Prevention of Central Venous Catheter (CVC)-Related Bloodstream Infections

**Description:** Percentage of patients, regardless of age, who undergo central venous catheter (CVC) insertion for whom CVC was inserted with all elements of maximal sterile barrier technique, hand hygiene, skin preparation and, if ultrasound is used, sterile ultrasound techniques followed

**Denominator:** All patients, regardless of age, who undergo CVC insertion

**Numerator:** Patients for whom central venous catheter (CVC) was inserted with all elements of maximal sterile barrier technique, hand hygiene, skin preparation and, if ultrasound is used, sterile ultrasound techniques followed

**Definition:**

Maximal Sterile Barrier Technique – includes all of the following elements: Cap AND mask AND sterile gown AND sterile gloves AND sterile full body drape.

Sterile Ultrasound Techniques – require sterile gel and sterile probe covers

**Rationale:** Catheter-related bloodstream infection is a costly complication of central venous catheter insertion, but may be avoided with routine use of aseptic technique during catheter insertion. This measure is constructed to require that all of the listed elements of aseptic technique are followed and documented. Hospital-acquired bloodstream infections are a common complication that leads to increased costs and mortality. 1 It is estimated that approximately 51% of hospital-acquired bloodstream infections occur in an intensive care unit (ICU), with the presence of a central venous catheter being the largest risk factor for the development of a bloodstream infection in the hospital. 2 Catheter-related bloodstream infections (CRBSIs) commonly occur when the catheter becomes contaminated by microbes on the skin during insertion. The use of maximal sterile barriers, including sterile gloves, long-sleeved sterile gown, mask, cap, and full-sized sterile drape, during insertion of the catheter has been shown to cost effectively reduce CRBSI rates compared to the use of less stringent precautions. 3 , 4 , 5 , 6

**Clinical Recommendation Statements:** Maximal sterile barrier precautions: Use maximal sterile barrier precautions, including the use of a cap, mask, sterile gown, sterile gloves, and a sterile full body drape, for the insertion of CVCs, PICCS, or guidewire exchange (CDC) (Category IB).

Hand hygiene: Perform hand hygiene procedures, either by washing hands with conventional soap and water or with alcohol-based hand rubs (ABHR) (Category IB)

Skin Preparation: Prepare clean skin with a >0.5% chlorhexidine preparation with alcohol before central venous catheter and peripheral arterial catheter insertion and during dressing changes. If there is a contraindication to chlorhexidine, tincture of iodine, an iodophor, or 70% alcohol can be used as alternatives (Category IB)

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6 Lee DH, Jung KY, Choi YH. Use of maximal sterile barrier precautions and/or antimicrobial-coated catheters to reduce the risk of central venous catheter-related bloodstream infection. Infect Control Hosp Epidemiol. 2008;29:947-950.
Sterile Ultrasound: The Food and Drug Administration recommends that policies and clinical practice standards be reviewed to ensure the use of sterile ultrasound gel. Once a container of sterile or non-sterile ultrasound gel is opened, it is no longer sterile and contamination during ongoing use is possible.

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