with competency assessment to insert and remove percutaneously inserted (CVADs) and arterial catheters.

It is within the scope of practice for the RN to obtain informed consent from the patient/client for the placement of a CVAD or RAC, in a manner consistent with current agency/employer policies governing the informed consent process.
Refer to the Informed Consent Advisory Opinion.

It is NOT within the scope of practice for the (RN) to perform fluoroscopy or operate radiographic equipment independently.

It is NOT within the scope of practice for the RN to insert a TIVAD using a surgical techniques (i.e. cutdown or fully implanted) approach.

| Type of CVAD Insertion | Scope |
|---|--|
| Peripheral intravenous catheter into the internal or external jugular vein | RN – after appropriate course of instruction and competency assessment |
| PICC (CVAD) insertion using the external jugular vein, basilic/brachial veins, cephalic vein, femoral vein, umbilical vein using either direct puncture or Modified Seldinger Technique (MST) including use of extended subcutaneous route (pseudo-tunneling) | RN – after appropriate course of instruction, and competency assessment |
| MTF-PICC using direct puncture or Modified Seldinger Technique (MST) including use of extended subcutaneous route (pseudo-tunneling) approach | RN – after appropriate course of instruction, and competency assessment |
| CICC/FICC/UVC (CVAD) insertion using the internal jugular vein, axillary vein, femoral vein, subclavian vein, umbilical vein; including use of extended subcutaneous route (pseudo-tunneling) for devices where appropriate | RN – after appropriate course of instruction, and with Licensed Practitioner LP readily accessible and competency assessment |
| AHD (CVAD) insertion using the internal jugular vein, femoral vein; use of extended subcutaneous route (pseudo-tunneling) for device where appropriate | RN – after appropriate course of instruction, and with LP readily accessible and competency assessment |
| Radial or peripheral arterial catheter (RAC/PAC) insertion using either direct puncture, an integrated guidewire system or Seldinger technique | RN – after appropriate course of instruction, and with LP readily accessible and competency assessment |
| Radial, brachial, or ulnar arterial puncture to obtain arterial blood gasses. | RN – after appropriate course of instruction, and competency assessment |

I. GENERAL REQUIREMENTS

- A. The agency/employer maintains current, evidence- based written VAD insertion policies and procedures, which address inserters’ qualifications, initial and ongoing competency, scope, and supervision requirements (as appropriate by facility)
 1. Qualifications: established training and competencies.
 2. Recommend a minimum two (2) years of experience performing ultrasound- guided vascular access.
 3. The minimum number of procedure insertions should be based on organizational policy and procedure. Performing greater numbers of VAD insertion procedures is associated with lower rates of complications; however, the number of procedures performed is not an adequate surrogate for competency.

- B. The RN inserting a VAD will have completed an instructional program that includes supervised clinical practice in ultrasound guided VAD insertion
 - 1. Established competency in ultrasound imaging for central vascular access and arterial procedures to include knowledge of all central vascular pathways (venous and arterial) and clear proficiency of vessels, surrounding structures, and patient assessment
- C. Didactic education, proctored clinical practice, and competencies for advanced CVAD techniques are completed and held on file with the agency/employer
- D. The RN, if using chest radiograph (initial or repeat) to verify all CVAD tip placements must have completed appropriate education and may not extend that training to the interpretation of radiographs for any other purpose. The RN may confirm with use of tip navigation/tip positioning devices e.g., intracavitary electrocardiogram (IC-ECG) \pm Doppler technology or other approved tip confirmation/positioning technologies as approved by facility policies
- E. The RN may proceed with use of the VAD for infusion therapies per agency/employer policy and procedure after optimal tip placement verification.
- F. For the RN's caring for and maintaining any VAD, including removal by an RN, the agency/employer maintains a current, evidence-based written policy and procedure.
- G. There is immediate accessibility to emergency equipment and personnel who are competent in managing complications associated from placement of these devices.
 - 1. A designated LP who is qualified to manage potential complications of VAD insertion shall be readily accessible to assist with the management of any associated complications.
 - 2. All VADs must be placed by inserters appropriately trained and competent in the use of ultrasound techniques. Ultrasound should be required for all patient assessment and VAD insertions, except in emergent situations where ultrasound may not be available (as appropriate per type of VAD and per facility policy). The RN should request a more experienced inserter given a situational assessment and patient condition. It is recommended that the RN inserting a VAD have current advanced cardiac life support training/certification appropriate to the patient population (ACLS, PALS, NRP, etc).

II. COURSE OF INSTRUCTION

Evidence-based education provided by practitioners skilled in ultrasound-guided VAD insertion, care and complication management. Course of instruction shall include, but is not limited to the following; (as appropriate per type of VAD and per facility policy):

- A. VAD indications and contraindications
- B. Infection control practices: sterile technique including maximal sterile barrier precautions, sterile field set up, and procedural aspects.
- C. Techniques used to anesthetize the insertion site for patient comfort and secure catheter post insertion as per facility policies.
- D. Use of VAD bundles, for assessment, procedural and ongoing care.
- E. Anatomy and physiology of the neck, chest, axillary and groin area, upper and lower abdomen, and upper and lower extremities to include at a minimum arteries, veins, nerves, lungs, and heart as well as nerve structures.
- F. Thorough patient assessment skills and patient preparation associated with VAD placement and removal.
- G. Knowledge of radiographic landmarks and techniques.
- H. Appropriate use of ultrasound or fluoroscopy, where applicable.

- I. Catheter tip positioning/navigation confirmation training to include intracavitary electrocardiogram (IC-ECG ± Doppler technology) or chest x-ray (CXR). Clearly established competencies for ultrasound assessment for sliding lung technique to rule out pneumothorax/pleural damage.
- J. Skills to detect abnormal anatomy and techniques for catheter repositioning/manipulation/interpretation.
- K. Nursing responsibilities including patient or caregiver education.
- L. Insertion, securement and stabilization, maintenance, and removal techniques, appropriate to device type and age/patient specific guidelines.
- M. Comprehensive knowledge and appropriate insertion techniques for central venous cannulation to include: Seldinger, modified Seldinger, and direct puncture, and (where applicable).
- N. Insertion and post-insertion related complications and management strategies.

III. RATIONALE

Due to the ever-changing healthcare landscape, qualified RNs may insert and remove VADs and arterial catheters in the provision of ongoing vascular access care. Due to the associated risks with VAD insertion and use, these invasive procedures should only be performed by a qualified RN with demonstrated competencies, established

knowledge, and skill sets. Considering these associated risks with VAD insertion, a LP should be readily accessible to assist with any associated procedural complication management.

The expertise of an RN educated to insert and maintain and care for VADs is consistent with current state of practices as outlined by the Infusion Nurses Society and the Association of Vascular Access (AVA).

The expertise and education required for radiographic tip confirmation when interpreting x-rays and using fluoroscopy for positioning and repositioning VADs is consistent with the American College of Radiology standard as to ensure safe practice and continuity of care for patients.

Central Vascular Access Device (CVAD) Glossary of Terms:

CVAD – central vascular/venous access devices

PICC - peripherally inserted central catheter

CICC - centrally inserted central catheter

FICC - femorally inserted central catheter

MTF-PICC - midhigh femoral-peripherally inserted central catheter

AHD – acute hemodialysis catheter

RAC - radial arterial catheter

TIVAD – totally implantable vascular access

device UVC- umbilical venous catheter

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