#0139 National Healthcare Safety Network (NHSN) Central line-associated Bloodstream Infection (CLABSI) Outcome Measure, Last Updated: Oct 23, 2019

Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

Brief Measure Information

NQF #: 0139
Corresponding Measures:
De.2. **Measure Title:** National Healthcare Safety Network (NHSN) Central line-associated Bloodstream Infection (CLABSI) Outcome Measure
Co.1.1. **Measure Steward:** Centers for Disease Control and Prevention
De.3. **Brief Description of Measure:** Standardized Infection Ratio (SIR) and Adjusted Ranking Metric (ARM) of healthcare-associated, central line-associated bloodstream infections (CLABSI) will be calculated among patients in bedded inpatient care locations. This includes acute care general hospitals, long-term acute care hospitals, rehabilitation hospitals, oncology hospitals, and behavioral health hospitals.
1b.1. **Developer Rationale:** It is envisioned the use of this measure will promote CLABSI prevention activities which will lead to improved patient outcomes including reduction of avoidable medical costs, and patient morbidity and mortality.

S.4. **Numerator Statement:** Total number of observed healthcare-associated CLABSI among patients in bedded inpatient care locations.
S.6. **Denominator Statement:** Total number of predicted healthcare-associated CLABSI among patients in bedded inpatient care locations, calculated using the facility's number of central line days and the following significant risk factors:

- Acute Care Hospitals: CDC location, facility bed size, medical school affiliation, facility type, birthweight category (NICU locations only)
- Critical Access Hospitals: no significant risk factors, calculation based intercept only model
- Inpatient Rehabilitation Facilities: Proportion of admissions with stroke, proportion of admissions in other non-specific diagnostic categories
- Long Term Acute Care Hospitals: CDC location type , facility bed size, average length of stay, proportion of admissions on a ventilator, proportion of admissions on hemodialysis

S.8. **Denominator Exclusions:** Data from patients who are not assigned to an inpatient bed are excluded from the denominator counts, including outpatient clinics, 24-hour observation units, and emergency department visits. Inpatient rehab locations and inpatient psychiatric locations that have their own Centers for Medicare and Medicaid Services (CMS) Certification Number (CCN) are excluded.

De.1. **Measure Type:** Outcome
S.17. **Data Source:** Electronic Health Data, Electronic Health Records, Other, Paper Medical Records
S.20. **Level of Analysis:** Facility, Population : Regional and State

IF Endorsement Maintenance – Original Endorsement Date: Aug 10, 2009 **Most Recent Endorsement Date:** Oct 23, 2019

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. **IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?**

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. ***Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.***

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form
CLABSI_NQF_Evidence_final_review.docx
1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?
Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.
Yes

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

1b.1. **Briefly explain the rationale for this measure** *(e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)*
If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.
It is envisioned the use of this measure will promote CLABSI prevention activities which will lead to improved patient outcomes including reduction of avoidable medical costs, and patient morbidity and mortality.

1b.2. **Provide performance scores on the measure as specified (current and over time) at the specified level of analysis**. *(This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*
When SIRs are compared over time, assessment of performance can be made. Hospitals have made significant progress in preventing CLABSIs–nationally, there has been a roughly 50% drop in CLABSIs between 2008 and 2016. For figures related to data please see https://www.cdc.gov/hai/surveillance/data-reports/data-summary-assessing-progress.html
CLABSI using the 2015 baseline:

National CLABSI SIR in 2015 is 0.994 = 26,029 observed / 26,183.537 predicted

National % change vs. baseline in 2015 < 1%

National CLABSI SIR in 2016 is 0.891 = 23,591 observed / 26,472.710 predicted

National % change vs. baseline in 2016 is 10%

National CLABSI SIR in 2017 is 0.814 = 21,173 observed / 25,993.180 predicted
There was about a 9% statistically significant decrease in CLABSI in acute care hospitals between 2016 and 2017, with the largest decrease seen in wards (10%).

Percent Change 2016 v. 2015 10% decrease

2015-

facilities: 3,550

Median: 0.868

Range, at 5% and 95%: (0.000 – 2.440)

2016-

facilities: 3,531

Median: 0.783

Range, at 5% and 95%: (0.000 – 2.239)

1b.3. **If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.**
The 2017 Current HAI Progress Report:
https://www.cdc.gov/hai/data/portal/progress-report.html

The Healthcare-associated Infections in the United States, 2006-2016: A Story of Progress located here:
https://www.cdc.gov/hai/surveillance/data-reports/data-summary-assessing-progress.html

The 2016 National and State Healthcare-associated Infection Data Report:
https://www.cdc.gov/hai/data/portal/progress-report.html

1b.4. **Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.** *(This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*
No studies provide evidence of a direct relationship between social risk and HAIs. Instead, they provide evidence that social risk factors are associated with an increased risk of chronic disease conditions, suboptimal care for those conditions, compromised functional status, exposure to nursing homes, and colonization with bacterial pathogens. While these associations may be meaningful, they do not establish a direct relationship between social risk factors and HAIs.

1b.5. **If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**
Bakullari, Anila, Mark L. Metersky, Yun Wang, Noel Eldridge, Sheila Eckenrode, Michelle M. Pandolfi, Lisa Jaser, Deron Galusha, and Ernest Moy. "Racial and Ethnic Disparities in Healthcare-Associated Infections in the United States, 2009–2011." Infection Control and Hospital Epidemiology 35, no. S3 (2014): S10-16. doi:10.1086/677827
Among patients hospitalized with acute cardiovascular disease, pneumonia, and major surgery, Asian and Hispanic patients had significantly higher rates of HAIs than white, non-Hispanic patients.

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. ***Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.***

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. **Subject/Topic Area** *(check all the areas that apply):*
Infectious Diseases (ID)

De.6. **Non-Condition Specific***(check all the areas that apply):*
Primary Prevention, Safety, Safety : Complications, Safety : Healthcare Associated Infections

De.7. **Target Population Category** *(Check all the populations for which the measure is specified and tested if any):*
Children, Elderly, Populations at Risk, Populations at Risk : Dual eligible beneficiaries, Populations at Risk : Individuals with multiple chronic conditions, Populations at Risk : Veterans, Women

S.1. **Measure-specific Web Page** *(Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)*
https://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf (p.6, p.13)

S.2a. **If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)
This is not an eMeasure **Attachment:**

S.2b. **Data Dictionary, Code Table, or Value Sets** *(and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)*
Attachment **Attachment:** Copy_of_nhsn-data-dictionary-636893674617277045.xlsx

S.2c. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.
No, this is not an instrument-based measure **Attachment:**

S.2d. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

S.3.1. **For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.
Yes

S.3.2. **For maintenance of endorsement,** please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

- Starting in 2018, we removed the exclusion for non-accessed central lines and we now include all central lines in the denominator device day counts regardless of access. There was confusion related to counting non-accessed permanent central lines and removal of this exclusion reduced confusion related to denominator device day counts.
- Intravenous Drug Abuse (IVDA): Bloodstream Infections (BSI) accompanied by documentation of observed or suspected injection into an IV line by the patient during the BSI Infection Window Period are excluded as CLABSIs regardless of presence of a central line. Patients meeting this CLABSI exclusion are at an increased risk for a CLABSI event due to the lack of aseptic technique when injecting their own line.

- In 2019, LCBI definition will no longer be met with the identification of a virus or parasite. These pathogens were excluded from the measure since they are not common causes of HAIS.
- Pus at the vascular access site: Bloodstream Infections (BSIs) accompanied by documentation of required elements during the BSI Infection Window Period are excluded as CLABSIs regardless of presence of a central line.

- Munchausen Syndrome by Proxy (MSBP): Bloodstream infections (BSIs) accompanied by documentation of a confirmed or suspected diagnosis of MSBP during the current admission are excluded as CLABSIs regardless of the presence of a central line.

- Epidermolysis bullosa (EB): Bloodstream infections (BSIs) accompanied by documentation during the current admission are excluded as CLABSIs regardless of the presence of a central line. Patients meeting this CLABSI exclusion are more likely to develop wounds that are heavily colonized with bacteria placing them at an increased risk for BSIs. Oftentimes skin cultures are not collected because the culturing process is painful for patients.

- Group B streptococcus: Group B Streptococcus identified from blood, with a date of event during the first 6 days of life, will not be reported as a CLABSI. Patients positive for GBS in the first 6 days of life are excluded because of vertical transmission.

S.4. **Numerator Statement** *(Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.*
IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
Total number of observed healthcare-associated CLABSI among patients in bedded inpatient care locations.

S.5. **Numerator Details** *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*
IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
Numbers of CLABSIs attributed to each location are counted for each month using the definitions below. CLABSIs attributed to neonatal ICUs are stratified by birth weight category. CLABSIs attributed to Specialty Care Areas or Oncology Locations are stratified by association with temporary vs. permanent central line.

1. Definition of infection that is Present on Admission (POA): An infection is considered Present on Admission (POA) if the date of event of the NHSN site-specific infection criterion occurs during the POA time period, which is defined as the day of admission to an inpatient location (calendar day 1), the 2 days before admission, and the calendar day after admission. For purposes of NHSN surveillance and determination of the Repeat Infection Timeframe (as defined below) if the date of event is determined to be either of the two days prior to inpatient admission, then the date of event will be hospital day 1. POA events are excluded

2. Definition of Healthcare-associated Infection (HAI): An infection is considered a Healthcare-associated Infection (HAI) if the date of event of the NHSN site-specific infection criterion occurs on or after the 3rd calendar day of admission to an inpatient location where day of admission is calendar day 1.

3. Definition of Eligible Central Line: A CL that has been in place for more than two consecutive calendar days (on or after CL day 3), following the first access of the central line, in an inpatient location, during the current admission. Such lines are eligible for CLABSI events and remain eligible for CLABSI events until the day after removal from the body or patient discharge, whichever comes first.

4. Definition of Central line: An intravascular catheter that terminates at or close to the heart or in one of the great vessels that is used for infusion, withdrawal of blood, or hemodynamic monitoring. The following are considered great vessels for the purpose of reporting CLABSI events and counting central-line device days in the NHSN system: Aorta, pulmonary artery, superior vena cava, inferior vena cava, brachiocephalic veins, internal jugular veins, subclavian veins, external iliac veins, common iliac veins, femoral veins, and in neonates, the umbilical artery/vein.
Neither the type of device nor the insertion site are used to determine if a device is considered a central line for NHSN reporting purposes.
The following devices are not considered central lines for NHSN Reporting Purposes:
- Non-lumened Pacemaker wires and other non-lumened devices inserted into central blood vessels or the heart
- Arterial catheters
- Arteriovenous fistula
- Arteriovenous graft
- Atrial catheters (also known as transthoracic intra-cardiac catheters, those catheters inserted directly into the right or left atrium via the heart wall)

- Extracorporeal membrane oxygenation (ECMO)
- Hemodialysis reliable outflow (HERO) dialysis catheters
- Intra-aortic balloon pump (IABP) devices
- Peripheral IV or Midlines
- Ventricular Assist Device (VAD)

5. Definition of CLABSI: A laboratory confirmed bloodstream infection which meets LCBI Criterion 1, 2, or 3, and where an eligible BSI organism is identified and an eligible central line is present on the LCBI DOE or the day before. Access definition: The performance of any of the following activities during the current inpatient admission
6. Definition of Infusion: The administration of any solution through the lumen of a catheter into a blood vessel. Infusions include continuous infusion (for example, nutritional fluids or medications), intermittent infusion (for example, IV flush), IV antimicrobial administration, and blood transfusion or hemodialysis treatment.
7. Definition of Temporary Central Line: A non-tunneled, non-implanted catheter.

8. Definition of Permanent Central Line: Tunneled catheters, (including tunneled dialysis catheters) and implanted catheters (including ports)

9. Definition of Laboratory Confirmed Bloodstream Infection (LCBI):
For all LCBI definitions, the following resources may be referenced:
- Appendix B: Secondary BSI Guide of the CLABSI Surveillance protocol can be found at www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf (p.32)
- NHSN Common Commensals from the NHSN Organism List can be found at https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx

LCBI must meet one of the following criteria:
LCBI Criterion 1: Patient of any age has a recognized bacterial or fungal pathogen not included on the NHSN common commensal list, identified from one or more blood specimens obtained by a culture or non-culture based microbiologic testing methods
AND
Organism(s) identified in blood is not related to an infection at another site
(See Appendix B [p.32] Secondary BSI Guide)
LCBI Criterion 2: Patient of any age has at least one of the following signs or symptoms: fever (>38 degrees C), chills, or hypotension and positive Organism(s) identified in blood
AND
Organism(s) identified in blood is not related to an infection at another site
AND
The same NHSN common commensal is identified by a culture or non-culture based microbiologic testing method, from two or more blood specimens collected on separate occasions not related to an infection at another site and the same NHSN common commensal is identified from two or more blood specimens drawn on separate occasions, by a culture or non-culture based microbiologic testing method.
Common Commensal organisms include, but not are not limited to, diphtheroids (Corynebacterium spp. not C. diphtheria), Bacillus spp. (not B. anthracis), Propionibacterium spp., coagulase-negative staphylococci (including S. epidermidis), viridans group streptococci, Aerococcus spp. Micrococcus spp, and Rhodococcus spp.
For a full list of Common Commensals see the Common Commensal tab of the NHSN organisms list. Criterion elements must occur within the Infection Window Period, the seven-day time period which includes the date the positive blood culture was collected, the 3 calendar days before and the 3 calendar days after. Note: The matching common commensals represent a single element; therefore, the collection date of the first common commensal is the date of the element used to determine the Date of Event.

LCBI Criterion 3: Patient 1 year of age or less has at least one of the following signs or symptoms: fever (>38 degrees C), hypothermia (<36 degrees C), apnea, or bradycardia and organism identified in blood not related to an infection at another site (See Appendix B Secondary BSI Guide) and the same NHSN common commensal is identified from two or more blood specimens drawn on separate occasions, by a culture or non-culture based microbiologic testing.

10. Criteria for meeting Mucosal Barrier Injury (MBI) Laboratory Confirmed Bloodstream Infection (LCBI)
For all MBI-LCBI definitions, the following resources may be referenced:
- Appendix B: Secondary BSI Guide of the CLABSI Surveillance protocol can be found at

www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf (p.32)

- NHSN Common Commensals from the NHSN Organism List can be found at https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx
- NHSN MBI Organism List can be found at https://www.cdc.gov/nhsn/xls/analysis/nhsn-data-dictionary.xlsx

MBI-LCBI Criterion1: Patient of any age fully meets criterion 1 for LCBI with at least one blood specimen identified by a culture or non-culture based microbiologic testing method, with ONLY intestinal organisms from the NHSN MBI organism list and patient meets at least one of the following:
a)Is an allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
i.) Grade III or IV gastrointestinal graft versus host disease [GI GVHD]
ii.)1 liter or more diarrhea in a 24-hour period (or 20 or more mL/kg in a 24-hour period for patients <18 years of age) with onset on or within 7 calendar days before the date the positive blood specimen was collected
b)Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) and/or white blood cell (WBC) values <500 cells/mm3 within a seven-day time period which includes the collection date of the positive blood specimen (Day 1), the 3 calendar days before and the 3 calendar days after.

MBI-LCBI Criterion 2: Patient of any age meets criterion 2 for LCBI when the blood specimens identify only viridans group streptococci or Rothia spp and patient meets at least one of the following:
a)Is an allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
i.) Grade III or IV gastrointestinal graft versus host disease [GI GVHD]
ii.)1 liter or more diarrhea in a 24-hour period (or 20 or more mL/kg in a 24-hour period for patients <18 years of age) with onset on or within 7 calendar days before the date the positive blood specimen was collected
b)Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) and/or white blood cell (WBC) values <500 cells/mm3 within a seven-day time period which includes the collection date of the positive blood specimen (Day 1), the 3 calendar days before and the 3 calendar days after

MBI-LCBI Criterion 3: Patient 1 year of age or less meets criterion 3 for LCBI when the blood specimens identify only viridans group streptococci or Rothia spp and patient meets at least one of the following:
a)Is an allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
i.) Grade III or IV gastrointestinal graft versus host disease [GI GVHD]
ii.)1 liter or more diarrhea in a 24-hour period (or 20 or more mL/kg in a 24-hour period for patients <18 years of age) with onset on or within 7 calendar days before the date the positive blood specimen was collected
b)Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) and/or white blood cell (WBC) values <500 cells/mm3 within a seven-day time period which includes the collection date of the positive blood specimen (Day 1), the 3 calendar days before and the 3 calendar days after

11. Definition of CDC Location: The patient care area to which a patient is assigned while receiving care in the healthcare facility. NOTE: Only locations where patients are housed overnight (i.e., inpatient locations) and where denominator data are collected can be used for reporting CLABSI data. Operating rooms (including cardiac cath labs, c-section rooms, and interventional radiology) and outpatient locations are not valid locations for this type of surveillance. See attached list of CDC/NHSN Location Types to identify Special Care Areas or Oncology Locations. https://www.cdc.gov/nhsn/xls/analysis/nhsn-data-dictionary.xlsx

12. Definition of Infection Window Period: Infection Window Period is defined as the 7-days during which all site-specific infection criteria must be met. It includes the day the first positive diagnostic test that is an element of the site-specific infection criterion, was obtained, the 3 calendar days before and the 3 calendar days after. For purposes of defining the Infection Window Period the following are considered diagnostic tests:

- laboratory specimen collection
- imaging test
- procedure or exam

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

are reported. The date of event is Day 1 of the 14-day RIT. Additional pathogens recovered during the RIT from the same type of infection are added to the event.
The RIT will apply at the level of specific type of infection with the exception of BSI, UTI, and PNEU where the RIT will apply at the major type of infection.

14. Definition of Date of Event (DOE): The Date of Event 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.

15. Definition of Location of Attribution: The location to which the CLABSI is attributed.

16. Definition of birthweight: Birthweight is the weight of the infant at the time of birth and should not be changed as the infant gains weight. The birthweight categories are as follows:
A = 750 g or less; B = 751-1000 g; C = 1001-1500 g; D = 1501-2500 g; E = >2500 g.

17. Definitions for facility physician education status: Teaching statuses: major, graduate, undergraduate - Major: Facility has a program for medical students and post-graduate medical training; Graduate: Facility has a program for post-graduate medical training (i.e., residency and/or fellowships); Undergraduate: Facility has a program for medical students only.

Exclusions from CLABSI:
1. Bloodstream Infections (BSI) accompanied by documentation of observed or suspected injection into an IV line by the patient during the BSI Infection Window Period are excluded as CLABSIs regardless of presence of central line.
2. Group B Streptococcus identified from blood, with a date of event during the first 6 days of life, are excluded as CLABSIs regardless of presence of central line.
3. Occasionally, a patient with both a central line and another vascular access device* will have pus at the other access site. If there is pus at the site of one of the following vascular access devices and a specimen collected from that site has at least one matching organism to an organism identified in blood this will be considered an LCBI but not a CLABSI for NHSN reporting purposes.
*Vascular access devices included in this exception are limited to:
• Arterial catheters
• Arteriovenous fistulae
• Arteriovenous grafts
• Atrial catheters (also known as transthoracic intra-cardiac catheters, those catheters inserted directly into the right or left atrium via the heart wall)
• Hemodialysis reliable outflow (HERO) dialysis catheters
• Intra-aortic balloon pump (IABP) devices
• Non-accessed CL (those neither inserted nor used during current admission)
• Peripheral IV or Midlines
4. CLABSIs in which any of the following organisms are the only pathogens identified are excluded:
- Blastomyces spp.
- Histoplasma spp.
- Coccidioides spp.
- Paracoccidioides spp.
- Cryptococcus spp.
- Pneumocystis spp.
- Any virus
- Parasites

5. If the date of blood specimen collection is on or after the date of documentation of evidence of consent AND the patient is being supported for organ donation purposes, an event identified using the blood specimen result should not be reported as CLABSI.

6. MBI CLABSI events will be excluded from the CLABSI measure

7. Munchausen Syndrome by Proxy (MSBP): If during the current admission, there is documentation of known or suspected (MSBP), also known as factitious disorder imposed on another and a CL has been in place for more than 2 days on a BSI DOE, these events are considered LCBIs but are NOT considered central line associated.

8. Epidermolysis bullosa (EB): If during the current admission, there is a diagnosis of and a CL has been in place for more than 2 days on a BSI DOE, these events are considered LCBIs but are NOT considered central line associated.

9. Extracorporeal life support (ECMO): A BSI meeting LCBI criteria with an eligible central line where ECMO is present for more than 2 days on the BSI DOE, and is still in place on the DOE or the day before, will be considered an LCBI but not a CLABSI for NHSN reporting purposes.

10. Ventricular assist device (VAD): A BSI meeting LCBI criteria with an eligible central line where ECMO is present for more than 2 days on the BSI DOE, and is still in place on the DOE or the day before, will be considered an LCBI but not a CLABSI for NHSN reporting purposes.

S.6. **Denominator Statement** *(Brief, narrative description of the target population being measured)*

Total number of predicted healthcare-associated CLABSI among patients in bedded inpatient care locations, calculated using the facility's number of central line days and the following significant risk factors:

- Acute Care Hospitals: CDC location, facility bed size, medical school affiliation, facility type, birthweight category (NICU locations only)
- Critical Access Hospitals: no significant risk factors, calculation based intercept only model
- Inpatient Rehabilitation Facilities: Proportion of admissions with stroke, proportion of admissions in other non-specific diagnostic categories
- Long Term Acute Care Hospitals: CDC location type , facility bed size, average length of stay, proportion of admissions on a ventilator, proportion of admissions on hemodialysis

S.7. **Denominator Details** *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Methodologies for counting central line days differ according to the location of the patients being monitored. Numbers of central line days attributed to each location are counted for each data period utilizing the following definitions and guidelines. In locations that are not neonatal ICUs, SCA or oncology locations, all CL days for that location and data period are summed. For neonatal ICU central line days counts are stratified by birthweight category. CL day counts for Special Care Areas or Oncology Locations are stratified by temporary vs. permanent central line type.

For locations other than specialty care areas/oncology (SCA/ONC) and NICUs (e.g., ICUs, step-down units, wards), the denominator sampling method can be used. (Refer to sampling method in the Device-Associated BSI protocol available at www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf)

1. Definition of central line day: For each patient, a day that at least one central line was present at the time of the CL day count.
2. Definition of CDC Location (acute care hospitals, long term acute care hospitals): Each patient care area in a facility that is monitored in NHSN is "mapped" to one or more CDC Locations. The specific CDC Location code is determined by the type of patients cared for in that area according to the 80% Rule. That is, if 80% of patients are of a certain type (e.g., pediatric patients with orthopedic problems) then that area is designated as that type of location (in this case, an Inpatient Pediatric Orthopedic Ward). https://www.cdc.gov/nhsn/pdfs/pscmanual/15locationsdescriptions_current.pdf
3. Definition of Medical school affiliation categories:
a. Major – facility has a program for medical students and post-graduate medical training
b. Graduate – facility has a program for post-graduate medical training (i.e., residency and/or fellowships)
c. Undergraduate: facility has a program for medical students only
4. Definition of Facility bed size: Number of beds set up and staffed in the healthcare facility
5. Setting (Freestanding or Within a Hospital): Describes physical placement of LTACH or IRF and does not define financial or administrative relationship with other healthcare facility types.

6. Average Length of Stay: number of patient days during the calendar year divided by the number of admissions during the calendar year

7. Proportion of admissions within a diagnostic category: number of admissions during the calendar year where the primary diagnosis is of that type (e.g., traumatic spinal cord dysfunction) divided by the total number of admissions during the calendar year

S.8. **Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*
Data from patients who are not assigned to an inpatient bed are excluded from the denominator counts, including outpatient clinics, 24-hour observation units, and emergency department visits. Inpatient rehab locations and inpatient psychiatric locations that have their own Centers for Medicare and Medicaid Services (CMS) Certification Number (CCN) are excluded.

S.9. **Denominator Exclusion Details** *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*
See S.8. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.

S.10. **Stratification Information** *(Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)*
The final risk model for the CLABSI SIR in Acute Care Hospitals includes: CDC locations, facility bed size, medical school affiliation, and facility type. For NICU locations the risk factor included in the final model was birthweight category. See S7 above

S.11. **Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)
Statistical risk model
If other:

S.12. **Type of score:**
Ratio
If other:

S.13. **Interpretation of Score** *(Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)*
Better quality = Lower score

S.14. **Calculation Algorithm/Measure Logic** (*Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)*
The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of CLABSI events is calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare associated infection (HAI) experience, including CLABSI events, in a single group of data or across any number of stratified groups of data. To produce the SIR:
1. Identify number of observed healthcare-associated CLABSIs for a given time period by adding the total number of observed CLABSIs across the facility.
2. Calculate the number of predicted healthcare-associated CLABSIs for each CDC location using a negative binomial regression model and the risk factors described above.
3. Calculate the number of predicted healthcare-associated CLABSIs for the facility and time period by adding the predicted number of CLABSIs for each location across the facility.
4. Divide the number of observed healthcare-associated CLABSIs (1 above) by the number of predicted healthcare-associated CLABSIs (3 above) to obtain the SIR.
5. Perform a Poisson test to compare the SIR obtained in 4 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.
(The NHSN analysis tool will perform the calculations once the patient infection data and denominator information are entered into the system.)

The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including CLABSI events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects

hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM:
1. Identify the number of CLABSI in each location
2. Obtain the adjusted number of observed CLABSIs by using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.
3. Total these numbers for an observed number of CLABSIs
4. Obtain the predicted number of CLABSIs in the same locations by multiplying the observed central line days according to the factors significantly associated with predicting CLABSI incidence as identified through a Log-linear Negative Binomial Regression Model.
5. Divide the total number of adjusted CLABSI events ("3" above) by the predicted number of CLABSIs ("5" above).
6. Result = ARM

S.15. **Sampling** *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*
IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.
No sampling methodology is used in calculating the metric.

S.16. **Survey/Patient-reported data** *(If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)*
Specify calculation of response rates to be reported with performance measure results.
Not PRO-PM

S.17. **Data Source** *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*
If other, please describe in S.18.
Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

S.18. **Data Source or Collection Instrument** *(Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)*
IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.
NHSN Primary BSI collection form
NHSN Denominator for ICU form
NHSN Denominator for NICU form
NHSN Denominator for Specialty Care Area/Oncology Form

S.19. **Data Source or Collection Instrument** *(available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*
Available at measure-specific web page URL identified in S.1

S.20. **Level of Analysis** *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)*
Facility, Population : Regional and State

S.21. **Care Setting** *(Check ONLY the settings for which the measure is SPECIFIED AND TESTED)*
Inpatient/Hospital, Other:Oncology Hospital; IRF; LTACH; Inpatient Psych, Post-Acute Care
If other:

S.22. **COMPOSITE Performance Measure** - Additional Specifications *(Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)*

2. Validity – See attached Measure Testing Submission Form
NQF_CLABSI_Scientific_testing_attachment_Revision.2.26.19_-003-.docx

2.1 For maintenance of endorsement

Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.

Yes

2.2 For maintenance of endorsement

Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.

Yes

2.3 For maintenance of endorsement

Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.

Yes - Updated information is included

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. **Data Elements Generated as Byproduct of Care Processes.**

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score), Abstracted from a record by someone other than person obtaining original information (e.g., chart abstraction for quality measure or registry), Other

If other: CLABSI and central line device days must be collected by trained hospital staff from information available in clinical data sources. The standard population's CLABSI rates are available from the NHSN Report. The NHSN analysis tool will automatically calculate SIRs. Some of the data used in the measure can be mined from electronic data sources.

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. **To what extent are the specified data elements available electronically in defined fields** (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*) Update this field for **maintenance of endorsement**.

Some data elements are in defined fields in electronic sources

3b.2. **If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.** For **maintenance of endorsement**, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

NHSN is moving towards an electronically captured CLABSI measure for future use. However, development and testing is not complete at this time.

3b.3. **If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-**

specific URL. Please also complete and attach the NQF Feasibility Score Card.
Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. **Required for maintenance of endorsement. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.**
IF instrument-based, consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.
CLABSI surveillance in hospitals participating in CDC surveillance systems began in 1986, and the CLABSI measure has been endorsed by NQF in 2 measure sets since 2004. The criteria for CLABSI have been updated routinely to reflect user input and findings from data analysis, and changes have been made to decrease the difficulty and burden of data collection for the users. Such changes include removal of non-culture confirmed types of bloodstream infection from the types included in measure, addition of mucosal-barrier-injury laboratory confirmed bloodstream infection to identify infections which may not be preventable with previously identified CLABSI prevention tools, as well as reduction of data collection burden informed by data analysis (i.e. discontinuation of NICU central line type stratification).

3c.2. **Describe any fees, licensing, or other requirements to use any aspect of the measure as specified** *(e.g., value/code set, risk model, programming code, algorithm)*.
There are no fees to utilize NQF measure 0139. Participants must sign a Rules of Behavior document which states that they will follow the CLABSI surveillance protocol in its entirety and report data that is in accordance with this manual.

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. **Current and Planned Use**
NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Specific Plan for Use	Current Use (for current use provide URL)

4a1.1 **For each CURRENT use, checked above (update for maintenance of endorsement), provide:**

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

1) Name: Hospital Inpatient Quality Reporting Program (HIQR)
Sponsor: Centers for Medicare and Medicaid Services
Purpose: To improve health, improve care and lower cost (triple aims) of Medicare beneficiaries.

Geographic area and number and percentage of accountable entities and patients included: Nationwide, currently covers all acute care hospitals with ICUs (approximately 3300).*
Level of measurement and setting: Facility-Level, acute inpatient hospital
2) Name: Prospective Payment System Exempt Cancer Hospital Quality Reporting Program
Sponsor: Centers for Medicare and Medicaid Services
Purpose: To establish a quality reporting program for PPS-Exempt Cancer Hospital to improve health, improve care and lower cost (triple aims)of Medicare beneficiaries.
Geographic area and number and percentage of accountable entities and patients: 11 Patient Prospective Payment Exempt Cancer Hospitals in 7 U.S. states with 19,203 average discharges each in FY 2012*.
Level of measurement and setting: Facility-Level, PPS-Exempt cancer hospital
3) Name: Long Term Care Hospital (LTCH) Quality Reporting Program
Sponsor: Centers for Medicare and Medicaid Services
Purpose: To establish a quality reporting program for LTCHs to improve health, improve care and lower cost (triple aims) of Medicare beneficiaries.
Geographic area and number and percentage of accountable entities and patients included: All 442 Medicare certified long-term care hospitals are required to participate to receive 100% of reimbursement money due. In 2012, this included 202,050 patient discharges*.
Level of measurement and setting: Facility-Level, LTAC inpatient
4) Name: Hospital Value-Based Purchasing
Sponsor: Centers for Medicare and Medicaid Services
Purpose: To establish a quality reporting program to improve health, improve care and lower cost (triple aims) of Medicare beneficiaries.
Geographic area and number and percentage of accountable entities and patients included: 2808 entities*
Level of measurement and setting: Facility-Level, acute inpatient hospital
5) Name: Hospital-Acquired Condition Reduction Program (HACRP)
Sponsor: Centers for Medicare and Medicaid Services
Purpose: To establish a quality reporting program to improve health, improve care and lower cost (triple aims) of Medicare beneficiaries.
Geographic area and number and percentage of accountable entities and patients included: 3,216 entities*
Level of measurement and setting: Facility-Level, acute inpatient hospital

*provided by Centers for Medicare and Medicaid Services

4a1.2. **If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons?** (*e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?*)
N/A

4a1.3. **If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement.** (*Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.*)
N/A

4a2.1.1. **Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.**
How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.
NHSN has developed numerous training resources to assist users with the proper understanding and interpretation of this measure. Several webinars and written training materials have been provided. Annual in-person trainings are held to discuss the SIR calculations, risk adjustment, and proper interpretation. Training materials are available online to all hospitals enrolled in NHSN, as well as external partners such as state health departments, quality improvement organizations, and healthcare corporations. NHSN users can run monthly analysis reports within NHSN to view their SIR data. On an annual basis, NHSN publishes national and state-

level SIRs in the National and State HAI Progress Report.

4a2.1.2. **Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**
SIR results are available to NHSN users at any time, based on their current data entry. Data provided within the analysis report includes numerator, denominator, SIR, p-value, and 95% confidence interval. Educational materials are available on the NHSN website that explain each data element

4a2.2.1. **Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**
Describe how feedback was obtained.
Feedback on measure performance and implementation is obtained via email to the NHSN helpdesk email system. Feedback is provided to us by hospital staff, physicians, epidemiologists, statisticians, state and local health department staff, quality improvement staff, and other personnel. An online survey is provided to all live-training attendees who provide feedback on whether objectives were met, usefulness of the training, and whether additional training is needed.
In 2019, NHSN is piloting an opportunity for facilities, groups and individuals to identify issues and areas for potential improvement for consideration as CDC updates and maintains the Bloodstream Infection (BSI) surveillance protocol for 2020. Comments may be submitted for consideration via the Federal Register, beginning Thursday February 14, 2019 through Monday April 15, 2019. This will be the format for submitting suggested modifications or comments regarding BSI surveillance for 2019.

4a2.2.2. **Summarize the feedback obtained from those being measured.**
Feedback from Hospitals and states: Based on results from a polling survey, hospitals have indicated that they are running SIR analysis reports within NHSN on a monthly basis, and that they use SIRs for prevention activities in their hospital. State health departments are using the SIR for public reporting purposes and to help target facilities for additional prevention. Feedback was received via email regarding the extent of risk adjustment and the limitations.

4a2.2.3. **Summarize the feedback obtained from other users**
Feedback from consumers, media, policy, etc. on measure performance and implementation is obtained via email to the NHSN helpdesk email system. Feedback is provided to us by hospital staff, physicians, epidemiologists, statisticians, state and local health department staff, professional organizations, quality improvement staff, infection prevention and other personnel. See 4.a2.2.1.

4a2.3. **Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**
Protocol changes such as numerator and denominator exclusions which have been incorporated into the protocol are the result of feedback that is received from users. Feedback from all stakeholders is considered when developing and implementing the SIR. Different risk factor variables were analyzed for potential inclusion in the statistical model due to input from users. Additional training formats, such as live chats and “quick learn” videos, were created in order to address different training environments that best meet the needs of our audience. We have also provided live demonstrations to users showing how to generate their SIRs in NHSN based on earlier feedback we had received.

Improvement
Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b1. **Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)**
If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.
To a substantial extent the quality measure is a driver of patient care practices and particularly decisions on central line insertion. The trend data in section 1b. display the reductions in central line utilization over time and the reduction in the SIR for this measure before and after the 2015 rebaseline. Combined with declining SIRs, which change in relation to the number of CLABSIs per central

line days, declines in the device (i.e. central line) use ratio on wards and especially neonatal intensive care units (NICUs) highlight the net benefit to patients afforded by both the safer and reduced central line use. Carefully determining the necessity of central lines before insertion is a CLABSI prevention strategy.

4b2. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4b2.1. **Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**

Patient medical records and other sources of patient data must be reviewed to determine if the patient meets the necessary criteria for a healthcare-associated CLABSI. It is possible that reviewers may miss symptoms or fail to identify that patients meet criteria thereby under-reporting CLABSI events. Data collectors might also intentionally under-report CLABSIs. Both of these actions would result in an SIR that is calculated to be lower than actual. Alternatively, patients may be identified as having a CLABSI when in fact they do not meet CLABSI criteria and thereby calculate an SIR that is higher than actual. In addition, it is possible SIRs may be miscalculated. The NHSN reporting tool includes business logic to minimize misclassification of CLABSI and inaccurate reporting of catheter days. In addition, site visits can be conducted to audit data validity and this has been done for other infection types by some of the states using NHSN as their mandatory reporting tool (for example, see New York's audit process summary: http://www.health.state.ny.us/statistics/facilities/hospital/hospital_acquired_infections/2008/docs/hospital-acquired_infection.pdf, p20).

4b2.2. **Please explain any unexpected benefits from implementation of this measure.**

Surveillance for CLABSI uses the results of cultures of blood specimens. Suboptimal blood culture collection and testing technique can result in not only false-CLABSI reporting but also unnecessary antibiotic administration to patients. Unnecessary antibiotics can result in unnecessary adverse reactions, antibiotic resistance and Clostridioides difficile infection and its complications. Facilities may be motivated to assess and improve blood culture collection and testing techniques, to avoid identifying false-CLABSIs and in the process may prevent unnecessary patient complications.

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

No

5.1a. **List of related or competing measures (selected from NQF-endorsed measures)**

5.1b. **If related or competing measures are not NQF endorsed please indicate measure title and steward.**

5a. Harmonization of Related Measures

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. **If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):**

Are the measure specifications harmonized to the extent possible?

5a.2. **If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.**

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);
OR
Multiple measures are justified.

5b.1. **If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):**
Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.
Attachment **Attachment:** CDC_Master_Locations_and_Descriptions_2014-635218543933008267.docx

Contact Information

Co.1 **Measure Steward (Intellectual Property Owner):** Centers for Disease Control and Prevention
Co.2 **Point of Contact:** Daniel, Pollock, dpollock@cdc.gov, 404-639-4237-
Co.3 **Measure Developer if different from Measure Steward:** Centers for Disease Control and Prevention
Co.4 **Point of Contact:** Daniel, Pollock, dpollock@cdc.gov, 404-639-4237-

Additional Information

Ad.1 **Workgroup/Expert Panel involved in measure development**
Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.
The Healthcare Infection Control Practices Advisory Committee (HICPAC) consists of experts in the field of HAI surveillance, prevention, and control to provide advice and guidance to CDC. The measure was vetted through the technical panel of HICPAC that informed subsequent changes to measure development.
https://www.cdc.gov/hicpac/about.html

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.2 **Year the measure was first released:** 2004
Ad.3 **Month and Year of most recent revision:** 12, 2013
Ad.4 **What is your frequency for review/update of this measure?** annually and when needed
Ad.5 **When is the next scheduled review/update for this measure?** 04, 2019

Ad.6 **Copyright statement:**
Ad.7 **Disclaimers:**

Ad.8 **Additional Information/Comments:**