

PEDIATRIC MEASURE SPECIFICATIONS

Measure: Percentage of Patient Trips to the Operating Room with Prophylactic Antibiotics Initiated 0-60 Minutes Prior to Incision; 0-120 minutes for those antimicrobials that require a longer infusion time.

The National Healthcare Safety Network (NHSN) Manual: Patient Safety Component Protocol list of designated surgical procedures governing the reporting period for which information is being submitted will serve as the official reference guide for eligible surgical procedures.

I. Population Definition (Note: All designated surgical procedures require prophylactic antibiotics.)

Inclusion Criteria:

Patients < 18 years of age, as of the date the designated surgical procedures are performed.

Exclusion Criteria:

Patients ≥ 18 years of age, as of the date the designated surgical procedures are performed.

Patients with physician, advanced practice nurse, or physician assistant documentation of any type of active infection at the time of the designated surgical procedures.

II. Calculation

Numerator: Number of patient trips to the operating room for designated surgical procedures where required prophylactic antibiotics were initiated 0-60 minutes prior to incision (0-120 minutes for those antimicrobials that require a longer infusion time).

Denominator: Number of patient trips to the operating room for designated surgical procedures performed during the applicable reporting period in patients < 18 years of age, as of the date the procedures are performed.

Note: A patient trip to the operating room is counted only **once**, regardless of the number of procedures performed.

(Numerator/Denominator) x 100 (Note: reported as a percentage)

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III. Data Collection/Reporting

Instances where required prophylactic antibiotics were not administered are counted the same as not initiated 0-60 minutes prior to incision (0-120 minutes for those antimicrobials that require a longer infusion time).

IV. Notes

Appropriate timing of antibiotic re-dosing during surgical procedures is not addressed.

Appropriate antibiotic selection is not addressed.

Adjusting data for differences in case mix, volumes, or patient severity across reporting hospitals is not required for this measure.

V. Eligible Surgical Procedures

The neurosurgical, orthopedic, and cardiothoracic procedures and corresponding CPT and ICD-9-CM procedure codes, based on the following Centers for Disease Control/National Healthcare Safety Network reporting categories: VSHN, FUSN, and CARD.

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Measure: Surgical Site Infections (SSI) per 100 Patient Trips to the Operating Room

The National Healthcare Safety Network (NHSN) Manual: Patient Safety Component Protocol and list of eligible surgical procedures governing the reporting period for which information is being submitted will serve as the official reference guide for defining/reporting surgical site infections of the pediatric population. However, hospitals are not required to use the NHSN forms or prepare monthly surveillance plans for purposes of reporting this measure.

I. Population Definition

Inclusion Criteria:

Patients < 18 years of age, as of the date the designated surgical procedures are performed.

Exclusion Criteria:

Patients ≥ 18 years of age, as of the date the designated surgical procedures are performed.

II. Calculation

Numerator: Number of SSIs related to designated surgical procedures.

Denominator: Number of patient trips to the operating room for designated surgical procedures during the applicable reporting period in patients < 18 years of age, as of the date the procedures are performed.

Note: A patient trip to the operating room is counted only **once**, regardless of the number of procedures performed.

(Numerator/Denominator) x 100 (Note: reported as SSIs per 100 patient trips to the operating room.)

III. Data Collection/Reporting

CDC-defined surveillance periods for identifying SSIs:

- 30 days for non-implanted devices.
- 365 days for implanted devices.

Minimum required scope of surveillance to identify SSIs includes hospital-based encounters (e.g. inpatient, ED/urgent care, hospital-based outpatient clinics).

SSI rate is reported separately for each of the following surgical procedure categories: neurosurgical, orthopedic, and cardiothoracic.

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SSIs are assigned to the month when the attributable surgical procedures were performed.

Due to challenges communicating information across hospitals, should the attributable procedure be performed at a hospital other than the hospital where the SSI was identified, the following guidelines apply:

- Hospital performing attributable procedure: add patient trip to the operating room to the denominator, even if unable to add the related SSI to the numerator (due to lack of awareness that the SSI has occurred); add SSI to the numerator if aware that the SSI has been identified by another hospital.
- Hospital identifying the SSI: exclude SSI from the numerator since the patient trip to the operating room where the attributable procedure was performed is within the denominator of a different hospital. (Note: hospital identifying the SSI should contact the infection control department of the hospital that performed the attributable procedure; cross-hospital communication of patient information should comply with legal, legislative, and regulatory requirements.)

IV. Notes

NHSN SSI risk-adjustment methodologies will not be utilized. NHSN algorithm based on operation duration, wound class, and ASA classification has not been validated for pediatric populations. As pediatric-specific SSI prevalence rates for the designated surgical procedures are not available from evidence-based literature, the alternative NHSN methodology based on “observed vs. expected” cannot be applied.

V. Eligible Surgical Procedures

The neurosurgical, orthopedic, and cardiothoracic procedures and corresponding CPT and ICD-9-CM procedure codes, based on the following Centers for Disease Control/National Healthcare Safety Network reporting categories: VSHN, FUSN, and CARD.

Measure: Laboratory-Confirmed Catheter-Associated Bloodstream Infections (CA-BSI) per 1,000 Catheter Days for ICU Patients

I. Population Definition

Inclusion criteria:

All patients < 18 years of age on date of admission or re-admission to ICU setting who have a central venous catheter.

Includes patients in applicable ICU settings with central venous catheters regardless of place of insertion (e.g., tunneled/implanted central lines inserted in OR, PICC lines inserted in interventional radiology).

Includes all ICU settings, except NICUs.

Includes immunocompromised patients.

Includes the following catheter types:

- Tunneled/implanted central line (e.g., Hickman, Broviac, Mediport).
- Percutaneous central line (e.g., central venous catheter, subclavian-inserted central catheter).
- Peripherally-inserted central catheter (PICC): must be threaded in or near heart or great vessel to qualify as “central line.”
- Umbilical venous catheter.

NHSN definition of central line: intravascular catheter that terminates at, or close to, the heart, or in one of the great vessels, which is used for infusion, withdrawal of blood, or hemodynamic monitoring.

Patients with an existing central venous catheter where a CA-BSI develops within 48 hours after inter- or intra-hospital transfer from an ICU within the hospital reporting this measure to another clinical setting (e.g., inpatient unit, ICU). (Note: the hospital reporting this measure should capture catheter days for these patients in their denominator, and the CA-BSIs for these patients in their numerator.)

Exclusion Criteria:

Patients ≥ 18 years of age on date of admission or re-admission to ICU setting.

Patients in the NICU. (Note: NICUs within children’s hospitals are part of this exclusion criteria; decisions regarding NICU-related quality measures for public reporting were deferred to the ODH Perinatal Workgroup.)

Catheter days for patients while in the NICU and infections attributed to the NICU are excluded.

Intermediate care unit patients.

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Patients with an existing central venous catheter where a CA-BSI develops within 48 hours after inter- or intra-hospital transfer to an ICU within the hospital reporting this measure.

II. Calculation

Numerator: Number of laboratory-confirmed CA-BSIs.

Clarifications:

Positive blood cultures drawn from multiple sites are counted as one infection if due to the same organism.

A laboratory-confirmed bloodstream infection (LCBI) must meet one of the following three criteria: (Note: LCBI criteria 1 and 2 may be used for patients of any age, including patients ≤ 1 year of age.) (Source: "CDC/NHSN Surveillance Definition of Health-Care Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting," American Journal of Infection Control, 2008; 36: 309-332; National Association of Children's Hospitals and Related Institutions CA-BSI collaborative.)

Criterion 1:

Patient has a recognized pathogen cultured from one or more blood cultures

And

Organism cultured from blood is not related to infection at another site. (See Notes 1 and 2 in addendum.)

Criterion 2:

Patient has at least one of the following signs/symptoms: fever ($>38^{\circ}\text{C}$), chills, or hypotension

And

Signs/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. (See Notes 3 and 4 in addendum.)

Criterion 3:

Patient ≤ 1 yr 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.

Note: for patients ≤ 1 year of age, the following temperature equivalents for fever and hypothermia may be used:

- Fever: 38°C rectal/tympanic/temporal artery= 37°C oral= 36°C axillary.

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- Hypothermia: 37°C rectal/tympanic/temporal artery=36°C oral=35°C axillary.

And

Signs/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. (See Notes 3 and 4 in addendum.)

Denominator: Number of catheter days during applicable reporting period in patients < 18 years of age on date of admission or re-admission to ICU setting.

Clarifications:

Definition of “catheter days”: sum of patients with 1 or more central lines (excluding arterial lines), measured at the same time each day.

Patients with multiple central lines, and central lines with multiple lumens/ports per line, are counted as 1 catheter day.

Only count line days that occurred within applicable ICU settings.

For patients transferred between ICUs within the same hospital, line days are combined across applicable ICU settings for the reporting period.

- - E.g. During the reporting period, a patient is admitted to the NICU, is later transferred to an applicable ICU setting, and then is transferred back to the NICU. As the NICU is not an applicable ICU setting, catheter days associated with that setting are not counted in the denominator.

(Numerator/Denominator) x 1,000 (Note: reported as CA-BSIs per 1,000 catheter days.)

III. Data Collection/Reporting

Data is reported to the ODH on a quarterly basis.

Due to challenges communicating information across hospitals, should corresponding catheter days be recorded by a hospital other than the hospital where the CA-BSI was identified, the following guidelines apply:

- Hospital reporting this measure: add catheter days to denominator, even if unable to add related CA-BSI to numerator (due to lack of awareness/knowledge that the CA-BSI has occurred); add the CA-BSI to numerator if aware that the CA-BSI was identified by another hospital.

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- Hospital identifying the CA-BSI: exclude the CA-BSI from numerator since corresponding catheter days are within the denominator of a different hospital. (Note: hospital identifying the CA-BSI should contact the infection control department of hospital where patient previously received care; cross-hospital communication of patient information should comply with legal, legislative and regulatory requirements.)

IV. Notes

Data is not adjusted for differences in case mix, volumes, or patient severity across reporting hospitals

Measure does not distinguish between infections due to central venous catheter insertion vs. maintenance practices.

Specimen collection considerations (Source: "CDC/NHSN Surveillance Definition of Health-Care Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting," American Journal of Infection Control, 2008; 36: 309-332): ideally, blood culture specimens 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 the hospital does not currently obtain specimens using this technique, BSIs can still be reported based on the aforementioned criteria and notes listed in the addendum, but the hospital should work with appropriate personnel to facilitate better specimen collection practices for blood cultures.

VI. Addendum

Notes from CDC/NHSN Surveillance Definition of Health-Care Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting, American Journal of Infection Control, 2008; 36: 309-332:

1. In criterion 1, the phrase "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., "positive" blood culture).
2. In criterion 1, the term "recognized pathogen" does not include organisms considered common skin contaminants (see criteria 2 and 3 for list of common skin contaminants). Examples of "recognized pathogens" include: *S. aureus*, *Enterococcus* spp., *E. coli*, *Pseudomonas* spp., *Klebsiella* spp., and *Candida* spp.
3. In criteria 2 and 3, 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 (e.g., blood draws on Monday and Tuesday or Monday and Wednesday would be acceptable for blood cultures drawn on separate occasions, but blood draws on Monday and Thursday would be too far apart to meet this criterion), and 2) that at least one bottle from each blood

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draw is reported by the laboratory as having grown the same common skin contaminant organism (i.e., “positive” blood culture). (See Note 4 for determining sameness of organisms.)

- a. Example: an adult patient has blood drawn at 8 a.m. and again at 8:15 a.m. of the same day. Blood from each blood draw is inoculated into two bottles and incubated (four bottles total). If one bottle from each blood draw set is positive for coagulase-negative staphylococci, this part of the criterion is met.
- b. Example: A neonate has a blood culture drawn on Tuesday and again on Saturday, and both grow the same common skin contaminant. Because time between blood cultures exceeds the two-day period for blood draws stipulated in criteria 2 and 3, this part of the criteria is not met.
- c. A blood culture may consist of a single bottle for a pediatric blood draw because of volume constraints. Therefore, to meet this part of the criterion, each bottle from two or more draws would have to be culture-positive for the same skin contaminant.

- 4. There are several issues to consider when determining sameness of organisms.
 - a. If the common skin contaminant is identified to the species level from one culture, and a companion culture is identified with only a descriptive name (i.e., to the genus level), then it is assumed that the organisms are the same. The speciated organism should be reported as the infecting pathogen (see table below).

Culture	Companion Culture	Report as ...
<i>S. epidermidis</i>	Coagulase-negative staphylococci	<i>S. epidermidis</i>
<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>

- b. If common skin contaminant organisms from the cultures are speciated but no antibiograms are done, or they are done for only one of the isolates, it is assumed that the organisms are the same.
- c. If the common skin contaminants from the cultures have antibiograms that are different for 2 or more antimicrobial agents, it is assumed that the organisms are not the same (see table below).
- d. For the purpose of NHSN antibiogram reporting, the category interpretation of intermediate (I) should not be used to distinguish whether two organisms are the same.

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