Central Line Insertion Practices (CLIP) Adherence Monitoring

Introduction: Central line-associated bloodstream infections (CLABSIs) can be prevented through proper placement and management of the central line. The CDC's Healthcare Infection Control Practices Advisory Committee (CDC/HICPAC) *Guidelines for the Prevention of Intravascular Catheter-Related Infections*, 2011[1] recommends 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 allowing that skin antiseptic to dry before catheter insertion. Despite the scientific evidence supporting these measures, several reports suggest that adherence to these practices remains low in U.S. hospitals.

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 to 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.

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

Requirements: Surveillance for central line insertion practices in at least one location in the healthcare institution for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Participating facilities may perform surveillance for insertion practices during a month when concomitant CLABSI surveillance is being conducted, or may collect insertion practice data during a month when no CLABSI surveillance is being conducted or in locations where CLABSI are not monitored (e.g., emergency department, operating room, etc.). If participating facilities wish to identify associations between insertion practices and outcomes (i.e., CLABSI), surveillance for insertion practices and CLABSI must be done concomitantly.

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, including unsuccessful attempts,

occurring during the month in the unit(s) selected for surveillance. The *Instructions for Completion of the Central Line Insertion Practices Adherence Monitoring Form* (Tables of Instructions, Table 3) 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 (e.g., nurse assisting with the catheter insertion), or the form can be completed from documentation in the patient chart (e.g., if the 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 reasons for central line insertion, whether the insertion was successful, skin antisepsis, hand hygiene practice before insertion, type of central line and insertion site, and use of a guidewire. Elements 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 central line insertions during which the recommended practice was followed by the total number of central line insertions 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. In NHSN, adherence to the bundle requires a "Yes" to all of the following:

- Hand hygiene performed
- Appropriate skin prep
  - Chlorhexidene gluconate (CHG) for patients ≥ 60 days old
  - 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: CHG has not been labeled for use by the Food and Drug and Administration with patients < 2 months of age. Acceptance of CHG use for adherence to the CLIP bundle in this patient population does not reflect a recommendation of its use by the NHSN.

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

[1] O'Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, Maki DG, et al. Guidelines for the prevention of intravascular catheter-related infections, 2011. Clinical Infectious Diseases 2011; 52 (a):1087-99.