Surgical Intensive Care Unit
Practice Management Guidelines: Central Venous Access

I. Purpose:
Central lines are a significant cause of hospital acquired blood stream infections (CLABSI). Significant literature supports the adoption of several safety practices for the insertion and maintenance of these catheters in critically ill patients.

These practices are bulleted below and summarized in the table approved and VUMC institutional policy (https://www.vumc.org/infectioncontrol/32960).

II. Guideline:

Catheter selection: When available, antibiotic impregnated catheters should be utilized for all central line insertions in the ICU.

Insertion site: The subclavian position is the preferred site for insertion, as the infection risk is lowest for this site. Internal jugular (IJ) is the second alternative with the femoral position being the least preferred due to both infection and thrombosis risk. Other factors, such as potential for mechanical complication, risk for subclavian vein stenosis, and catheter-operator skill should be considered when deciding where to place the catheter.

Ultrasound guidance: If the IJ position is selected, ultrasound guidance prior to and during the procedure should be employed. Ultrasound may be useful for other sites in certain circumstances.

Insertion technique:

- Obtain consent for central line placement.
- Ensure continuous cardiac monitoring with QRS volume up and continuous pulse oximetry.
- Full barrier precautions should be utilized for all invasive catheters.
- This includes ALL the following:
  - Mask
  - Cap
  - Sterile Gown
  - Sterile Gloves
  - Small blue towel drape x 4.
  - Large drape in addition to 4 “blue towels” that fully cover the head and torso of the patient.
- Skin should be free of debris and adequately and widely prepped with chlorhexidine or ChloraPrep and allowed to dry.
• Patient should be in Trendelenburg position to prevent air embolus, unless contraindication (particularly spontaneously breathing patients). A sufficient volume of air to cause mortality can travel through a 14-gauge needle in < 1 second.
• Transduce line using transducer in central line kit before dilating to ensure venous catheterization.

Replacement of central venous catheters:

• Evidence of local catheter infection such as purulence, erythema, tenderness, mandates a catheter change to a new site.
• Do not use guide wire exchanges to replace non-tunneled catheter suspected of being the source of bacteremia (i.e. + blood cultures).
• Do not routinely replace CVC (or change over guide wire) or pulmonary artery catheters to prevent catheter related infections.
• You may use change over guide wire to replace a mal-functioning catheter if no infection is suspected.
• For patients with SIRS and undergoing evaluation of possible line infection, the risk of line infection should be weighed against the risk of mechanical complications with new line insertion. Catheters exchanged over a wire with culture will limit the risk of mechanical complications and stenoses, but may increase the risk of subsequent colonization – change over wire vs. new site.
• Patients with evidence of bloodstream infection with hemodynamic instability, sepsis – change line to new site.
• No clinical evidence of infection – do not change line.
For more detail see PolicyTech: CL 30-07.11

III. References


IV. Revised June 1, 2021:

Michael C. Smith, MD
SICU PI Physician Lead

Elizabeth King, RN, BSN, CCRN
CSL, Surgical Intensive Care Unit

V. Endorsement:

Shannon C. Eastham, MD
SICU Co-Medical Director

Approved: June 1, 2021