

<b>Graduate Medical Education Policy</b>	Central Venous Catheter (CVC) Placement
<b>Facility/Sponsor</b>	CMC/GMEC
<b>Policy Origin Date</b>	June 2015
<b>Revision Date</b>	March 2026

### **PURPOSE**

Carilion Medical Center is committed to ensuring all trainees in accredited programs who place central venous catheters (CVC) do so safely, consistently, and with appropriate training and supervision. This policy is intended to standardize how trainees are taught, supervised, and evaluated when performing central venous catheter placements.

### **SCOPE**

This policy applies to all Accreditation Council for Graduate Medical Education (ACGME), Council on Podiatric Medical Education (CPME), and Commission on Dental Accreditation (CODA) accredited graduate medical education programs sponsored by Carilion Medical Center (CMC).

### **DEFINITIONS**

**Trainee:** refers to all interns, residents, and fellows participating in graduate medical education programs at Carilion Medical Center and may be used interchangeably with the terms resident and fellow.

**Supervising Physician:** the attending physician who is credentialed by Carilion Medical Center to perform CVC placements.

**Direct Supervision:** the supervising physician is physically present with the trainee during the key portions of the patient interaction.

**Indirect Supervision:** the supervising physician is not providing physical or concurrent visual or audio supervision but is immediately available to the trainee for guidance and is available to provide appropriate direct supervision.

**Oversight:** the supervising physician is available to provide review of procedure/encounters with feedback provided to the trainee after care is delivered.

**Training Phases:** designated levels of competency based on education, training, and proficiency as determined by the Program Director.

1. Learner Phase: early training level – all procedures require direct supervision.
2. Competency Phase: intermediate level – with approval, trainees may perform procedures with indirect supervision
3. Teaching Phase: advanced level – trainees may perform procedures with oversight and may supervise and teach others

**Medically Complex Patient:** a patient with conditions that increase risk of complications. Examples include but are not limited to abnormal anatomy, coagulopathy, agitation, collapsed vessels, and extremes of habitus.

**Internal Jugular (IJ) and Femoral Catheters:** are central venous access devices, with the IJ generally preferred for lower infection risks and better patient mobility. IJ is often used for medium-term access, while femoral, though easier to access, has higher infection and thrombosis risks, often reserved for emergency or temporary use.

**Large Bore Catheter:** catheters >7.5 Fr (e.g., dialysis, trauma/resuscitation catheters).

### **PROCEDURE**

#### **1. General Principles**

- a. Whenever possible, ultrasound should be used for internal jugular and femoral CVC placement

- b. Supervising Physicians may adjust the approach in unusual or urgent clinical situations
  - c. Trainees may only perform procedures appropriate for their level of training
- 2. Learner Phase**
- a. The purpose of this phase is to build foundational skills in CVC placement, to develop safe habits, and to learn standard techniques using both anatomy and ultrasound guidance. At this beginner level, all CVC placements require direct supervision.
  - b. Required Training**
    - i. Required training must be successfully completed before any attempts to place CVC in a patient
    - ii. Read and review the Central Line Placement Policy
    - iii. Read and review the CVC Competency
    - iv. Complete the in-person institutional Central Line Training Course
    - v. Complete Duke Infection Control Outreach Network (DICON) online module and score at least 80% on required post-tests
      - 1. For Physicians: Insertion of Central Venous Catheters 3.0
      - 2. For Nurses and Allied Staff: Care and Maintenance of Central Venous Catheters 2.0
  - c. Expected Skills Competency**
    - i. Understand when and why a CVC is needed
    - ii. Proper setup, sterile technique, and procedure preparation
    - iii. Identifying appropriate anatomic and ultrasound landmarks
    - iv. Recognizing complications early and notifying the Supervising Physician immediately
    - v. Performing individual portions of the procedure under close guidance
  - d. Restricted Activities**
    - i. Learners may NOT attempt CVC placement in medically complex or high-risk patients, emergency situations requiring rapid placement, or cases involving large-bore catheters. These situations exceed the expected skill level for beginners.
  - e. Supervision Requirements**
    - i. Direct supervision is required for every step of every procedure in the Learner Phase.
    - ii. The supervising individual must be a credentialed attending physician, a fellow, or a senior resident who has been approved for the Teaching Phase.
  - f. Goals for Advancement**
    - i. Successfully complete at least 10 CVC placements under direct supervision; it is at the Program Director's discretion to adjust this number based on individual trainee's competency and skill level.
    - ii. The resident must demonstrate the ability to perform the procedure safely, maintain sterile technique, communicate clearly, and remain aware of patient risk factors.
- 3. Competency Phase**
- a. The purpose of this phase is to allow trainees who have mastered the basics to perform CVC placement independently while support is still immediately available when needed. At this intermediate level, trainees may perform CVC placements with indirect supervision.
  - b. Eligibility Requirements**
    - i. Complete all Learner Phase requirements
    - ii. To maintain this phase, trainees must annually complete the online DICON module, Safety Practices for Central Venous Catheter (CVC) Insertion: Refresher Course, with a passing post-test score of at least 80%
    - iii. Successfully complete at least 10 CVC placements with direct supervision
    - iv. Obtain Program Director approval
  - c. Expected Skills Competency**
    - i. In this phase, trainees should be able to:

- ii. Independently set up, perform, and complete a CVC procedure using proper sterile techniques
  - iii. Confidently use ultrasound for femoral and internal jugular placements
  - iv. Recognize early signs of complications and escalate care appropriately
  - v. Select appropriate patients for independent procedures
  - vi. Accurately document procedures in EMR using the designated CVC workflow
- d. Restricted Activities**
- i. Large-bore catheters: trainees may not perform large-bore catheters without direct supervision until they have successfully completed at least five (5) placements under direct supervision.
  - ii. Trainees in the Competency Phase may not supervise other learners until they reach the Teaching Phase.
- e. Supervision Requirements**
- i. Indirect supervision by a supervising physician is acceptable
  - ii. Direct supervision is required for complex patients or unusual circumstances
- f. Goals for Advancement**
- i. Continue building speed and acumen
  - ii. Develop the ability to teach and troubleshoot common challenges
  - iii. Reach a total of 15 successful CVC at IJ/Femoral sites if planning to enter the Teaching Phase
- 4. Teaching Phase**
- a. This stage is designed to prepare senior trainees to safely supervise and teach CVC placement, including coaching on technique, troubleshooting, and safe patient selection.
- b. Eligibility Requirements**
- i. To enter this phase, trainees must:
  - ii. Complete all requirements in both the Learner and Competency Phase including annually completing the online DICON module, Safety Practices for Central Venous Catheter (CVC) Insertion: Refresher Course, with a passing post-test score of at least 80%
  - iii. Successfully complete at least:
    - 1. 15 total IJ/Femoral lines, AND
    - 2. 5 subclavian lines to supervise subclavian placement
  - iv. Obtain Program Director approval
- c. Expected Skills Competency**
- i. Consistently demonstrate the following:
  - ii. Independent performance of CVC placement at all assigned sites
  - iii. Ability to anticipate challenges learners may encounter
  - iv. Ability to intervene promptly and safely if a procedure becomes high risk
  - v. Knowledge of when to escalate to an attending physician
  - vi. Clear communication and teaching skills, including coaching sterile techniques
  - vii. Maintain high procedural quality
  - viii. Model safe practice and adherence to institutional guidelines
  - ix. Seek attending support for medically complex patients or complications
- d. Permitted Activities**
- i. Teach and supervise trainees in Learner Phase
  - ii. Assist in assessing patient complexity and determining whether or not a learner may attempt a procedure
  - iii. Perform and supervise procedures at IJ and Femoral sites, and subclavian sites if subclavian-competent and approved
- e. Supervision Requirements**
- i. May supervise learners under direct supervision standards
  - ii. May perform independent procedures under indirect or oversight supervision from attending physicians
- 5. Escalation**
- a. A supervising attending or teaching phase provider must take over the procedure if:
- i. The trainee has to unsuccessful attempts

- ii. There is an arterial puncture
- iii. There is concern for pneumothorax or patient instability
- iv. Any complications occur or are suspected
- b. Trainees in the Competency Phase may not take over escalation; only attendings or Teaching Phase trainees may assume the procedure.

**6. Transfers and Visiting Residents**

- a. Trainees entering mid-program, or transferring into fellowship from residency must:
  - i. Provide documentation of previous CVC training and experience
  - ii. Complete institutional online modules
  - iii. Demonstrate at least one supervised CVC placement at the bedside
  - iv. Complete full training program if unable to show competency

**7. Documentation, Assessment and Verification**

- a. All CVCs must be documented in the electronic medical record using the designated procedure workflow
- b. Competency must be verified by an attending who directly observed the entire procedure
- c. The Program Director maintains ultimate authority for determining whether or not a trainee is competent to perform CVC placements and the level of supervision under which they may be placed.

Designated Institutional Official	Reviewing Committee	Date Approved
Donald Kees, MD	GMEC	July 21, 2015
Donald Kees, MD	GMEC	March 19, 2019
Arthur Ollendorff, MD	GMEC	May 17, 2022
Arthur Ollendorff, MD	GMEC	March 17, 2026