Central Line Insertion Practices (CLIP) Adherence Monitoring

Introduction: Central line-associated bloodstream infections (CLABSIs) may be prevented through proper placement and management of the central line.[1-4] The CDC's Healthcare Infection Control Practices Advisory Committee (CDC/HICPAC) *Guidelines for the Prevention of Intravascular Catheter-Related Infections*, 2011[1] recommend evidence-based central line insertion practices known to reduce the risk of subsequent central line-associated bloodstream infection. These include hand hygiene by inserters, use of maximal sterile barriers during insertion, proper use of a skin antiseptic prior to insertion, and time to allow the skin antiseptic to dry before catheter insertion.

Several centers have found it useful to monitor adherence to evidence-based central line insertion practices as a method for identifying quality improvement opportunities and strategically targeting interventions. Feedback of adherence data has been a component of multifaceted interventions that have successfully reduced CLABSI rates.

Participation in NHSN CLIP surveillance enables participating facilities and CDC to:

- Monitor central line insertion practices in individual patient care units and facilities and provide aggregate adherence data for all participating facilities; facilities have the option of recording inserter-specific adherence data
- Facilitate quality improvement by identifying specific gaps in adherence to recommended prevention practices, thereby helping to target intervention strategies for reducing CLABSI rates

Participating facilities may perform surveillance for insertion practices during the following:

- a month when concurrent CLABSI surveillance is being conducted
- a month when no CLABSI surveillance is being conducted

If participating facilities wish to identify associations between insertion practices and outcomes (specifically, CLABSI), surveillance for insertion practices and CLABSI must be done concurrently.

Settings: Surveillance may occur in any type of patient care location where central lines are inserted.

Numerator and Denominator Data: The *Central Line Insertion Practices Adherence Monitoring Form* (CDC 57.125) is used to collect and report central line insertion practices for every central line insertion attempt occurring during the month in the unit(s) selected for surveillance. If an insertion attempt is unsuccessful, report a new CLIP event only if a new site preparation was performed. The *Table of Instructions for Completion of the Central Line Insertion Practices Adherence Monitoring Form* contains directions for collection and entry of each data element on the form. The form can be completed at or near the time of insertion, either by the inserter or an observer present at the insertion (for example, a nurse

assisting with the catheter insertion), or the form can be completed from documentation in the patient chart (only if all elements of the monitoring form have been incorporated into standard central-line insertion procedure notes). The form includes information pertaining to demographics of the patient, information pertaining to the inserter, information on maximal sterile barriers used, the reason for central line insertion, whether the insertion was successful, skin antisepsis, hand hygiene practice before insertion, type of central line including whether it was antimicrobial coated, insertion site and, if placed because of suspected existing central line infection, the use of a guide wire. Elements of some of these data will be used to calculate adherence to recommended insertion practices.

Data Analyses: Adherence rates for specific insertion practices will be calculated by dividing the number of bundle- compliant central line insertions (numerator) by the total number of central line insertions (denominator) and multiplying the result by 100. Such calculations can also be done for a bundle of practices that have been shown to reduce the incidence of CLABSI (specifically, NHSN CLIP Bundle). In NHSN for CLIP insertions dated January 1, 2016 and forward, adherence to the bundle requires a "Yes" to all of the following:

- Hand hygiene performed
- Appropriate skin prep*
    - Chlorhexidine gluconate (CHG) for patients ≥60 days old unless there is a documented contraindication to CHG
    - Povidone iodine, alcohol, CHG, or other specified for children <60 days old
- Skin prep agent has completely dried before insertion
- **All** 5 maximal sterile barriers used
    - Sterile gloves
    - Sterile gown
    - Cap
    - Mask worn
    - Large sterile drape (a large sterile drape covers the patient's entire body)

Note: These calculations are performed separately for different types of locations in the institution. Participants have the option of calculating inserter-specific adherence rates.

*The Food and Drug Administration (FDA) has labeled CHG to be used with care in premature infants and infants < 2 months of age.

REFERENCES

[1]O'Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, et al. "Guidelines for the Prevention of Intravascular Catheter-related Infections". *Clinical Infectious Diseases* 52 (a): (2011): 1087-99.

[2]Hang HJ, Lin HL, Lin YH, Leung PO, Chuang YC, Lai. *The Impact of central line insertion bundle on central line-associated bloodstream infection.* BMC Infectious. 2014;14:356.

[3]Infusion Nurses Society. Infusion Therapy Standard of Practice. *J Inf Nurs.2016 Jan-Feb; 39 number 1S.*

[4]Pronovost P, Needham D, Berenholtz S, et al. An intervention to decrease catheter-related bloodstream infections in the ICU. New England Journal of Medicine. 2006;355:2725-2732.