Central Line Insertion Practices (CLIP) Adherence Monitoring

1. Introduction

This VICNISS Central Line Insertion Practices (CLIP) adherence monitoring surveillance module is based on the National Health Safety Network (NHSN) Patient Safety Component Manual, Centers for Disease Control and Prevention (CDC) in the United States[1].

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 Infection,2011*[2] 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 some hospitals.

Monitoring adherence to evidence-based central line insertion practices can be a useful 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 VICNISS CLIP surveillance enables hospitals to:

- Monitor central line insertion practices in individual patient care units e.g. ICU, Interventional Radiology, and to provide aggregate adherence data for all participating facilities. Hospitals have the option of recording inserter-specific adherence data.
- Facilitate quality improvement by identifying specific gaps in adherence to recommended insertion practices, thereby helping to target intervention strategies for reducing central line-associated bloodstream infection rates.

CLIP surveillance may allow hospitals to link gaps in recommended practice with clinical outcomes (i.e., CLABSI) where measured.

2. Methodology

This module requires active, patient-based, prospective surveillance of central-line insertions. Clinicians shall seek out central line insertion procedures and collect data as required.

Due to the potential for poor documentation the data form should be completed as close to the time of the procedure as possible. Use VICNISS forms to record all required data.

Setting

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

Requirements

Surveillance for central line insertion practices in a nominated patient care location (e.g. ICU) for at least three calendar months as indicated in the VICNISS Surveillance Plan. For further information also refer to the VICNISS Type 1 Surveillance Manual (section 4.1) on the VICNISS website.

For participating patient care locations to identify associations between insertion practices and outcomes (i.e., CLABSI), surveillance for insertion practices and CLABSI must be done concomitantly. Currently VICNISS only offers the CLABSI surveillance module in ICU.

Numerator and Denominator Data

- A VICNISS web based data collection form (web form) Central Line Insertion Practices Adherence Monitoring form is to be used to report central line insertion practices for every central line insertion occurring in the nominated units during the months selected for surveillance.
- For further explanation of required data fields see Instructions for Completion of CLIP Data Form on the VICNISS website.
- For more information on how to register and obtain access to web forms please see the Web Based Data Collection Forms (Web Forms) User Guide on the VICNISS website.
- Ideally the form should be completed at or near the time of insertion by the observer (e.g., nurse assisting with the catheter insertion). If the observer is unable to complete the form it can be completed by the inserter. In the event that the form cannot be completed at the time of the procedure documentation in the patient chart can be used (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, skin antisepsis, hand hygiene practice before insertion, type of central line and insertion site, and use of a guide wire. Elements of these data will be used to calculate adherence to recommended insertion practices.
- The collection of information is estimated to average less than 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering needed data, and completing and reviewing the collection of information.

3. 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 VICNISS, adherence to the bundle requires a 'Yes' to all of the following:

- Hand hygiene performed
- Appropriate skin prep
    - 2% Chlorhexidine gluconate in 70% alcohol
    - Povidone iodine, alcohol, chlorhexidine, or other specified for children < 2 months 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

4. References

1. Centers for Disease Control and Prevention. The National Healthcare Safety Network (NHSN) Manual. Patient Safety Component Protocol. June 2011 http://www.cdc.gov/nhsn/TOC_PSCManual.html (last accessed July 2011)

2. O'Grady NP, Alexander M, Dellinger EP, Gerberding JL, Heard SO, Maki DG, et al. Guidelines for the prevention of intravascular catheter-related infections. *MMWR* 2002;51(No.RR-10:1-26)

Instructions for Completion of CLIP Adherence Monitoring Data Form

Please refer to the table below for instructions on each VICNISS data field.

CENTRAL LINE INSERTION PRACTICES (CLIP) ADHERENCE MONITORING

A web form is to be completed for each central line insertion.

Data Field	Instructions for Data Collection
Hospital Code Number	Enter the VICNISS assigned hospital code number.
MRN (UR No.)	Enter the patient UR Number. This is the alphanumeric patient identifier assigned by the hospital and may consist of a combination of numbers, letters, spaces, dashes or leading zeroes, e.g., 000-123-A.
Sex	Select male or female to indicate the gender of the patient.
DOB	Enter the date of the patient's birth using this format: day/month/year (DD/MM/YYYY).
Date of Central Line Insertion	Enter the date of central line insertion using this format DD/MM/YYYY.
Location of Central Line Insertion	Select the location of the patient at the time of central line insertion from the pick list: Intensive Care Unit (ICU), Radiology, Operating theatre, Emergency department; Level 3 neonatal nursery; Medical/surgical ward; or if Other – specify the location
Person Recording Insertion Practice	To indicate who is completing the data collection form select Observer (person observing central line insertion procedure) or Inserter (person inserting the central line). It is preferred that the observer complete the form.
Central Line Inserter (coded) *First name* *Last name*	*Optional field.* *Enter coded details of the person inserting the central line.* *Enter first two letters of the inserter's first name* *Enter the first two letters of the inserter's last name (surname)*
Occupation of Inserter	Select the occupational category of the person inserting the central line from the pick list: Consultant, Fellow/Registrar; Resident /Intern; Medical Student; IV team; or if none of these apply enter Other and specify
Reason for Insertion	Select the primary reason for inserting the central line from the pick list: • New indication for central line • Replace malfunctioning central line • Suspected central line-associated infection • Other, please specify the reason
If suspected central line-associated infection, was the central line exchanged over a guidewire?	If primary reason for inserting the central line was suspected central line-associated infection, select Yes if this central line was exchanged over a guide wire; if not, select No.

Data Field	Instructions for Data Collection
Inserter Performed Hand Hygiene Immediately Prior to Insertion	Select Yes if the inserter appropriately performed hand hygiene immediately prior to inserting central line; otherwise select No. Appropriate hand hygiene includes the use of alcohol-based hand rub or antimicrobial soap and water hand wash according to hospital protocol.
Maximal Sterile Barriers Used:	Indicate which barrier precautions were used during insertion of central line from the pick list:
Mask	If the inserter wore either a mask or a mask with eye shield (must cover the nose and the mouth tightly), select Yes; if not, select No.
Cap	If the inserter wore a cap (covering all hair), select Yes; if not, select No.
Large sterile drape	If the inserter used a full body drape (covering the patient from head to toe, with a small opening for the site of insertion), select Yes; if not, select No.
Sterile gown	If inserter wore a sterile gown (long sleeves), select Yes; if not, select No.
Sterile gloves	If inserter wore sterile gloves, select Yes; if not, select No.
Skin Preparation	Select all that apply from the pick list: Povidone iodine; 2% Chlorhexidine gluconate in 70% alcohol; 70% Alcohol; Other. If Other is indicated, specify which skin preparation was used.
Was Skin Preparation Agent Completely Dry at Time of First Skin Puncture?	Select Yes if the skin prep agent was allowed to dry completely at the time of first skin puncture; otherwise select No.
Insertion Site	Indicate the site of insertion of the central line: Femoral; Jugular; Subclavian; Upper extremity; or Lower Extremity (excluding femoral).
Antimicrobial Coated Catheter Used	Select Yes if antimicrobial (antiseptic or antibiotic) coated catheter was used; otherwise select No.
Dedicated Central Line Trolley Used	Select Yes if a trolley dedicated for central line insertions was used for the procedure, if not select No.
Central Line Catheter Type	Indicate the type of central line inserted from the pick list: Dialysis catheter non-tunnelled; Non-tunnelled catheter (other than dialysis); Dialysis catheter tunnelled; Tunnelled catheter (other than dialysis); PICC; or Other - please specify what type.
Antimicrobial Impregnated Dressing Applied to Insertion Site	Indicate the (if any) antimicrobial impregnated dressing applied to the insertion site: Chlorhexidine (e.g. Biopatch), Nil, or Other - specify dressing used.
Was the procedure stopped (at any stage) due to non-compliance with insertion guidelines?	Select Yes if the procedure was stopped at any stage, otherwise select No.
If Yes, why?	*Optional field. Briefly explain reason for stopping the procedure (free text).*
Any Complications	*Optional field. From the pick list, indicate if any complications occurred at the time of central line insertion, i.e. arterial puncture, failure to insert line, arrhythmia requiring intervention, pneumothorax, multiple punctures (>2), or specify (free text) any other complication.*

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CENTRAL LINE INSERTION PRACTICES (CLIP) ADHERENCE MONITORING

THIS DATA MUST BE SUBMITTED ELECTRONICALLY USING A VICNISS WEBFORM

NOTE: FADED DATA FIELDS = NOT REQUIRED BY VICNISS

Hospital Code Number:

Patient Identification & General Details *(Do not attach a bradma label)*

MRN (UR No.): | **Sex:** M ☐ F ☐ | **DOB:** / /

CLIP Details

Date of Central Line Insertion: / /

Location of Central Line Insertion: ☐ ICU ☐ Radiology ☐ Operating theatre ☐ Emergency department ☐ Level 3 neonatal nursery ☐ Medical/surgical ward ☐ Other *(specify)*: _____

Person Recording Insertion Practice: ☐ Observer (preferred option) ☐ Inserter

Central Line Inserter (Coded): **First name** (first 2 letters): _____ **Last name** (first 2 letters): _____

Occupation of Inserter: ☐ Consultant ☐ Fellow/Registrar ☐ Resident/Intern ☐ Medical Student ☐ IV Team ☐ Other *(specify)*: _____

Reason for Insertion: ☐ New indication for central line ☐ Replace malfunctioning central line ☐ Suspected central line-associated infection ☐ Other *(specify)*: _____

If suspected central line-associated infection, was the central line exchanged over a guidewire? ☐ yes ☐ No

Inserter Performed Hand Hygiene Immediately Prior to Insertion *(according to hospital protocol)*: ☐ Yes ☐ No

Maximal Sterile Barriers Used:
Mask *(covers nose & mouth)* ☐ Yes ☐ No **Sterile gown** *(long sleeves)* ☐ Yes ☐ No
Cap *(covers all hair)* ☐ Yes ☐ No **Sterile gloves** ☐ Yes ☐ No
Large sterile drape *(full body drape)* ☐ Yes ☐ No

Skin Preparation: *(tick all that apply)* ☐ Povidone Iodine ☐ 2% Chlorhexidine gluconate in 70% alcohol ☐ 70% Alcohol ☐ Other *(specify)*: _____

Was Skin Preparation Agent Completely Dry at Time of First Skin Puncture? ☐ Yes ☐ No

Insertion Site: ☐ Femoral ☐ Jugular ☐ Subclavian ☐ Upper extremity ☐ Lower extremity (excluding femoral)

Antimicrobial Coated Catheter Used: ☐ Yes ☐ No | **Dedicated Central Line Trolley Used:** ☐ Yes ☐ No

Central Line Catheter Type: ☐ Dialysis non-tunnelled ☐ Non-tunnelled (other than dialysis) ☐ Dialysis tunnelled ☐ Tunnelled (other than dialysis) ☐ PICC ☐ Other *(specify)*: _____

Antimicrobial Impregnated Dressing Applied to Insertion Site: ☐ Chlorhexidine (e.g. Biopatch) ☐ Nil ☐ Other *(specify)*: _____

Was the procedure stopped (at any stage) due to non-compliance with insertion guidelines? ☐ Yes ☐ No

If Yes, why? _____

Any Complications: *(tick all that apply)* ☐ Arterial puncture ☐ Failure to insert line ☐ Arrhythmia requiring intervention ☐ Pneumothorax ☐ Multiple punctures (>2) ☐ Other *(specify)*: _____