

# Surveillance of Central Line associated blood stream infections (CLABSI) in NSICU

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## Abstract

A central line-associated bloodstream infection (CLABSI) is a laboratory-confirmed bloodstream infection (BSI) in a patient who had a central line within the 48 hour period before the development of the BSI, and that is not related to an infection at another site. Data are collected by visiting concerned ICUs on daily basis and are reported. Data analyzed are reported as CLABSI rate. CLABSI can be prevented by adhering to infection control protocols such as hand hygiene and use of care bundles in ICUs.

**Keywords:** Surveillance; Central line associated blood stream infections.

## Introduction

Central line associated blood stream infection is the major cause of mortality and morbidity in any health care facility. Babies in NSICU are at higher risk of developing CLABSI as majority of them require long term access to central lines for various procedures such as administration of fluids, drugs and blood products. Therefore surveillance of CLABSI is utmost importance.

### Common Terminologies

#### *Infection window period*

The Infection Window Period (IWP) is defined as the 7-days during which all site-specific infection criteria which includes the collection date of the first positive diagnostic test that is used as an element to meet the site-specific infection criterion, the 3 calendar days before and the 3 calendar days after.

#### *Date of Event*

The Date of Event (DOE) is the date the first element used to meet an NHSN site-specific

infection criterion occurs for the first time within the seven-day infection window period.

#### *Repeat Infection Timeframe*

The Repeat Infection Timeframe (RIT) is a 14-day timeframe during which no new infections of the same type are reported.

#### *Secondary BSI Attribution Period*

The Secondary BSI Attribution Period (SBAP) is the period in which a blood specimen must be collected for a secondary bloodstream infection to be attributed to a primary site infection.

#### *Location of Attribution (LOA)*

The inpatient location where the patient was assigned on the date of event is the location of attribution.

### *Greater vessels considered for central line surveillance*

The following vessels considered for Purpose of Central line surveillance

Commonly used vessels are:

Subclavian vessels

Internal Jugular veins

Femoral veins

Other vessels

Aorta & Pulmonary artery

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Superior & Inferior vena cava  
 Brachicephalic veins  
 External & common iliac veins  
 In neonates, umbilical artery or umbilical vein

#### *Devices not considered for central line*

The following devices not considered central line for surveillance purposes includes:

Arterial catheters, arteriovenous fistula, arteriovenous graft  
 Atrial catheters  
 Extracorporeal membrane oxygenation (ECMO)  
 Hemodialysis reliable outflow dialysis catheters  
 Intra-aortic balloon pump devices  
 Ventricular assist device  
 Peripheral IV or midlines  
 Pacemaker wires and other non-luminated devices.

#### *Types of Central Lines*

There are three types of CL for CLABSI Surveillance

Permanent Central Lines  
 Temporary Central Lines  
 Umbilical catheter

#### *Laboratory confirmed blood stream infection (LCBI)*

It is classified as three types;

*LCBI-1:* Isolation of a pathogen from single blood culture regardless of symptoms (in any age)  
*LCBI-2:* Isolation of a commensal from two blood cultures with associated symptoms (in any age).  
*LCBI-3:* Isolation of a commensal from two blood cultures with associated symptoms, for age group  $\leq 1$  year.

#### *Data Collection of CLABSI*

Infection control nurse visits the respective NSICU and collects daily data's related to CLABSI in a data collection form. Data are reported in another reporting form based on data collected.

#### *Reporting Instructions regarding CLABSI*

- Catheter tip cultures cannot be used in place of blood specimens for meeting LCBI criteria.
- Blood specimens drawn through central lines can have a higher rate of contamination than blood specimens collected through peripheral venipuncture.
- The following Pathogens are not included in NHSN LCBI Pathogen are *Campylobacter*

species, *C. difficile*, enterohemorrhagic *E. coli*, *Salmonella* Species, *Listeria* Species, *Yersenia* species.

#### *Data Analysis*

The data analysis related to CLABSI is as follows:

CLABSI rate =  $\frac{\text{The number of CLABSIs for a location}}{\text{The number of Central Line Days for that location}} \times 1000$ .

DUR =  $\frac{\text{Central Line Days for a location}}{\text{Patient Days for that location}}$ .

#### **Conclusion**

Central line associated blood stream infections can be prevented by safe hygiene practices such as Hand hygiene and adherence to care bundles.

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