



Patient Safety Component

Central Line-associated Bloodstream Infection

(CLABSI)

SAFER • HEALTHIER • PEOPLE™



Introduction

This course will review key concepts of surveillance for central line-associated bloodstream infections (CLABSI) in the Device-associated Module of the Patient Safety Component, as well as review certain definitions.



Objectives



By completing this lesson, you should be able to

- Describe the scope of the problem of CLABSI
- Review the structure of the Device-associated Module in NHSN and the surveillance methodology used for data collection
- Define key terms and protocol used for collecting CLABSIs and their corresponding denominator data
- Describe how to collect CLABSI data using the BSI form
- Describe how CLABSI rates and device utilization ratios are calculated and reported to promote performance improvement

Target Audience

- This training session is designed for those individuals who collect and analyze CLABSI and their associated denominators in the Patient Safety Component of NHSN.
- This may include:
 - Facility Administrator
 - Patient Safety Primary Contact
 - Infection Preventionist
 - Epidemiologist
 - Microbiologist
 - Data entry staff

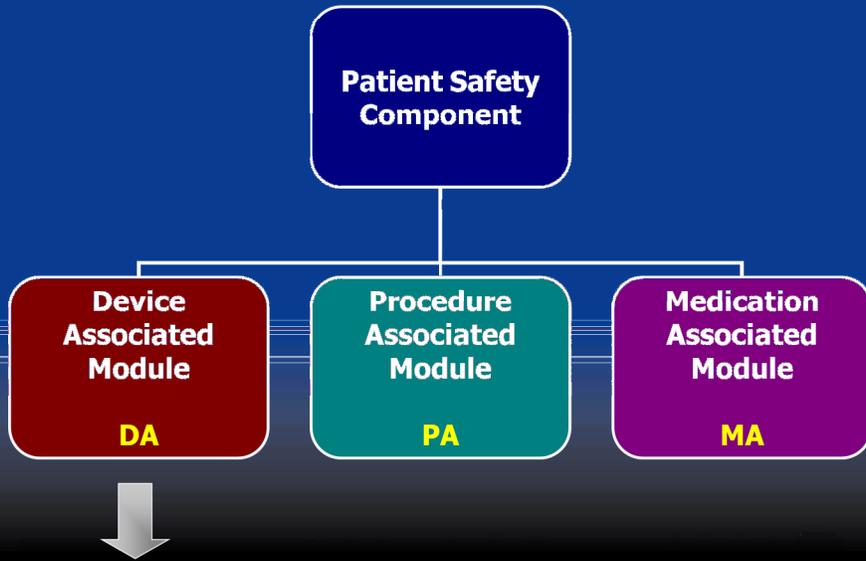


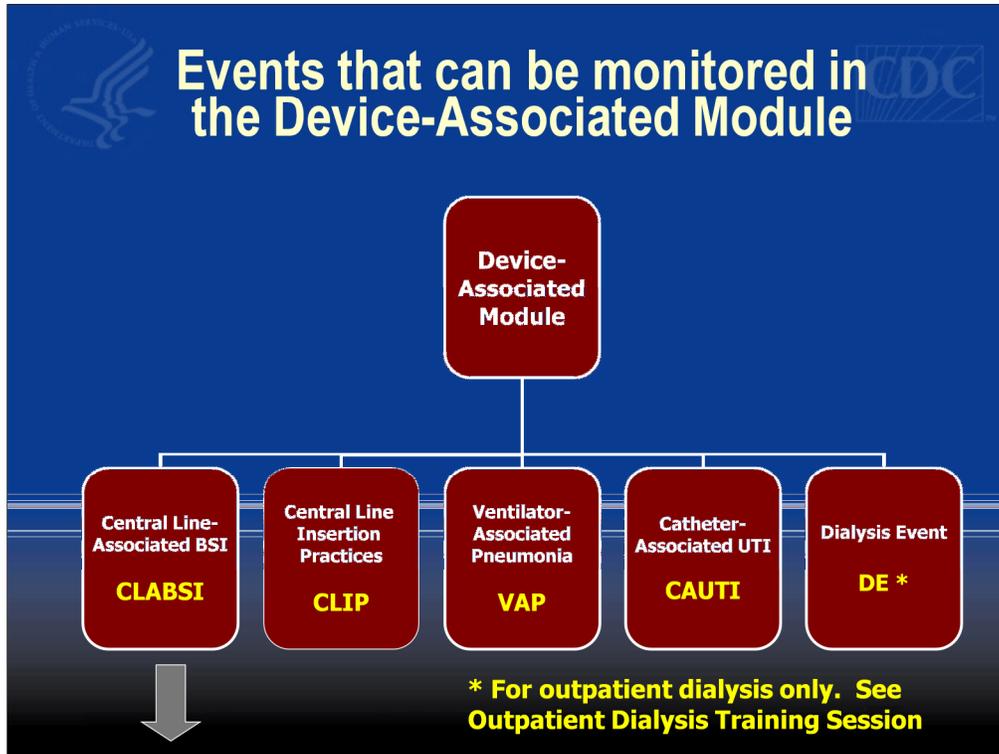
Background

- 250,000 CLABSIs occur in the United States each year
- Most bloodstream infections are associated with the presence of a central line or umbilical catheter (in neonates) at the time of or before the onset of the infection
- Estimated mortality is 12-25% for each CLABSI
- Cost to the healthcare system is approximately \$25,000 per episode

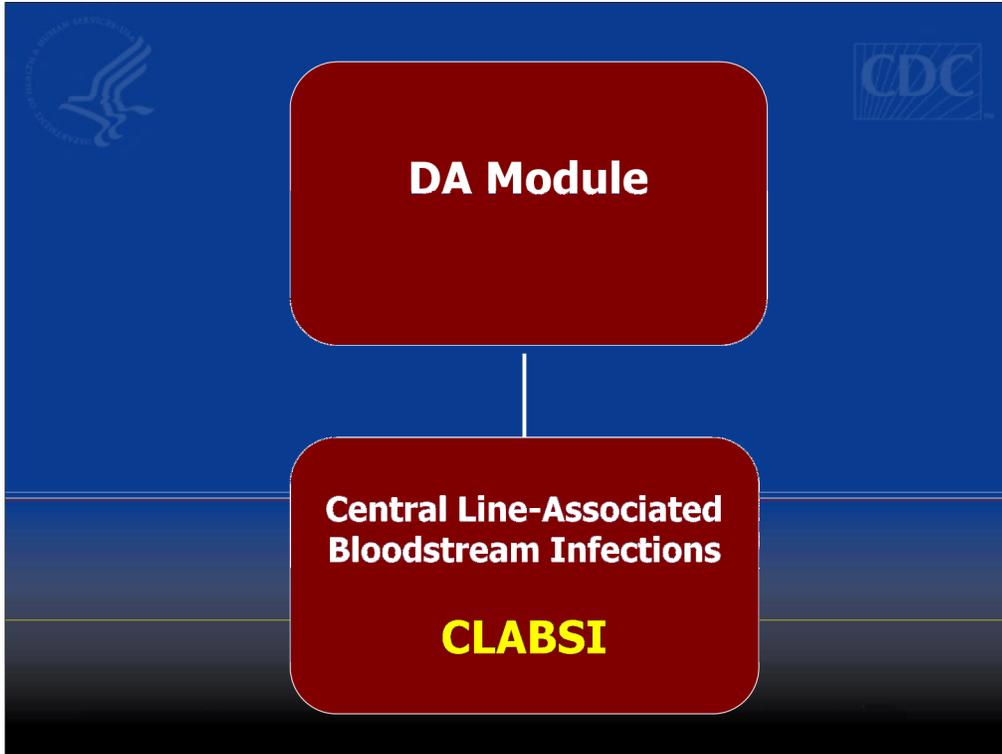


Modules in the Patient Safety Component





Not in objectives – we do not have anything separate for the Device-associated module



NHSN location types (patient care areas) where CLABSI events can be monitored

1. Intensive care units (ICU)
2. Specialty care areas (SCA)
 - a) Hematology/Oncology unit
 - b) Bone marrow/Stem cell transplant unit
 - c) Solid organ transplant unit
 - d) Acute inpatient dialysis unit
 - e) Long term acute care
3. Neonatal intensive care units (NICU)
4. Any other inpatient care location in which central line days and patient days can be collected (e.g., surgical ward, etc.)



Surveillance Methodology

CLABSI methodology requires

- Active
- Patient-based
- Prospective
- Priority-directed surveillance

that will yield risk-adjusted incidence rates.



Sources of Data for Finding CLABSI



- Microbiology reports
- Infection control rounds on monitored units
- Pharmacy reports for antimicrobial use
- Networking with nursing staff
- Temperature chart
- List of patients with central lines



Key Terms

- Use CDC Definitions for the following:
 - CLABSI
 - Central line
 - Laboratory-confirmed BSI (LCBI)
 - Temporary Central Line
 - Permanent Central Line



Definition: CLABSI

- Central line-associated bloodstream infection (CLABSI) is a primary bloodstream infection (BSI) in a patient that had a central line *within* the 48-hour period before the development of the BSI.
- If the BSI develops in a patient within 48 hours of discharge from a location, indicate the discharging location on the infection report.

NOTE: There is no minimum time period that the central line must be in place in order for the BSI to be considered central line-associated.



Definition: **Central Line**

A vascular infusion device that terminates at or close to the heart or in one of the great vessels.

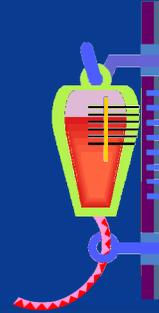
The following are considered great vessels for the purpose of reporting CLABSI and counting central line days

- Aorta
- Pulmonary artery
- Superior vena cava
- Inferior vena cava
- Brachiocephalic veins
- Internal jugular veins
- Subclavian veins
- External iliac veins
- Common femoral veins



Infusion

- Introduction of a solution through a blood vessel via a catheter lumen
- Includes:
 - Continuous infusions such as nutritious fluids or medications, or
 - Intermittent infusions such as flushes or IV antimicrobial administration
 - Administration of blood or blood products in the case of transfusion or hemodialysis





- In neonates, the umbilical artery is considered a great vessel
- Neither the location of the insertion site nor the type of device may be used to determine if a line qualifies as a central line
- Pacemaker wires and other non-lumened devices inserted into central blood vessels or the heart are not considered central lines, because fluids are not infused, pushed, nor withdrawn through such devices.



Transfer Rule

- If the BSI develops in a patient within 48 hours of transfer from one inpatient location to another, indicate the *transferring* location on the infection report.

Example: A patient with a central line is transferred from the Orthopedic ward to the Medical/Surgical ICU on Monday. On Tuesday afternoon, he spikes a fever and is determined to have a CLABSI. The location of the CLABSI is recorded as the Orthopedic ward.

- NOTE: It is not required to monitor for CLABSIs after the patient is discharged from the facility. However, if discovered, they should be reported to NHSN. No additional central line days are recorded.



Types of Central Lines

- Temporary– A central line that is noncuffed and nontunneled
- Permanent– A central line that is cuffed and tunneled
- Umbilical Catheter – Central vascular device inserted through the umbilical artery or vein in a neonate



CLABSI Numerator Data



- Use a Primary Bloodstream Infection (BSI) form for each CLABSI that is identified during the month (Form CDC 57.108).
- Indicate the specific criteria used to identify the BSI*
 - Note that laboratory-confirmed bloodstream infection (LCBI) criterion 3 is restricted to patients ≤ 1 year of age, but criteria 1 and 2 can be used for patients of any age, including those ≤ 1 year of age .

*** See NHSN Manual: Patient Safety Component Protocol**



LCBI – Criterion 1



Patient has a recognized pathogen cultured from one or more blood cultures
and
organism cultured from blood is not related to an infection at another site.



Example: Jon Smith had a PICC line inserted on admission. On hospital day 4, he became confused and experienced chills. Blood cultures were drawn which grew *Enterococcus faecalis*. There was no infection at any other body site.

Mr. Smith's infection meets LCBI criterion 1.



One or more blood cultures means that at least one bottle from a blood draw is reported by the laboratory as having grown organisms (i.e., is a positive blood culture).

Recognized pathogen does not include organisms considered common skin contaminants. A few of the recognized pathogens are *Staphylococcus aureus*, *Enterococcus* species, *Escherichia coli*, *Pseudomonas* species, *Klebsiella* species, *Candida* species, etc.



LCBI – Criterion 2

Criterion 2: Patient has at least one of the following signs or symptoms: fever (>38°C), chills, or hypotension
and
signs and symptoms and positive laboratory results are not related to an infection at another site
and
common skin contaminant (i.e., diphtheroids [*Corynebacterium* spp.], *Bacillus* [not *B. anthracis*] spp., *Propionibacterium* spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions.



The phrase “two or more blood cultures drawn on separate occasions” means:

- 1. That blood from at least two blood draws were collected within two days of each other, and**
- 2. That at least one bottle from each blood draw is reported by the laboratory as having grown the same common skin contaminant organism (i.e., is a positive blood culture)**

Note: If special pediatric blood culture bottles are used, only one bottle may be inoculated per blood draw. Therefore, to meet this part of the criterion, two would have to be culture-positive.



LCBI – Criterion 3

Criterion 3: Patient ≤ 1 year of age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$, rectal), hypothermia ($<37^{\circ}\text{C}$, rectal), apnea, or bradycardia and signs and symptoms and positive laboratory results are not related to an infection at another site and common skin contaminant (i.e., diphtheroids [*Corynebacterium* spp.], *Bacillus* [not *B. anthracis*] spp., *Propionibacterium* spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions.

Note that although Criterion 3 can only be used for infants and neonates, criteria 1 and 2 can also be used in this age group.



Determining “sameness” of two organisms



If the common skin contaminant from one culture is identified to both genus and species level (e.g., *Staphylococcus epidermidis*) and the companion culture identifies only the genus with or without other attributes (in this example, coagulase negative staphylococci), then it is assumed that the organisms are the same.

The more specific organism should be reported in NHSN; in this example *S. epidermidis*, would be reported. See other examples below:

Culture	Companion Culture	Report as...
<i>Bacillus</i> spp. (not <i>anthracis</i>)	<i>B. cereus</i>	<i>B. cereus</i>
<i>S. salivarius</i>	<i>Strep viridans</i>	<i>S. salivarius</i>



Determining “sameness” of two organisms (cont.)



If common skin contaminant organisms are speciated (e.g., both are *Bacillus cereus*), but no antibiograms are done, or they are done for only one of the isolates, it is assumed that the organisms are the same.





Determining “sameness” of two organisms (cont.)



If the common skin contaminants from the cultures have antibiograms that are different for two or more antimicrobial agents, it is assumed that the organisms are not the same.

Examples:

Organism Name	Isolate A	Isolate B	Interpret as...
<i>S. epidermidis</i>	All drugs S	All drugs S	Same
<i>S. epidermidis</i>	OX R CEFAZ R	OX S CEFAZ S	Different
<i>Corynebacterium</i> spp.	PENG R CIPRO S	PENG S CIPRO R	Different
<i>Strep viridans</i>	All drugs S	All drugs S except ERYTH (R)	Same



Collecting Blood Culture Specimens



Ideally, blood specimens for culture should be obtained from two to four blood draws from separate venipuncture sites (e.g., right and left antecubital veins), not through a vascular catheter.



These blood draws should be performed simultaneously or over a short period of time (i.e., within a few hours).

If your facility does not currently obtain specimens using this technique, you may still report BSIs using the NHSN criteria, but you should work with appropriate personnel to facilitate better specimen collection practices for blood cultures.



Bloodstream Infection Criteria Summary



Laboratory Confirmed Bloodstream Infection (LCBI)

1. Any age patient: ≥ 1 blood culture with recognized pathogen + no HAI at another site
2. Any age patient: ≥ 2 blood cultures drawn on separate occasions positive for the same skin contaminant organism + clinical symptoms + no HAI at another site
3. Infant/neonate: ≥ 2 blood cultures drawn on separate occasions positive for the same skin contaminant organism + clinical symptoms + no HAI at another site

Example of a Completed BSI Form – top section

		Primary Bloodstream Infection (BSI)		OMB No. 0920-0666 Exp. Date: 09-30-2012
Page 1 of 3				
*required for saving: Facility ID: 00000		*required for completion: Event #: 2488		
*Patient ID: 123456		Social Security #:		
Secondary ID:				
Patient Name, Last: Smith		First: Jane		Middle:
*Gender: <input checked="" type="radio"/> F <input type="radio"/> M		*Date of Birth: 08/12/1956		
Ethnicity (specify):		Race (specify):		
*Event Type: BSI		*Date of Event: 02/15/2009		
Post-procedure BSI: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Date of Procedure:		
NHSN Procedure Code:		ICD-9-CM Procedure Code:		
*MDRO Infection Surveillance: <input type="checkbox"/> Yes, this event's pathogen & location are in-plan for the MDRO/CDAD Module <input checked="" type="checkbox"/> No, this event's pathogen & location are not in-plan for the MDRO/CDAD Module				
*Date Admitted to Facility: 02/05/2009		*Location: MSICU		

Example of a Completed BSI Form

 Primary Bloodstream Infection (BSI)		<small>OMB No. 0920-0666 Exp. Date: 09-30-2012</small>
<small>Page 1 of 3</small>		
<small>*required for saving **required for completion</small>		
<small>Facility ID:</small> 10000	<small>Event #:</small> 2400	
<small>*Patient ID:</small> 123456	<small>Social Security #:</small>	
<small>Secondary ID:</small>		
<small>Patient Name, Last:</small> Smith		<small>First:</small> Jane
		<small>Middle:</small>
<small>*Gender:</small> <input checked="" type="radio"/> F <input type="radio"/> M	<small>*Date of Birth:</small> 08/12/1956	
<small>Ethnicity (specify):</small>	<small>Race (specify):</small>	
<small>*Event</small>	Required patient demographic fields (marked with *):	
<small>Post-pr</small>	*Patient ID	
<small>NHSN #</small>	*Gender	
<small>*MDRO</small>	*Date of Birth	
<small>*Date Admitted to Facility:</small> 02/05/2009	<small>*Location:</small> MSICU	
		<small>AD Module</small>
		<small>/CDAD Module</small>

Example of a Completed BSI Form

 Primary Bloodstream Infection (BSI)		<small>OMB No. 0920-0666 Exp. Date: 09-30-2012</small>	
<small>Page 1 of 3</small>			
<small>*Required for entry</small>	<small>*Required for completion</small>		
Facility ID: 10000	Event #: 2008		
Patient ID: 123456	Social Security #:		
Secondary ID:			
Patient Name, Last: Smith		First: Jane	Middle:
*Gender: <input checked="" type="radio"/> F <input type="radio"/> M	*Date of Birth: 08/12/1956		
Ethnicity (specify):	Race (specify):		
*Event Type: BSI	*Date of Event: 02/16/2009		
Post-procedure BSI: Yes No	Date of Procedure:		
NHSN Procedure Code:	ICD-9-CM Procedure Code:		
<small>*MDRO Infection Surveillance: <input type="checkbox"/> Yes, this event's pathogen & location are in-plan for the MDRO/CDAD Module</small> <small><input checked="" type="checkbox"/> No, this event's pathogen & location are not in-plan for the MDRO/CDAD Module</small>			
*Date Admitted to Facility: 02/05/2009		*Location: MSTCU	

Required Event fields:

- *Event Type
- *Date of Event
- *Date Admitted to Facility
- *MDRO Infection Surveillance
- *Location

Example of a Completed BSI Form

NHSN National Healthcare Safety Network		Primary Bloodstream Infection (BSI)		OMB No. 0920-0666 Exp. Date: 09-30-2012	
*required for reporting		**required for completion		Event #: 2009	
Facility ID: 10000		Patient ID: 123456		Social Security #:	
Secondary ID:		Patient Name, Last: Smith		First: Jane Middle:	
*Gender: <input checked="" type="radio"/> F <input type="radio"/> M		*Date of Birth: 08/12/1956			
Ethnicity (specify):		Race (specify):			
*Event Type: BSI		*Date of Event: 02/16/2009			
Post-procedure BSI: Yes No		Date of Procedure:			
NHSN Procedure Code:		ICD-9-CM Procedure Code:			
*MDRO Infection Surveillance		<input type="checkbox"/> Yes, this event's pathogen & location are in-plan for the MDRO/CDAD Module			
		<input checked="" type="checkbox"/> No, this event's pathogen & location are not in-plan for the MDRO/CDAD Module			
*Date Admitted to					

MDRO Infection Surveillance: Check "Yes" if this BSI's pathogen and location are in-Plan for the MDRO & CDAD Module; otherwise, check "No".

Example of a Completed BSI Form

*required for saving		**required for completion	
Facility ID: 10000	Event #: 2488		
*Patient ID: 123456	Social Security #:		
Secondary ID:			
Patient Name, Last: Smith	First: Jane	Middle:	
*Gender: (F) M	*Date of Birth: 08/12/1956		
Ethnicity (specify):	Race (specify):		
*Event Type: BSI	*Date of Event: 02/16/2009		
Post-procedure BSI: Yes No	Date of Procedure:		
NHSN Procedure Code:	ICD-9-CM Procedure Code:		
*MDRO Infection Surveillance: <input type="checkbox"/> Yes, this event's pathogen & location are in-plan for the MDRO/CDAD Module			
<input checked="" type="checkbox"/> No, this event's pathogen & location are not in-plan for the MDRO/CDAD Module			
*Date Admitted to Facility: 02/05/2009		*Location: MSICU	

Date Admitted to Facility: The date the patient was admitted to this facility.

Risk Factors – ICU/Other Locations

Risk Factors		
*If ICU/Other locations, Central line:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
*If Specialty Care Area,		
Permanent central line:	<input type="radio"/> Yes	<input type="radio"/> No
Temporary central line:	<input type="radio"/> Yes	<input type="radio"/> No
*If NICU		
	<input type="radio"/> Yes	<input type="radio"/> No
	<input type="radio"/> Yes	<input type="radio"/> No

For an ICU patient, in the Risk Factors section, circle "Yes" if the patient had one or more central lines.

If the patient is on a patient care area that is not an ICU, SCA or NICU, circle "Yes" if the patient had one or more central lines.



Risk Factors – Specialty Care Area (SCA)

Risk Factors		
*If ICU/Other Locations, Central line:	Yes	No
*If Specialty Care Area,		
Permanent central line:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Temporary central line:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
*If NICU,		
Central line:	Yes	No
Umbilical catheter:	Yes	No
Birth weight (grams):		

For SCA, note that a response is required for both “Permanent central line” and for “Temporary central line”.



Risk Factors -- NICU

Risk Factors		
*If ICU/Other locations, Central line:	Yes	No
*If Specialty Care Area,		
Permanent central line:	Yes	No
Temporary central line:	Yes	No
*If NICU,		
Central line:	Yes	<input checked="" type="radio"/> No
Umbilical catheter:	<input checked="" type="radio"/> Yes	No
Birth weight (grams):	<input type="text" value="1888"/>	

Event Details

For NICU, the birthweight and the line type are required.

Risk Factors – Optional Fields

Risk Factors	
*If ICU/Other locations, Central line:	Yes No
*If Specialty Care Area,	
Permanent central line:	Yes No
Temporary central line:	Yes No
*If NICU,	
Non-umbilical Central line:	Yes No
Umbilical catheter:	Yes No
Birth weight (grams):	

Location of Device Insertion: _____
Date of Device Insertion: __/__/__

Event Details	
*Specific Event:	
<input type="checkbox"/> Laboratory-confirmed	
*Specify Criteria Used:	
<u>Signs & Symptoms (check all that apply)</u>	
<u>Any patient</u>	<u>≤1 year of age</u>
<input type="checkbox"/> Fever	<input type="checkbox"/> Fever
<input type="checkbox"/> Chills	<input type="checkbox"/> Hypotension
<input type="checkbox"/> Hypotension	<input type="checkbox"/> Apnea
	<input type="checkbox"/> Bradycardia

Location of Device Insertion and Date of Device Insertion are optional fields for identifying the patient care area on which the patient was located at the time of central line insertion.

Event Details Section

Event Details

*Specific Event: Laboratory-confirmed

*Specify Criteria Used:

<p>Signs & Symptoms (check all that apply)</p> <p>Any period: <input type="checkbox"/> 0-30 days</p> <p><input checked="" type="checkbox"/> Fever</p> <p><input checked="" type="checkbox"/> Chills</p> <p><input checked="" type="checkbox"/> Hypotension</p> <p><input type="checkbox"/> Shock</p> <p><input type="checkbox"/> Tachycardia</p> <p><input type="checkbox"/> Bradycardia</p>	<p>Laboratory (check one)</p> <p><input type="checkbox"/> Recognized pathogen from one or more blood cultures</p> <p><input checked="" type="checkbox"/> Pathogen identified from 2+ blood cultures</p> <p><input type="checkbox"/> Other</p>
---	--

**Died: Yes

Discharge Date: _____

There is only one Specific Event type for BSI: Laboratory-confirmed. Check the elements of the specific criterion that were used to identify this CLABSI.

Page 2



Event Details Section

Died: If the patient died before discharge, circle “Yes”; otherwise, circle “No”.

BSI Contributed to Death: If “Died” is Yes, then circle “Yes” if the BSI caused the patient’s death or exacerbated an existing disease which then lead to death; otherwise, circle “No”.

Pathogens Identified: Yes: Specify organism and antibiogram on back of form.

Event Details	
*Specific Event	
*Specify Criteria	
Signs & Symptoms	
Any patient	
<input checked="" type="checkbox"/> Fever	
<input type="checkbox"/> Chills	
<input type="checkbox"/> Hypotension	
**Died: Yes <input type="radio"/> No <input checked="" type="radio"/>	BSI Contributed to Death: Yes No
Discharge Date:	*Pathogens Identified: Yes *Specify on page 2



Pathogen Data

- List up to 3 pathogens for each CLABSI identified (in rank order of importance)
- For each pathogen, complete information about antimicrobial susceptibilities
- Only certain bug/drug combinations are required but up to 20 drugs can be listed with susceptibilities

CLABSI Denominator Data for ICU and Patient Care Areas that are not SCA or NICU

- Use **Denominators for ICU/Other Locations form**
- At the same time each day, count
 - # patients (i.e., patient days)
 - # patients with one or more central lines (i.e., central line-days)
- Enter the totals within 30 days of the end of the month

Example of Completed Denominators for ICU/Other Locations Form

NHSN National Healthcare Safety Network

Denominators for Intensive Care Unit (ICU)/ Other locations (not NICU or SCA)

OMB No. 0920-0666
Exp. Date: 02-29-2008

* required for saving

*Facility ID# **10000** *Month: **Feb** *Year: **2009** *Location Code: **MSICU**

Date	*Number of patients	**Number of patients with 1 or more central lines	**Number of patients with a urinary catheter	**Number of patients on a ventilator
1	6	6		
2	8	6		
3	6	4		
4	7	7		
5	6	6		
6	8	6		
7				
8				
9				
10				
11				
31	//	//		
*Totals	151	138		

Patient-days Central-line days Urinary catheter-days Ventilator-days



CLABSI Denominator Data for Specialty Care Areas (SCA)



- Use **Denominators for Specialty Care Areas (SCA)** form
- At the same time each day, count
 - # patients (i.e., patient days)
 - # patients with one or more central lines (i.e., central line-days) separated into
 - Temporary central lines and
 - Permanent central lines*
- Enter the totals within 30 days of the end of the month

*** If a patient has both a temporary and a permanent line, count as a patient with only a temporary line.**

Example of Completed Denominators for SCA Form



Denominators for Specialty Care Area (SCA)

OMB No. 0920-0666
Exp. Date: 02-29-2008

* required for saving

*Facility ID# : 10000 *Month: Jan *Year: 2009 *Location Code: LTAC					
Date	*Number of patients	**Number of patients with 1 or more central lines <small>(if patient has both, count as Temporary)</small>		**Number of patients with a urinary catheter	**Number of patients on a ventilator
		Temporary	Permanent		
1					
2	4	1	3		
3	6	4	1		
4	7	1	4		
5	4	2	0		
6	4	4	4		
7	6	4	2		
26					
27					
28					
29					
30	//		//		
31	//		//		
*Totals	141	84	14		

CLABSI Denominator Data for NICU

- Use **Denominators for NICU** form
- At the same time each day, count for each birthweight category:
 - # patients (i.e., patient days)
 - # patients with one or more central lines (i.e., central line-days) separated into central lines and umbilical catheters*
- Enter the totals within 30 days of the end of the month

*If an infant has both an umbilical catheter and a central count as a patient with only an umbilical line.



NICU Birthweight Categories



- ≤ 750 grams
- 751-1000 grams
- 1001-1500 grams
- 1501-2500 grams
- >2500 grams

Example of Completed Denominators for NICU Form



Denominators for Neonatal Intensive Care Unit (NICU)

OMB No. 0920-0666
Exp. Date: 02-29-2008

* required for saving

*Facility ID# : **10000** *Month: **Jan** *Year: **2009** *Location Code: **NICUW**

Birth Weight Categories																				
Date	<750 gm				751-1000 gm				1001-1500 gm				1501-2500 gm				>2500 gm			
	*Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VNT
1	4	4	0		4	0	4		4	4	4		4	1	2		6	1	4	
2	6	2	3		6	0	6		6	6	6		4	1	2		6	1	4	
3	7	6	0		7	1	4		7	7	7		1	1	0		4	0	4	
4	4	4	0		4	0	4		4	1	2		4	1	2		4	0	4	
5	4	2	1		4	4	4		4	4	4		4	4	4		5	1	4	
6	6	3	3		5	3	1		1	1	0		6	1	4		4	0	4	
7	5	2	3		3	0	3		1	1	0		5	5	0		4	0	4	
8	4	0	4		0	0	0		1	1	0		5	5	0		4	0	4	
27																				
28																				
29																				
30																				
31		//			//				//				//				//			
*Total	116	62	44		100	44	31		88	63	16		101	68	24		116	7	100	

Pts=number of infants U/C=number of infants with umbilical catheter CL=number of infants with 1 or more central lines
VNT=number of infants on a ventilator *If infant has both a U/C and CL, count as U/C infant only for the day
** Conditionally required according to the events indicated in Plan

Required Fields for Summary (Denominator) Data

- Based on the Monthly Reporting Plan



Department of Health and Human Services
Centers for Disease Control and Prevention

NHSN - National Healthcare Safety Network | [NHSN Home](#) | [My Info](#) | [Contact us](#) | [Help](#) | [Log Out](#)

NHSN Home
Logged into DHQP Memorial Hospital (ID 10000) as TCH.
Facility DHQP Memorial Hospital (ID 10000) is following the PS component.

Reporting Plan
[Add](#)
[Find](#)

Patient

Event

Procedure

Summary Data

Import/Export

Analysis

Surveys

Users

Facility

Group

View Monthly Reporting Plan

Mandatory fields marked with *

Facility ID*: DHQP Memorial Hospital (10000)

Month*: October

Year*: 2009

[Print PDF Form](#)

Device-Associated Module [HELP](#)

Locations CLA BSI DE VAP CAUTI CLIP

CMICU - CARDIAC ICU	X	X	X
---------------------	---	---	---

Required denominators will appear with an asterisk (*) only if included in the Monthly Reporting Plan

NHSN - National Healthcare Safety Network | NHSN Home | My Info | Contact us | Help | Log Out

NHSN Home
Reporting Plan
Patient
Event
Procedure
Summary Data
Add
Find
Incomplete
Import/Export
Analysis
Surveys
Users
Facility
Group
Log Out

Logged into DHQP Memorial Hospital (ID 10000) as TCH.
Facility DHQP Memorial Hospital (ID 10000) is following the PS component.

Denominators for Intensive Care Unit (ICU)/ Other locations (not NICU or SCA)

HELP

Mandatory fields marked with *

Print PDF Form

Facility ID*: 10000 (DHQP Memorial Hospital)

Location Code*: CMICU - CARDIAC ICU

Month*: October

Year*: 2009

Total Patient Days*: 128

Central Line Days*: 89

Urinary Catheter Days*: 76

Ventilator Days*: 68

Note: Only the totals are entered into the data entry screen.



CLABSI Rate



$$\text{CLABSI Rate}^* = \frac{\text{\# CLABSIs identified}}{\text{\# central line days}} \times 1000$$

* Stratify by:

- Type of ICU/Other Location
- SCA
 - Catheter type (temporary or permanent)
- NICU
 - Birthweight category
 - Catheter type (umbilical or central)



Device Utilization (DU) Ratio

$$\text{CL DU Ratio} = \frac{\# \text{ Central line days}}{\# \text{ Patient days}}$$

DU Ratio is the proportion of total patient-days during which central lines were used.



CLABSI Rate Options



Expand All Collapse All

- Device-Associated Module
 - All Device-Associated Events
 - Central Line-Associated BSI
 - CDC Defined Output
 - Line Listing - All CLAB Events
 - Frequency Table - All CLAB Events
 - Bar Chart - All CLAB Events
 - Pie Chart - All CLAB Events
 - Rate Table - CLAB Data for ICU-Other**
 - Control Chart - CLAB Data for ICU-Other
 - Rate Table - UCAB/CLAB Data for NICU**
 - Control Chart - UCAB/CLAB Data for NICU
 - Rate Table - CLAB Data for SCA**
 - Control Chart - CLAB Data for SCA
 - Custom Output
 - Ventilator-Associated PNEU
 - Urinary Catheter-Associated UTI
 - Central Line Insertion Practices

National Healthcare Safety Network
 Rate Table for Central Line-Associated BSI Data for ICU-Other
 As of: September 22, 2009 at 1:28 PM
 Date Range: All CLAB_RATES/ICU
 orgID=10018 loccdc=IN:ACUTE:CC:M

Location	summaryYM	CLABCount	numCLDays	CLABRate	CLAB_Mean	IDR_pval	IDR_pctl	numPatDays	LineDU	LineDU_Mean	P_pval	P_pctl
MICU	2005M06	0	110	0.0	2.4	0.7714	10	299	0.37	0.58	0.0000	23
MICU	2005M07	0	266	0.0	2.4	0.5339	10	401	0.66	0.58	0.0004	78
MICU	2005M08	1	238	4.2	2.4	0.4296	80	494	0.48	0.58	0.0000	39
MICU	2005M09	0	288	0.0	2.4	0.5069	10	447	0.64	0.58	0.0030	58
MICU	2006M01	0	214	0.0	2.4	0.6036	10	439	0.49	0.58	0.0001	39
MICU	2006M02	1	302	3.3	2.4	0.5096	71	481	0.63	0.58	0.0168	58
MICU	2006M03	2	169	11.8	2.4	0.0612	100	401	0.42	0.58	0.0000	23
MICU	2006M11	0	100	0.0	2.4	0.7899	10	388	0.26	0.58	0.0000	13
MICU	2007M01	0	115	0.0	2.4	0.7624	10	330	0.35	0.58	0.0000	13
MICU	2007M02	0	219	0.0	2.4	0.5965	10	309	0.71	0.58	0.0000	78
MICU	2007M03	0	114	0.0	2.4	0.7642	10	385	0.30	0.58	0.0000	13

CLABSI Rate Tables



National Healthcare Safety Network

Rate Table for Umb Cath/Central Line-Associated BSI Data for NICU

As of: September 22, 2009 at 1:31 PM

Date Range: All CLAB_RATESNICU

Non-umbilical CLABSI Rates (CLAB rate)

orgID=10018 | loccd=IN:ACUTE:CC:NURS

location	birthwcode	clabcount	numcldays	CLABRate	CLAB_Mean	IDR1_pval	IDR1_pctf	numpatdays	LineDU	LineDU_Mean	P1_pval	P1_pctf
NICU	A	0	172	0.0	3.7	0.5294	25	504	0.34	0.34	0.4911	29
NICU	B	0	116	0.0	3.3	0.6791	25	375	0.31	0.32	0.4104	47
NICU	C	0	109	0.0	2.6	0.7551	25	290	0.38	0.23	0.0000	91
NICU	D	0	124	0.0	2.4	0.7459	25	580	0.21	0.16	0.0005	75
NICU	E	0	111	0.0	2.0	0.7972	50	406	0.27	0.20	0.0001	90

Source of aggregate data: NHSN Report, Am J Infect Control 2008;36:609-26

Data contained in this report were last generated on September 11, 2009 at 9:05 AM.

National Healthcare Safety Network

Rate Table for Umb Cath/Central Line-Associated BSI Data for NICU

As of: September 22, 2009 at 1:31 PM

Date Range: All CLAB_RATESNICU

Umbilical Catheter CLABSI Rates (UCAB rate)

orgID=10018 | loccd=IN:ACUTE:CC:NURS

location	birthwcode	ucabcount	numumbdays	UCABRate	UCAB_Mean	IDR2_pval	IDR2_pctf	numpatdays	UmbCDU	UmbCDU_Mean	P2_pval	P2_pctf
NICU	A	0	202	0.0	4.7	0.3860	50	504	0.40	0.11	0.0000	97
NICU	B	1	160	6.3	2.6	0.3397	82	375	0.43	0.10	0.0000	99
NICU	C	2	124	16.1	1.9	0.0242	100	290	0.43	0.08	0.0000	100
NICU	D	0	360	0.0	0.9	0.7183	75	580	0.62	0.07	0.0000	100
NICU	E	0	157	0.0	1.0	0.8604	75	406	0.39	0.10	0.0000	100

Source of aggregate data: NHSN Report, Am J Infect Control 2008;36:609-26

Data contained in this report were last generated on September 11, 2009 at 9:05 AM.

CLABSI Rate Tables



National Healthcare Safety Network

Rate Table for Central Line-Associated BSI Data for SCA

As of: September 22, 2009 at 1:38 PM

Date Range: All CLAB_RATESSCA

Permanent Central Line CLABSI Rates (PCLAB Rate)

orgID=10018 loccdc=IN:ACUTE:SCA:BMT

location	pclabcount	numpcldays	PCLABRate	PCLAB_Mean	IDR1_pval	IDR1_pctf	numpatdays	PLineDU	PLineDU_Mean	P1_pval	P1_pctf
BMT	0	558	0.0	3.9	0.1139	.	1790	0.31	0.67	0.0000	.

Source of aggregate data: NHSN Report, Am J Infect Control 2008;36:609-26

Data contained in this report were last generated on September 11, 2009 at 9:05 AM.

National Healthcare Safety Network

Rate Table for Central Line-Associated BSI Data for SCA

As of: September 22, 2009 at 1:38 PM

Date Range: All CLAB_RATESSCA

Temporary Central Line CLABSI Rates (TCLAB Rate)

orgID=10018 loccdc=IN:ACUTE:SCA:BMT

location	tclabcount	numtcldays	TCLABRate	TCLAB_Mean	IDR2_pval	IDR2_pctf	numpatdays	TLineDU	TLineDU_Mean	P2_pval	P2_pctf
BMT	5	481	10.4	.	.	.	1790	0.27	.	.	.

Source of aggregate data: NHSN Report, Am J Infect Control 2008;36:609-26

Data contained in this report were last generated on September 11, 2009 at 9:05 AM.



Interpreting CLABSI Rates



Location	Birth Wt Code	CLA BSI Count	Central Line Days	CLA BSI Rate	NHSN CLAB Pooled Mean	Incidence Density p-value #1	Incidence Density Percentile #1	Patient Days	CL Util Ratio	NHSN Line DU Pooled Mean	Proportion p-value #1	Proportion Percentile #1
NICU3	A	0	248	0.0	6.4	0.2049	10	552	0.45	0.32	0.0000	68
NICU3	B	4	214	18.7	4.4	0.0158	97	549	0.39	0.31	0.0000	65
NICU3	C	1	240	4.2	4.8	0.6764	54	730	0.33	0.23	0.0000	67
NICU3	D	0	162	0.0	4.2	0.5068	50	490	0.33	0.17	0.0000	79
NICU3	E	0	61	0.0	3.1	0.8277	50	335	0.18	0.21	0.0893	66

- This table shows data for a Neonatal ICU (NICU).
- During the time period, the NICU reported 4 central line-associated BSIs and a total of 214 days in which patients had central lines (central line days) in birthweight category B (751-1000 grams).
- Dividing 4 (numerator) by 214 (denominator) and multiplying by 1000 gives this birthweight category in the NICU a CLABSI rate of 18.7 per 1000 central line days.



Interpreting CLABSI Rates



Location	Birth Wt Code	CLA BSI Count	Central Line Days	CLA BSI Rate	NHSN CLAB Pooled Mean	Incidence Density p-value #1	Incidence Density Percentile #1	Patient Days	CL Util Ratio	NHSN Line DU Pooled Mean	Proportion p-value #1	Proportion Percentile #1
NICU3	A	0	248	0.0	6.4	0.2049	10	552	0.45	0.32	0.0000	68
NICU3	B	4	214	18.7	4.4	0.0158	97	549	0.39	0.31	0.0000	65
NICU3	C	1	240	4.2	4.8	0.6764	54	730	0.33	0.23	0.0000	67
NICU3	D	0	162	0.0	4.2	0.5068	50	490	0.33	0.17	0.0000	79
NICU3	E	0	61	0.0	3.1	0.8277	50	335	0.18	0.21	0.0893	66

- When compared to the NHSN mean rate of 4.4, this NICUs rate is at the 97th percentile, which means that 97% of all reporting NICUs in that birthweight category had a rate at or below this one.
- The p-value indicates that the difference in these two incidence density rates is statistically significant ($p = 0.0158$).



Interpreting CLABSI Rates



Location	Birth Wt Code	CLA BSI Count	Central Line Days	CLA BSI Rate	NHSN CLAB Pooled Mean	Incidence Density p-value #1	Incidence Density Percentile #1	Patient Days	CL Util Ratio	NHSN Line DU Pooled Mean	Proportion p-value #1	Proportion Percentile #1
NICU3	A	0	248	0.0	6.4	0.2049	10	552	0.45	0.32	0.0000	68
NICU3	B	4	214	18.7	4.4	0.0158	97	549	0.39	0.31	0.0000	65
NICU3	C	1	240	4.2	4.8	0.6764	54	730	0.33	0.23	0.0000	67
NICU3	D	0	162	0.0	4.2	0.5068	50	490	0.33	0.17	0.0000	79
NICU3	E	0	61	0.0	3.1	0.8277	50	335	0.18	0.21	0.0893	66

- There were 549 patient days reported for this birthweight category in the NICU during this time period.
- Dividing 214 (central line days) by 549 yields a device utilization ratio of 0.39.
- When compared to the NHSN mean device utilization ratio of 0.31, this NICU's device utilization ratio for birthweight category B is at the 65th percentile, which means that 65% of all reporting NICUs in this birthweight category had a ratio at or below this one.
- The p-value indicates that the difference in these two ratios is statistically significant ($p < 0.00001$).



Information on CLABSI protocol and forms:

http://www.cdc.gov/nhsn/psc_da.html

Questions: nhsn@cdc.gov