VANDERBILT UNIVERSITY MEDICAL CENTER
MULTIDISCIPLINARY SURGICAL CRITICAL CARE

CLINICAL MANAGEMENT GUIDELINES:
CENTRAL VENOUS ACCESS

RATIONALE:
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 (http://www.mc.vanderbilt.edu/infectioncontrol).

GUIDELINE:
Catheters 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 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 of 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.
  If rewiring a line:
  - Double glove, remove outer gloves after removal of original line.
  - Set old line aside and cover with sterile towel.
  - Cut old line to appropriate length for culture after covering new line with sterile dressing
- Skin should be free of debris and adequately and widely prepped with chlorhexidine or ChloraPrep and allowed to dry.
- Patients should be in trendelenburg position to prevent air embolus unless contra-indication (particularly spontaneously breathing pts). 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) [6].
- Do not routinely replace CVC (or change over guide wire) or pulmonary artery catheters to prevent catheter related infections [6].
- You may use change over guide wire to replace a mal-functioning catheter if no infection is suspected [6].
- 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. Exchanged over a wire with culture will limit the risk of mechanical complications and stenoses but increase the risk of subsequent colonization – change over wire vs. new site [7,8].
- Patients with evidence of BSI with hemodynamic instability, sepsis – change line to new site.
- No clinical evidence of infection – do not change line.
REFERENCES:


*Clinical Management Guidelines (CMG) have been developed by the Multidisciplinary Surgical Critical Care service in an attempt to standardize and optimize care. They are based on a combination of accepted surgical practice and recent contributions to the medical literature. CMGs are intended to provide guidelines for the management of the majority of patients, and are not proposed as rules, policies or as a substitute for clinical judgment. Deviations from the CMGs are necessary and expected; all exceptions should be documented in the medical record and discussed with the attending physician.

Revised: June 29, 2011
Addison May, MD

Reviewed/revised: February 2014
Addison May, MD
Caroline Banes ACNP-BC

Approved:

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Addison May, MD