



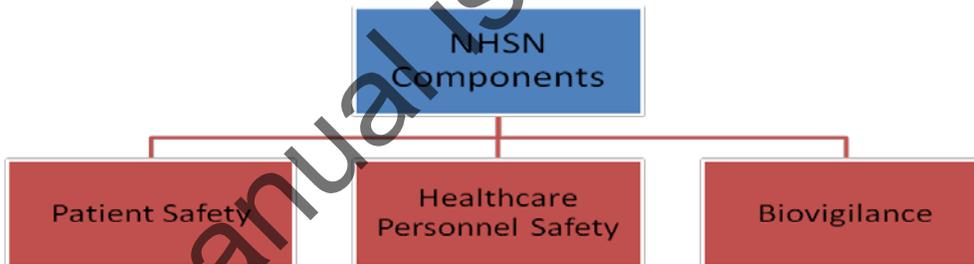
National Healthcare Safety Network (NHSN) Overview

The NHSN is a secure, Internet-based surveillance system that expands and integrates former CDC surveillance systems, including the National Nosocomial Infections Surveillance System (NNIS), National Surveillance System for Healthcare Workers (NaSH), and the Dialysis Surveillance Network (DSN). In addition, facilities that participate in certain reporting programs operated by the Centers for Medicare and Medicaid Services (CMS) can do so through use of NHSN. Some U.S. states utilize NHSN as a means for healthcare facilities to submit data on healthcare-associated infections (HAIs) mandated through their specific state legislation.

NHSN enables healthcare facilities to collect and use data about healthcare-associated infections, adherence to clinical practices known to prevent healthcare-associated infections, the incidence or prevalence of multidrug-resistant organisms within their organizations, trends and coverage of healthcare personnel safety and vaccination, and adverse events related to the transfusion of blood and blood products.

The NHSN includes three components: Patient Safety, Healthcare Personnel Safety, and Biovigilance (Figure 1).

Figure 1: NHSN Components



Within the Patient Safety Component, like-types of surveillance are grouped into modules, each concerned with healthcare procedures, devices, or medications associated with HAIs. Specific types of surveillance within the Patient Safety Component are outlined below:

- Device-associated Module:
 - CLABSI - Central line-associated bloodstream infection
 - CLIP - Central line insertion practices adherence
 - VAP - Ventilator-associated pneumonia



- CAUTI - Catheter-associated urinary tract infection
- DE - Dialysis Event
- Procedure-associated Module:
 - SSI - Surgical site infection
 - PPP - Post-procedure pneumonia
- Medication-associated Module:
 - AUR - Antimicrobial use and resistance options
- Multidrug-Resistant Organism/*Clostridium difficile* Infection (MDRO/CDI) Module
- Vaccination Module

Instructions and standardized surveillance methods and definitions for each module of the Patient Safety Component are provided in this manual and on the NHSN website (www.cdc.gov/nhsn). Modules may be used singly or simultaneously and each module has its own minimum time period for required participation (see individual modules). Regardless of the combination of modules in which a facility chooses to participate, a total of 6 months of data must be reported annually to NHSN for continued participation.

There are two modules within the Healthcare Personnel Safety (HPS) component of NHSN: the Blood/Body Fluid Exposure Modules With and Without Exposure Management and the Influenza Vaccination and Exposure Management Modules. The Blood/Body Fluids Exposure and the Influenza Vaccination and Exposure Modules may be used separately or simultaneously. Instructions and standardized surveillance methods and definitions for each module are provided in the NHSN Manual: HPS Component Protocol http://www.cdc.gov/nhsn/TOC_HPS_Manual.html

The Biovigilance Component of NHSN was developed in collaboration with the transfusion and transplant communities. Biovigilance includes the collection of adverse event data to improve outcomes in the use of blood products, organs, tissues, and cellular therapies.

The Hemovigilance Module is the first part of the Biovigilance Component to be developed in NHSN. This module is designed for staff in healthcare facility transfusion services to track adverse events, including recipient adverse reactions and quality control incidents, related to blood transfusion. Instructions and standardized surveillance method and definitions for this module are provided in the NHSN Manual: <https://www.cdc.gov/nhsn/TOC-BIOManual.html>.

Surveillance Techniques

Some of the options in the following modules require active, patient-based, prospective surveillance of events and their corresponding denominator data by a trained Infection



Preventionist (IP). This means that the IP shall seek out infections during a patient's stay by screening a variety of data sources, such as laboratory, pharmacy, admission/discharge/transfer, radiology/imaging, and pathology databases, and patient charts, including history and physical exam notes, nurses/physicians notes, temperature charts, etc. Others may be trained to screen data sources for these infections, but the IP must make the final determination. Laboratory-based surveillance should not be used alone, unless all possible criteria for identifying an infection are solely determined by laboratory evidence (e.g., LabID event detection in the MDRO & CDI Module). Retrospective chart reviews should be used only when patients are discharged before all information can be gathered. NHSN forms should be used to collect all required data, using the NHSN definitions of each data field. To minimize the IP's data collection burden, others may be trained to collect the denominator data and process of care data (e.g., central line insertion and inpatient influenza vaccination information).

Procedure-Associated Module

Surgical site infection (SSI) and post-procedure pneumonia (PPP) monitoring is offered through protocols in this module. Both protocols require active, patient-based, prospective surveillance (see Surveillance Techniques above). PPP events are monitored only for patients undergoing inpatient operative procedures and only during the patient's stay (i.e., post-discharge surveillance methods are not used for PPP). However both post-discharge and ante-discharge surveillance methods should be used to detect SSIs following in- and outpatient operative procedures. These methods include 1) direct examination of patients' wounds during follow-up visits to either surgery clinics or physicians' offices, 2) review of medical records or surgery clinic patient records, 3) surgeon surveys by mail or telephone, and 4) patient surveys by mail or telephone (though patients may have a difficult time assessing their infections). Any combination of these methods is acceptable for use; however, CDC criteria for SSI must be used. To minimize IPs' workload of collecting denominator data, operating room data may be downloaded (see file specifications at:

http://www.cdc.gov/nhsn/PDFs/ImportingProcedureData_current.pdf.

See the SSI and PPP protocols for detailed surveillance instructions.

Device-Associated Module

Medical instrumentation increases the risk of development of an HAI and most patients admitted for health care are exposed to some kind of medical device in the course of their treatment. Such devices include, but are not limited to, venous and urinary catheters, and ventilators. NHSN enables facilities to monitor infectious complications associated with the use of these devices and also to monitor processes related to their use which might increase infection risk. Specifically, surveillance of Central Line-associated Bloodstream Infection (CLABSI), Catheter-associated UTI (CAUTI), and/or Ventilator-associated Pneumonia (VAP) is possible using the NHSN. See Dialysis Manual for detailed



instructions for Dialysis Event (DE) surveillance. In addition, Central Line Insertion Practices (CLIP) can be monitored to inform facilities of the appropriateness of their processes and how they may relate to HAI development.

Device-associated denominator data should be collected at the same time each day. When denominator data are available from electronic databases (e.g., ventilator days from respiratory therapy), these sources may be used as long as the counts are not substantially different ($\pm 5\%$) from manually-collected counts, validated for a minimum of 3 months.

See the respective device-associated protocols for detailed surveillance instructions.

Medication-Associated Module

The use of antimicrobial agents has a direct effect on antimicrobial resistance patterns of pathogens. The observed increase in multidrug resistance is in part due to inappropriate prescription of, as well as incomplete completion of, courses of antibiotics.

The Medication-Associated Module allows facilities to collect information on the amount of antimicrobials that are utilized for patient care within their systems, as well as to collect data on the prevalence of drug-resistant organisms in their inpatient and outpatient areas. Electronic capture of microbiology and pharmacy data is the available option for this module.

See the [Antimicrobial Use and Resistance](#) (AUR) protocol for detailed surveillance instructions.

Multidrug-resistant Organism & *Clostridium difficile* Infection (MDRO/CDI) Module

The NHSN MDRO/CDI Module offers a means for facilities to meet criteria and metrics that are outlined in several organizational guidelines to control and measure the spread of MDROs and CDI within their healthcare system. The module has both required and optional surveillance activities that can be tailored to the needs of the facility. Infection surveillance and monitoring of proxy infection measures are choices available to facilities choosing to participate in this program within NHSN.

In addition, process measures related to adherence to contact precautions when caring for patients infected or colonized with an MDRO or *C. difficile*, and/or active surveillance testing for such organisms, or outcome measurements of incidence and prevalence of positive cultures of these organisms in patients can be undertaken.

See the [MDRO/CDI](#) protocol for detailed surveillance instructions in this manual.



Vaccination Module

Influenza continues to be associated with increased morbidity and mortality in certain patient populations including the very young, elderly, immunocompromised, and pregnant women. Hospitalization has been identified as a potential opportunity to provide influenza immunization not only to these at-risk individuals, but also to any patient.

The NHSN Vaccination module offers a means for facilities to track the success of capitalizing on influenza vaccination opportunities. Two options are available related to patient susceptibility and adherence to vaccination recommendations.

See the [Vaccination](#) protocol for detailed surveillance instructions.

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Identifying Healthcare-associated Infections (HAI) in NHSN

Any infection reported to NHSN must meet the definition of an NHSN healthcare-associated infection (HAI), that is, a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating at the time of admission to the care setting. Clinical evidence may be derived from direct observation of the infection site or review of information in the patient chart or other clinical records.

For certain, but not all, infection sites, a physician's or surgeon's diagnosis of infection derived from direct observation during a surgical operation, endoscopic examination, or other diagnostic studies or from clinical judgment may be an acceptable criterion for an NHSN infection, unless there is compelling evidence to the contrary.

NOTE: Physician's diagnosis of pneumonia alone is not an acceptable criterion for healthcare-associated pneumonia.

HAIs may be caused by infectious agents from endogenous or exogenous sources.

- Endogenous sources are body sites, such as the skin, nose, mouth, GI tract, or vagina that are normally inhabited by microorganisms.
- Exogenous sources are those external to the patient, such as patient care personnel, visitors, patient care equipment, medical devices, or the healthcare environment.

The following special considerations are important when identifying HAIs:

- Infections occurring in infants that result from passage through the birth canal are considered HAIs.
- The following infections are not considered healthcare associated:
 - Infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection.
 - Infections in infants that have been acquired transplacentally (e.g., herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) and become evident ≤ 48 hours after birth.
 - Reactivation of a latent infection (e.g., herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis).
- The following conditions are not infections:
 - Colonization, which means the presence of microorganisms on skin, on mucous membranes in open wounds, or in excretions or secretions but which are not causing adverse clinical signs or symptoms.
 - Inflammation that results from tissue response to injury or stimulation by noninfectious agents, such as chemicals.



Before an HAI is reported to NHSN, the person performing surveillance must decide that the clinical, laboratory, and other diagnostic information gathered concerning the patient satisfy the criteria for a particular type of HAI. To assist surveillance personnel in making these decisions consistently, each module in this manual contains a listing of specific infection sites used in the module and the criteria for determining the presence of an infection at each of those sites. The definitions used in this manual are the only criteria that should be used when identifying and reporting NHSN events. While all participants may not agree with all the criteria, it is important that NHSN participants consistently use them for reporting infections, so that metrics between hospitals can be appropriately compared. The complete set of infection definitions, including all specific sites used for SSI organ/space infections can be found in [Chapter 17](#).

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Patient Safety Monthly Reporting Plan

The *Patient Safety Monthly Reporting Plan Form* (CDC 57.106) is used by NHSN institutions to inform CDC which Patient Safety modules are used during a given month. This allows CDC to select the data that should be included in the aggregate data pool for analysis. Each participating institution must enter a monthly Plan to indicate the module used, if any, and the events, locations and/or procedures they monitored.

There must be a Plan completed for every month that data are entered into NHSN although a facility may choose “No NHSN Patient Safety Modules Followed this Month” as an option. The *Instructions for Completion of Patient Safety Monthly Reporting Plan Form* ([Chapter 14](#) Tables of Instructions, Table 1) includes brief instructions for collection and entry of each data element on the form. A minimum of 6 months of data from at least one component is required during each calendar year to remain an active participant in NHSN. States and other entities (e.g., CMS) using NHSN as their reporting platform may have additional reporting requirements.

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Central Line-Associated Bloodstream Infection (CLABSI) Event

Introduction: An estimated 41,000 central line-associated bloodstream infections (CLABSI) occur in U.S. hospitals each year.¹ These infections are usually serious infections typically causing a prolongation of hospital stay and increased cost and risk of mortality.

CLABSI can be prevented through proper management of the central line. These techniques are addressed in the CDC's Healthcare Infection Control Practices Advisory Committee (CDC/HIPAC) *Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011*.²

Settings: Surveillance will occur in any inpatient location where denominator data can be collected, which may include critical/intensive care units (ICU), specialty care areas (SCA), neonatal units including neonatal intensive care units (NICUs), step down units, wards, and long term care units. A complete listing of inpatient locations can be found in [Chapter 15](#).

NOTE: Surveillance for CLABSIs after the patient is discharged from the facility is not required. However, if discovered, any CLABSIs occurring within 48 hours of discharge should be reported to NHSN. No additional central line days are reported.

Requirements: Surveillance for CLABSI in at least one inpatient location in the healthcare institution for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106).

Definitions: As for all infections reported to NHSN, infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection, are not considered healthcare associated. Therefore, infections that become apparent within the first few days of admission must be carefully reviewed to determine whether they should be considered healthcare associated.

Primary bloodstream infections (BSI) are laboratory-confirmed bloodstream infections (LCBI) that are not secondary to a community-acquired infection or an HAI meeting CDC/NHSN criteria at another body site (see criteria in [Chapter 17](#) and Appendix 1. Secondary Bloodstream Infection Guide). Report BSIs that are central line associated (i.e., a central line or umbilical catheter was in place at the time of, or within 48 hours before, onset of the event).

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



Location of attribution: The inpatient location where the patient was assigned on the date of the BSI event, which is further defined as the date when the first clinical evidence appeared or the date the specimen used to meet the BSI criteria was collected, whichever came first.

EXAMPLE: Patient, who had no clinical signs or symptoms of sepsis upon arrival to the Emergency Department, has a central line inserted there before being admitted to the MICU. Within 24 hours of admission to the MICU, patient meets criteria for BSI. This is reported to NHSN as a CLABSI for the MICU because the Emergency Department is not an inpatient location and no denominator data are collected there.

EXCEPTION:

Transfer Rule: If a CLABSI develops within 48 hours of transfer from one inpatient location to another in the same facility, or a new facility, the infection is attributed to the transferring location. This is called the Transfer Rule and examples are shown below:

- Patient with a central line in place in the SICU is transferred to the surgical ward. Thirty six (36) hours later, the patient meets the criteria for BSI. This is reported to NHSN as a CLABSI for the SICU.
- Patient is transferred to the medical ward from the MSICU after having the central line removed. Within 24 hours, patient meets criteria for a BSI. This is reported to NHSN as a CLABSI for the MSICU.
- Patient with a central line in place is transferred from the medical ward to the coronary care ICU (CCU). After 4 days in the CCU, the patient meets the criteria for a BSI. This is reported to NHSN as a CLABSI for the CCU.
- Patient on the urology ward of Hospital A had the central line removed and is discharged home a few hours later. The IP from Hospital B calls the next day to report that this patient has been admitted to Hospital B with a BSI. This CLABSI should be reported to NHSN for, and by, Hospital A and attributed to the urology ward. No additional catheter days are reported.

Central line: An 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. The following are considered great vessels for the purpose of reporting central-line BSI and counting central-line 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.



NOTES:

1. Neither the insertion site nor the type of device may be used to determine if a line qualifies as a central line. The device must terminate in one of these vessels or in or near the heart to qualify as a central line.
2. An introducer is considered an intravascular catheter, and depending on the location of its tip, may be a central line.
3. A Hemodialysis Reliable Outflow dialysis catheter (HERO), that is located in one of the great vessels and used for purposes outlined above, is considered a central line.
4. Pacemaker wires and other nonlumened 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.
5. The following devices are not considered central lines: extracorporeal membrane oxygenation (ECMO), femoral arterial catheters and intraaortic balloon pump (IABP) devices. If you have a question about whether a device qualifies as a central line, please email us at NHSN@cdc.gov.

Infusion: The introduction of a solution through a blood vessel via a catheter lumen. This may include continuous infusions such as nutritional fluids or medications, or it may include intermittent infusions such as flushes or IV antimicrobial administration, or blood, in the case of transfusion or hemodialysis.

Umbilical catheter: A central vascular device inserted through the umbilical artery or vein in a neonate.

Temporary central line: A non-tunneled catheter.

Permanent central line: Includes

- Tunneled catheters, including certain dialysis catheters
- Implanted catheters (including ports)

Laboratory-confirmed bloodstream infection (LCBI): Must meet one of the following criteria:

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. (See Notes 1 and 2 below and Appendix 1. Secondary Bloodstream Infection Guide.)

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 (See Appendix 1. Secondary Bloodstream Infection Guide.) and



common commensal (i.e., diphtheroids [*Corynebacterium* spp. not *C. diphtheriae*], *Bacillus* spp. [not *B. anthracis*], *Propionibacterium* spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., and *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions.

Criterion 3: Patient \leq 1 year of age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$ core) hypothermia ($<36^{\circ}\text{C}$ core), apnea, or bradycardia and signs and symptoms and positive laboratory results are not related to an infection at another site (See Appendix 1. Secondary Bloodstream Infection Guide.) and

common skin commensal (i.e., diphtheroids [*Corynebacterium* spp. not *C. diphtheriae*], *Bacillus* spp. [not *B. anthracis*], *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, 4 and 5 below.)

NOTES:

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., is a positive blood culture).
2. In criterion 1, the term “recognized pathogen” does not include organisms considered common commensals (see criteria 2 and 3 for a list of common commensals). A few of the recognized pathogens are *S. aureus*, *Enterococcus* spp., *E. coli*, *Pseudomonas* spp., *Klebsiella* spp., *Candida* spp., etc.
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 in time to meet this criterion), and 2) that at least one bottle from each blood draw is reported by the laboratory as having grown the same common commensal (i.e., is a positive blood culture). (See Note 4 for determining sameness of organisms.)
 - a. For 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. For example, a neonate has blood drawn for culture on Tuesday and again on Saturday and both grow the same common commensal. Because the time between these 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 due to 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 commensal.
- 4. If the common commensal is identified to the species level from one culture, and a companion culture is identified with only a descriptive name (e.g., to the genus level), then it is assumed that the organisms are the same. The organism identified to the species level should be reported as the infecting pathogen along with its antibiogram if available (see Table 1 below).

Table 1. Examples of how to report speciated and unspeciated common commensals

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

- 5. Only genus and species identification should be utilized to determine the sameness of organisms. No additional comparative methods should be used (e.g., morphology or antibiograms) because laboratory testing capabilities and protocols may vary between facilities. This will reduce reporting variability, solely due to laboratory practice, between facilities reporting LCBI meeting criterion 2. Report the organism to the genus/species level only once, and if antibiogram data are available, report the results from the most resistant panel.
- 6. LCBI criteria 1 and 2 may be used for patients of any age, including patients ≤ 1 year of age.
- 7. Specimen Collection Considerations:
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).^{3,4} If your facility does not currently obtain specimens using this technique, you must still report BSIs using the criteria and notes above, but you should work with appropriate personnel to facilitate better specimen collection practices for blood cultures.

REPORTING INSTRUCTIONS:

- Report organisms cultured from blood as BSI – LCBI when no other site of infection is evident.



- When there is a positive blood culture and clinical signs or symptoms of localized infection at a vascular access site, but no other infection can be found, the infection is considered a primary BSI.
- Purulent phlebitis confirmed with a positive semiquantitative culture of a catheter tip, but with either negative or no blood culture is considered a CVS-VASC, not a BSI or an SST-SKIN or ST infection.
- Occasionally a patient with both peripheral and central IV lines develops a primary bloodstream infection (LCBI) that can clearly be attributed to the peripheral line (e.g., pus at the insertion site and matching pathogen from pus and blood). In this situation, enter “Central Line = No” in the NHSN application. You should, however, include the patient’s central line days in the summary denominator count.

Numerator Data: The *Primary Bloodstream Infection (BSI)* form (CDC 57.108) is used to collect and report each CLABSI that is identified during the month selected for surveillance. The *Instructions for Completion of Primary Bloodstream Infection Form* (Tables of Instructions, Tables 2 and 2a.) contains brief instructions for collection and entry of each data element on the form. The Primary BSI form includes patient demographic information and whether a central line was present, and, if so, the type of central line the patient had if appropriate to the location; these data will be used to calculate line-specific infection rates. Additional data include the specific criteria met for identifying the primary BSI, whether the patient died, the organisms isolated from blood cultures, and the organisms’ antimicrobial susceptibilities.

REPORTING INSTRUCTION:

- If no CLABSIs are identified during the month of surveillance, the Report No Events box must be checked on the appropriate denominator summary screen, e.g., Denominators for Intensive Care Unit (ICU)/Other locations (Not NICU or SCA), etc.

Denominator Data: Device days and patient days are used for denominators (see [Chapter 16](#), Key Terms). Device-day denominator data that are collected differ according to the location of the patients being monitored; however, they should be collected at the same time each day. When denominator data are available from electronic databases, these sources may be used as long as the counts are not substantially different ($\pm 5\%$) from manually-collected counts, validated for a minimum of 3 months.

For locations other than specialty care areas (SCAs) and NICUs, the number of patients with one or more central lines of any type is collected daily, at the same time each day, during the month and recorded on the *Denominators for Intensive Care Unit (ICU)/Other Locations (Not NICU or Specialty Care Area (SCA))* (CDC 57.118). Only the totals for the month are entered into NHSN. When denominator data are available from electronic sources (e.g., central line days from electronic charting), these sources may be used as long as the counts are not substantially different ($\pm 5\%$) from manually-collected counts, validated for a minimum of 3 months.



For specialty care areas, the number of patients with one or more central lines is dichotomized into those with permanent central lines and those with temporary central lines on the *Denominators for Specialty Care Area* (CDC 57.117) form. Each is collected daily, at the same time each day. Only the total for the month are entered into NHSN. This distinction in lines is made because permanent lines are commonly used in patients frequenting these areas and may have lower rates of associated infection than central lines inserted for temporary use. If a patient has both a temporary and a permanent central line, count the day only as a temporary line day. The *Instructions for Completion of Denominators for Intensive Care Unit (ICU)/Other Locations Form* (Tables of Instructions, Table 6) and *Instructions for Completion of Denominators for Specialty Care Areas (SCA) Form* (Tables of Instructions, Table 7) contain brief instructions for collection and entry of each data element on the forms.

In NICUs, the number of patients with central lines is stratified by birthweight in five categories since risk of BSI varies by birthweight. These data are collected on the *Denominators for Neonatal Intensive Care Unit (NICU)* (CDC 57.116) form.

NOTE: The weight of the infant at the time of BSI is not used and should not be reported. For example, if a neonate weighs 1006 grams at birth but remains in the NICU for two months and has a body weight of 1650 grams when it develops a CLABSI, record the birthweight of 1006 grams on the BSI form. The *Instructions for Completion of Denominators for Neonatal Intensive Care Unit (NICU)* form (Tables of Instructions, Table 8) contains brief instructions for collection and entry of each data element on the forms.

Data Analyses: The SIR is calculated by dividing the number of observed infections by the number of expected infections. The number of expected infections, in the context of statistical prediction, is calculated using CLABSI rates from a standard population during a baseline time period as reported in the NHSN Report.

NOTE: The SIR will be calculated only if the number of expected HAIs (numExp) is ≥ 1 .

$$\text{SIR} = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}$$

While the CLABSI SIR can be calculated for single locations, the measure also allows you to summarize your data across multiple locations, adjusting for differences in the incidence of infection among the location types. For example, you will be able to obtain one CLABSI SIR adjusting for all locations reported. Similarly, you can obtain one CLABSI SIR for all specialty care areas in your facility.

The CLABSI rate per 1000 central line days is calculated by dividing the number of CLABSI by the number of central line days and multiplying the result by 1000. The



Central Line Utilization Ratio is calculated by dividing the number of central line days by the number of patient days. These calculations will be performed separately for different types of ICUs, specialty care areas, and other locations in the institution. Separate rates and ratios will also be calculated for different types of catheters in specialty care areas and for birthweight categories in NICUs.

¹CDC Vital Signs. Making healthcare safer: reducing bloodstream infections. March 2011. Available at: <http://www.cdc.gov/VitalSigns/HAI/index.html>.

² O'Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, Maki DG, et al. Guidelines for the prevention of intravascular catheter-related infections, 2011. *Clinical Infectious Diseases* 2011; 52 (a):1087-99.

³ Clinical and Laboratory Standards Institute (CLSI). *Principles and Procedures for Blood Cultures; Approved Guideline*. CLSI document M47-A (ISBN 1-56238-641-7). Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania, USA, 2007.

⁴ Baron EJ, Weinstein MP, Dunne Jr WM, Yagupsky P, Welch DF, and Wilson DM. *Blood Cultures IV*. ASM Press: Washington, DC; 2005.

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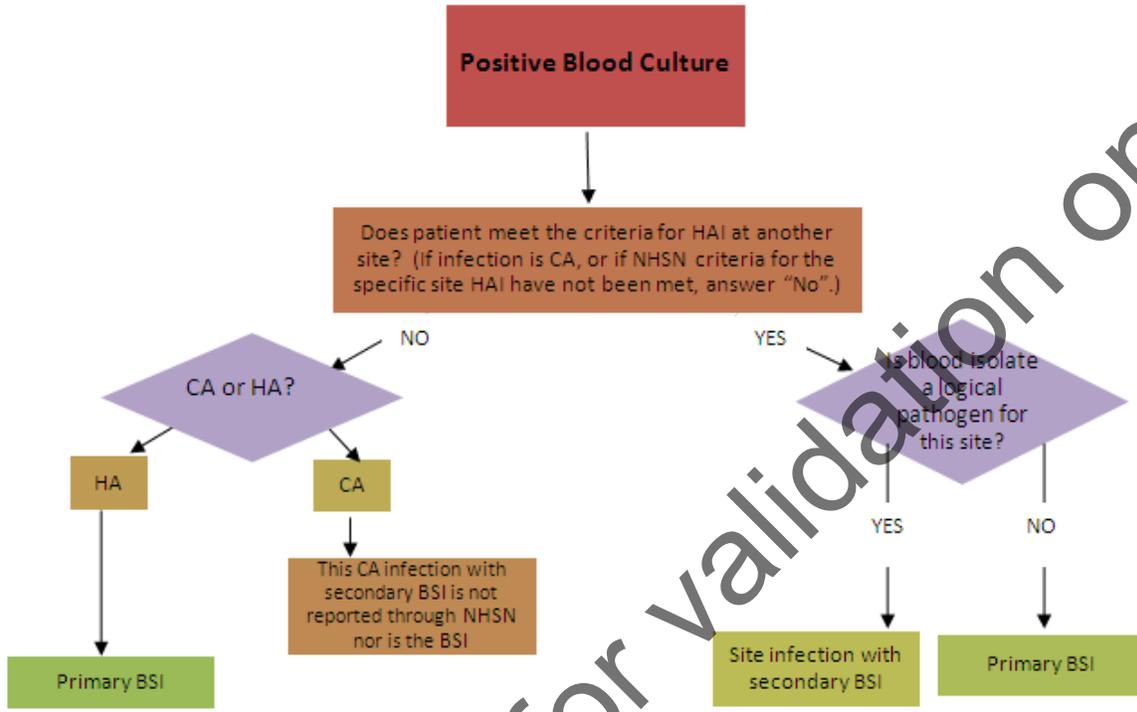
Appendix 1. Secondary Bloodstream Infection (BSI) Guide

What is the meaning of the statement “not related to infection at another site” in relation to a positive blood culture?

The purpose of using the CDC/NHSN infection criteria is to identify and consistently categorize infections that are healthcare-associated into major and specific infection sites or types. Several of the criteria include the caveat that signs, symptoms, and/or laboratory findings may not be related to infection at another site. When assessing positive blood cultures in particular, one must be sure that there is no other CDC-defined primary site of HAI that may have seeded the bloodstream secondarily; otherwise the bloodstream infection may be misclassified as a primary BSI or erroneously associated with the use of a central line, i.e., called a CLABSI.

If the criteria for the primary infection site require a culture, then at least one organism cultured from that site must match an organism in the blood culture. NOTE: As of 1/1/11, antibiograms of the blood and site isolates do not have to match. In these instances and others where a culture of the involved site is not required for the criteria, and no such culture is collected, it is necessary to use clinical judgment regarding the likelihood of the organisms causing a secondary bloodstream infection. The graphic below may be used to help determine the relatedness of a primary site of infection to a positive blood culture.

In addition, if the blood isolate by itself does not meet BSI criteria (e.g., only one positive blood culture of a common commensal), then that isolate may not be used to indicate the presence of a secondary BSI. For example, the patient has an HAI meeting criteria for symptomatic urinary tract infection due to *E. coli* and a single positive blood culture with *E. coli* and *S. epidermidis*, the SUTI should be reported as having a secondary bloodstream infection, but only *E. coli* should be listed as the infecting pathogen.



Legend
BSI= bloodstream infection
CA= Community acquired
HA= Healthcare associated
HAI= healthcare-associated infection

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Central Line Insertion Practices (CLIP) Adherence Monitoring

Introduction: Central line-associated bloodstream infections (CLABSIs) can be prevented through proper placement and management of the central line. The CDC's Healthcare Infection Control Practices Advisory Committee (CDC/HICPAC) *Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011*¹ recommends evidence-based central line insertion practices known to reduce the risk of subsequent central line-associated bloodstream infection. These include handwashing by inserters, use of maximal sterile barriers during insertion, proper use of a skin antiseptic prior to insertion, and allowing that skin antiseptic to dry before catheter insertion. Despite the scientific evidence supporting these measures, several reports suggest that adherence to these practices remains low in U.S. hospitals.

Several centers have found it useful to monitor adherence to evidence-based central line insertion practices as a method for identifying quality improvement opportunities and strategically targeting interventions. Feedback of adherence data has been a component of multifaceted interventions that have successfully reduced CLABSI rates.

Participation in NHSN CLIP surveillance enables participating facilities and CDC to:

- Monitor central line insertion practices in individual patient care units and facilities and to provide aggregate adherence data for all participating facilities. Facilities have the option of recording inserter-specific adherence data.
- Facilitate quality improvement by identifying specific gaps in adherence to recommended prevention practices, thereby helping to target intervention strategies for reducing CLABSI rates.

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

Requirements: Surveillance for central line insertion practices in at least one location in the healthcare institution for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Participating facilities may perform surveillance for insertion practices during a month when concomitant CLABSI surveillance is being conducted, or may collect insertion practice data during a month when no CLABSI surveillance is being conducted or in locations where CLABSI are not monitored (e.g., emergency department, operating room, etc.). If participating facilities wish to identify associations between insertion practices and outcomes (i.e., CLABSI), surveillance for insertion practices and CLABSI must be done concomitantly.

Numerator and Denominator Data: The *Central Line Insertion Practices Adherence Monitoring Form* (CDC 57.125) is used to collect and report central line insertion practices for every central line insertion attempt, including unsuccessful attempts,



occurring during the month in the unit(s) selected for surveillance. The *Instructions for Completion of the Central Line Insertion Practices Adherence Monitoring Form* (Tables of Instructions, Table 3) contains directions for collection and entry of each data element on the form. The form can be completed at or near the time of insertion either by the inserter or an observer present at the insertion (e.g., nurse assisting with the catheter insertion), or the form can be completed from documentation in the patient chart (e.g., if the elements of the monitoring form have been incorporated into standard central-line insertion procedure notes). The form includes information pertaining to demographics of the patient, information pertaining to the inserter, information on maximal sterile barriers used, the reasons for central line insertion, whether the insertion was successful, skin antisepsis, hand hygiene practice before insertion, type of central line and insertion site, and use of a guidewire. Elements of these data will be used to calculate adherence to recommended insertion practices.

Data Analyses: Adherence rates for specific insertion practices will be calculated by dividing the number of central line insertions during which the recommended practice was followed by the total number of central line insertions and multiplying the result by 100. Such calculations can also be done for a bundle of practices that have been shown to reduce the incidence of CLABSI. In NHSN, adherence to the bundle requires a “Yes” to all of the following:

- Hand hygiene performed
- Appropriate skin prep
 - Chlorhexidine gluconate (CHG) for patients ≥ 2 months old
 - Povidone iodine, alcohol, CHG, or other specified for children < 2 months old
- Skin prep agent has completely dried before insertion
- All 5 maximal sterile barriers used
 - Sterile gloves
 - Sterile gown
 - Cap
 - Mask worn
 - Large sterile drape (a large sterile drape covers the patient’s entire body)

NOTE: CHG has not been labeled for use by the Food and Drug and Administration with patients < 2 months of age. Acceptance of CHG use for adherence to the CLIP bundle in this patient population does not reflect a recommendation of its use by the NHSN.

These calculations can be performed separately for different types of locations in the institution. Participants have the option of calculating inserter-specific adherence rates.

¹ O’Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, Maki DG, et al. Guidelines for the prevention of intravascular catheter-related infections, 2011. *Clinical Infectious Diseases* 2011; 52 (a):1087-99.



Ventilator-Associated Pneumonia (VAP) Event

Introduction: In 2002, an estimated 250,000 healthcare-associated pneumonias developed in U.S. hospitals and 36,000 of these were associated with deaths.¹ Patients with mechanically-assisted ventilation have a high risk of developing healthcare-associated pneumonia. For the year 2010, NHSN facilities reported more than 3,525 VAPs and the incidence for various types of hospital units ranged from 0.0-5.8 per 1,000 ventilator days.²

Prevention and control of healthcare-associated pneumonia is discussed in the CDC/HICPAC document, *Guidelines for Prevention of Healthcare-Associated Pneumonia, 2003*.³ The Guideline strongly recommends that surveillance be conducted for bacterial pneumonia in ICU patients who are mechanically ventilated to facilitate identification of trends and for inter-hospital comparisons.

Settings: Surveillance will occur in any inpatient location where denominator data can be collected, which may include critical/intensive care units (ICU), specialty care areas (SCA), neonatal units, including neonatal intensive care units (NICUs), step-down units, wards, and long term care units. A complete listing of inpatient locations can be found in [Chapter 15](#).

NOTE: It is not required to monitor for VAPs after the patient is discharged from the facility, however, if discovered, any VAPs occurring within 48 hours of discharge should be reported to NHSN. No additional ventilator days are reported.

Requirements: Surveillance for VAP in at least one inpatient location in the healthcare institution for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106).

Definitions: As for all infections reported to NHSN, infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection area not considered healthcare associated. Therefore, infections that become apparent within the first few days of admission must be carefully reviewed to determine whether they should be considered healthcare associated.

Pneumonia (PNEU) is identified by using a combination of radiologic, clinical and laboratory criteria. The following pages outline the various assessment criteria that may be used for meeting the surveillance definition of healthcare-associated pneumonia (Tables 2-5 and Figures 1 and 2). Report PNEUs that are ventilator-associated (i.e., patient was intubated and ventilated at the time of, or within 48 hours before, the onset of the event).

NOTE: There is no minimum period of time that the ventilator must be in place in order for the PNEU to be considered ventilator associated.

Location of attribution: The inpatient location where the patient was assigned on the date of the PNEU event, which is further defined as the date when the first clinical evidence appeared or the date the specimen used to meet the PNEU criterion was collected, whichever came first.



EXAMPLE: Patient is intubated and ventilated in the Operating Room and then is admitted to the MICU. Within 24 hours of admission to the MICU, patient meets criteria for PNEU. This is reported to NHSN as a VAP for the MICU, because the Operating Room is not an inpatient location and no denominator data are collected there.

EXCEPTION:

Transfer Rule: If a VAP develops within 48 hours of transfer from one inpatient location to another in the same facility or a new facility, the infection is attributed to the transferring location. This is called the Transfer Rule and examples are shown below:

- Patient on a ventilator in the SICU is transferred to the surgical ward. Thirty six (36) hours later, the patient meets the criteria for PNEU. This is reported to NHSN as a VAP for the SICU.
- Patient is transferred to the medical ward from the MSICU after having ventilator removed. Within 24 hours, the patient meets criteria for a PNEU. This is reported to NHSN as a VAP for the MSICU.
- Patient on a ventilator is transferred from the medical ward to the coronary care ICU (CCU). After 4 days in the CCU, the patient meets the criteria for a PNEU. This is reported to NHSN as a VAP for the CCU.
- Patient on the Respiratory ICU (RICU) of Hospital A had the endotracheal tube and ventilator removed and is discharged home a few hours later. The ICP from Hospital B calls the next day to report that this patient has been admitted to Hospital B with a PNEU. This VAP should be reported to NHSN for, and by, Hospital A and attributed to the RICU. No additional ventilator days are reported.

Ventilator: A device to assist or control respiration continuously, inclusive of the weaning period, through a tracheostomy or by endotracheal intubation.

NOTE: Lung expansion devices such as intermittent positive-pressure breathing (IPPB); nasal positive end-expiratory pressure (PEEP); and continuous nasal positive airway pressure (CPAP, hypoCPAP) are not considered ventilators unless delivered via tracheostomy or endotracheal intubation (e.g., ET-CPAP).

General Comments Applicable to All Pneumonia Specific Site Criteria:

1. Physician's diagnosis of pneumonia alone is not an acceptable criterion for healthcare-associated pneumonia.
2. Although specific criteria are included for infants and children, pediatric patients may meet any of the other pneumonia specific site criteria.
3. Ventilator-associated pneumonia (i.e., pneumonia in persons who had a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation within the 48-hour period before the onset of infection, inclusive of the weaning period) should be so designated when reporting data.
4. When assessing a patient for presence of pneumonia, it is important to distinguish between changes in clinical status due to other conditions such as myocardial infarction, pulmonary embolism, respiratory distress syndrome, atelectasis, malignancy, chronic obstructive pulmonary disease, hyaline membrane disease, bronchopulmonary dysplasia, etc. Also, care must be taken when assessing intubated patients to distinguish between tracheal colonization, upper respiratory tract infections (e.g., tracheobronchitis), and early onset pneumonia.



Finally, it should be recognized that it may be difficult to determine healthcare-associated pneumonia in the elderly, infants, and immunocompromised patients since such conditions may mask typical signs or symptoms associated with pneumonia. Alternate specific criteria for the elderly, infants and immunocompromised patients have been included in this definition of healthcare-associated pneumonia.

5. Healthcare-associated pneumonia can be characterized by its onset: early or late. Early onset pneumonia occurs during the first four days of hospitalization and is often caused by *Moraxella catarrhalis*, *H. influenzae*, and *S. pneumoniae*. Causative agents of late onset pneumonia are frequently gram negative bacilli or *S. aureus*, including methicillin-resistant *S. aureus*. Viruses (e.g., Influenza A and B or Respiratory Syncytial Virus) can cause early and late onset healthcare-associated pneumonia, whereas yeasts, fungi, legionellae, and *Pneumocystis carinii* are usually pathogens of late onset pneumonia.
6. Pneumonia due to gross aspiration (for example, in the setting of intubation in the field, emergency room, or operating room) is considered healthcare-associated if it meets any specific criteria and was not clearly present or incubating at the time of admission to the hospital.
7. Multiple episodes of healthcare-associated pneumonia may occur in critically ill patients with lengthy hospital stays. When determining whether to report multiple episodes of healthcare-associated pneumonia in a single patient, look for evidence of resolution of the initial infection. The addition of or change in pathogen alone is not indicative of a new episode of pneumonia. The combination of new signs and symptoms and radiographic evidence or other diagnostic testing is required.
8. Positive Gram stain for bacteria and positive KOH (potassium hydroxide) mount for elastin fibers and/or fungal hyphae from appropriately collected sputum specimens are important clues that point toward the etiology of the infection. However, sputum samples are frequently contaminated with airway colonizers and therefore must be interpreted cautiously. In particular, *Candida* is commonly seen on stain, but infrequently causes healthcare-associated pneumonia.

Table 1: Abbreviations used in PNEU laboratory criteria

BAL – bronchoalveolar lavage	LRT – lower respiratory tract
EIA – enzyme immunoassay	PCR – polymerase chain reaction
FAMA – fluorescent-antibody staining of membrane antigen	PMN – polymorphonuclear leukocyte
IFA – immunofluorescent antibody	RIA – radioimmunoassay

REPORTING INSTRUCTIONS:

- There is a hierarchy of specific categories within the major site pneumonia. Even if a patient meets criteria for more than one specific site, report only one:
 - If a patient meets criteria for both PNU1 and PNU2, report PNU2
 - If a patient meets criteria for both PNU2 and PNU3, report PNU3
 - If a patient meets criteria for both PNU1 and PNU3, report PNU3
- Report concurrent lower respiratory tract infection (e.g., abscess or empyema) and pneumonia with the same organism(s) as pneumonia
- Lung abscess or empyema without pneumonia are classified as LUNG



- Bronchitis, tracheitis, tracheobronchitis, or bronchiolitis without pneumonia are classified as BRON.

Table 2: Specific Site Algorithms for Clinically Defined Pneumonia (PNU1)

Radiology	Signs/Symptoms/Laboratory
<p>Two or more serial chest radiographs with at least one of the following^{1,2}:</p> <p>New or progressive <u>and</u> persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p>	<p>FOR ANY PATIENT, at least one of the following:</p> <ul style="list-style-type: none"> -Fever (>38°C or >100.4°F) with no other recognized cause -Leukopenia (<4000 WBC/mm³) or leukocytosis (≥12,000 WBC/mm³) -For adults ≥70 years old, altered mental status with no other recognized cause <p>and</p> <p>at least two of the following:</p> <ul style="list-style-type: none"> -New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements -New onset or worsening cough, or dyspnea, or tachypnea⁵ -Rales⁶ or bronchial breath sounds -Worsening gas exchange (e.g. O₂ desaturations (e.g., PaO₂/FiO₂ ≤ 240)⁷, increased oxygen requirements, or increased ventilator demand)
<p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), <u>one definitive</u> chest radiograph is acceptable.</p>	<p>ALTERNATE CRITERIA, for infants ≤1 year old:</p> <p>Worsening gas exchange (e.g., O₂ desaturations [e.g. pulse oximetry < 94%], increased oxygen requirements, or increased ventilator demand)</p> <p>and</p> <p>at least three of the following:</p> <ul style="list-style-type: none"> -Temperature instability with no other recognized cause -Leukopenia (<4000 WBC/mm³) <u>or</u> leukocytosis (≥15,000 WBC/mm³) and left shift (≥10% band forms) -New onset of purulent sputum³ or change in character of sputum⁴, or increased respiratory secretions or increased suctioning requirements -Apnea, tachypnea⁵, nasal flaring with retraction of chest wall or grunting -Wheezing, rales⁶, or rhonchi -Cough -Bradycardia (<100 beats/min) or tachycardia (>170 beats/min) <p>ALTERNATE CRITERIA, for child >1 year old or ≤ 12 years old, at least three of the following:</p> <ul style="list-style-type: none"> -Fever (>38.4°C or >101.1°F) or hypothermia (<36.5°C or <97.7°F) with no other recognized cause -Leukopenia (<4000 WBC/mm³) or leukocytosis (≥15,000 WBC/mm³) -New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements -New onset or worsening cough, or dyspnea, apnea, or tachypnea⁵. -Rales⁶ or bronchial breath sounds -Worsening gas exchange (e.g. O₂ desaturations [e.g. pulse oximetry < 94%], increased oxygen requirements, or increased ventilator demand)



Table 3: Specific Site Algorithms for Pneumonia with Common Bacterial or Filamentous Fungal Pathogens and Specific Laboratory Findings (PNU2)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least one of the following^{1,2}:</p> <p>New or progressive <u>and</u> persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p> <p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), <u>one</u> <u>definitive</u> chest radiograph is acceptable.¹</p>	<p>At least one of the following:</p> <p>Fever ($>38^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$) with no other recognized cause</p> <p>Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 12,000$ WBC/mm^3)</p> <p>For adults ≥ 70 years old, altered mental status with no other recognized cause</p> <p>and</p> <p>at least one of the following:</p> <p>New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements</p> <p>New onset or worsening cough, or dyspnea or tachypnea⁵</p> <p>Rales⁶ or bronchial breath sounds</p> <p>Worsening gas exchange (e.g. O_2 desaturations [e.g., $\text{PaO}_2/\text{FiO}_2 \leq 240$]⁷, increased oxygen requirements, or increased ventilator demand)</p>	<p>At least one of the following:</p> <p>Positive growth in blood culture⁸ not related to another source of infection</p> <p>Positive growth in culture of pleural fluid</p> <p>Positive quantitative culture⁹ from minimally contaminated LRT specimen (e.g., BAL or protected specimen brushing)</p> <p>$\geq 5\%$ BAL-obtained cells contain intracellular bacteria on direct microscopic exam (e.g., Gram stain)</p> <p>Histopathologic exam shows at least one of the following evidences of pneumonia:</p> <p>Abscess formation or foci of consolidation with intense PMN accumulation in bronchioles and alveoli</p> <p>Positive quantitative culture⁹ of lung parenchyma</p> <p>Evidence of lung parenchyma invasion by fungal hyphae or pseudohyphae</p>



Table 4: Specific Site Algorithms for Viral, Legionella, and other Bacterial Pneumonias with Definitive Laboratory Findings (PNU2)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least <u>one</u> of the following^{1,2}:</p> <p>New or progressive <u>and</u> persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p> <p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), <u>one definitive</u> chest radiograph is acceptable.</p>	<p>At least <u>one</u> of the following:</p> <p>Fever (>38°C or >100.4°F) with no other recognized cause</p> <p>Leukopenia (<4000 WBC/mm³) <u>or</u> leukocytosis (≥12,000 WBC/mm³)</p> <p>For adults ≥70 years old, altered mental status with no other recognized cause</p> <p><u>and</u></p> <p>at least <u>one</u> of the following:</p> <p>New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements</p> <p>New onset or worsening cough or dyspnea, or tachypnea⁵</p> <p>Rales⁶ or bronchial breath sounds</p> <p>Worsening gas exchange (e.g. O₂ desaturations [e.g., PaO₂/FiO₂ ≤ 240]⁷, increased oxygen requirements, or increased ventilator demand)</p>	<p>At least <u>one</u> of the following¹⁰⁻¹²:</p> <p>Positive culture of virus or <i>Chlamydia</i> from respiratory secretions</p> <p>Positive detection of viral antigen or antibody from respiratory secretions (e.g., EIA, FAMA, shell vial assay, PCR)</p> <p>Fourfold rise in paired sera (IgG) for pathogen (e.g., influenza viruses, <i>Chlamydia</i>)</p> <p>Positive PCR for <i>Chlamydia</i> or <i>Mycoplasma</i></p> <p>Positive micro-IF test for <i>Chlamydia</i></p> <p>Positive culture or visualization by micro-IF of <i>Legionella</i> spp, from respiratory secretions or tissue.</p> <p>Detection of <i>Legionella pneumophila</i> serogroup 1 antigens in urine by RIA or EIA</p> <p>Fourfold rise in <i>L. pneumophila</i> serogroup 1 antibody titer to ≥1:128 in paired acute and convalescent sera by indirect IFA.</p>



Table 5: Specific Site Algorithm for Pneumonia in Immunocompromised Patients (PNU3)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least <u>one</u> of the following^{1,2}:</p> <p>New or progressive <u>and</u> persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p> <p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), <u>one definitive</u> chest radiograph is acceptable.</p>	<p>Patient who is immunocompromised¹³ has at least <u>one</u> of the following:</p> <p>Fever ($>38^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$) with no other recognized cause</p> <p>For adults ≥ 70 years old, altered mental status with no other recognized cause</p> <p>New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements</p> <p>New onset or worsening cough, or dyspnea, or tachypnea⁵</p> <p>Rales⁶ or bronchial breath sounds</p> <p>Worsening gas exchange (e.g. O_2 desaturations [e.g., $\text{PaO}_2/\text{FiO}_2 \leq 240$]⁷, increased oxygen requirements, or increased ventilator demand)</p> <p>Hemoptysis</p> <p>Pleuritic chest pain</p>	<p>At least <u>one</u> of the following:</p> <p>Matching positive blood and sputum cultures with <i>Candida</i> spp.^{14,15}</p> <p>Evidence of fungi or <i>Pneumocystis carinii</i> from minimally contaminated LRT specimen (e.g., BAL or protected specimen brushing) from one of the following:</p> <ul style="list-style-type: none"> - Direct microscopic exam - Positive culture of fungi <p>Any of the following from</p> <p>LABORATORY CRITERIA DEFINED UNDER PNU2</p>

Footnotes to Algorithms:

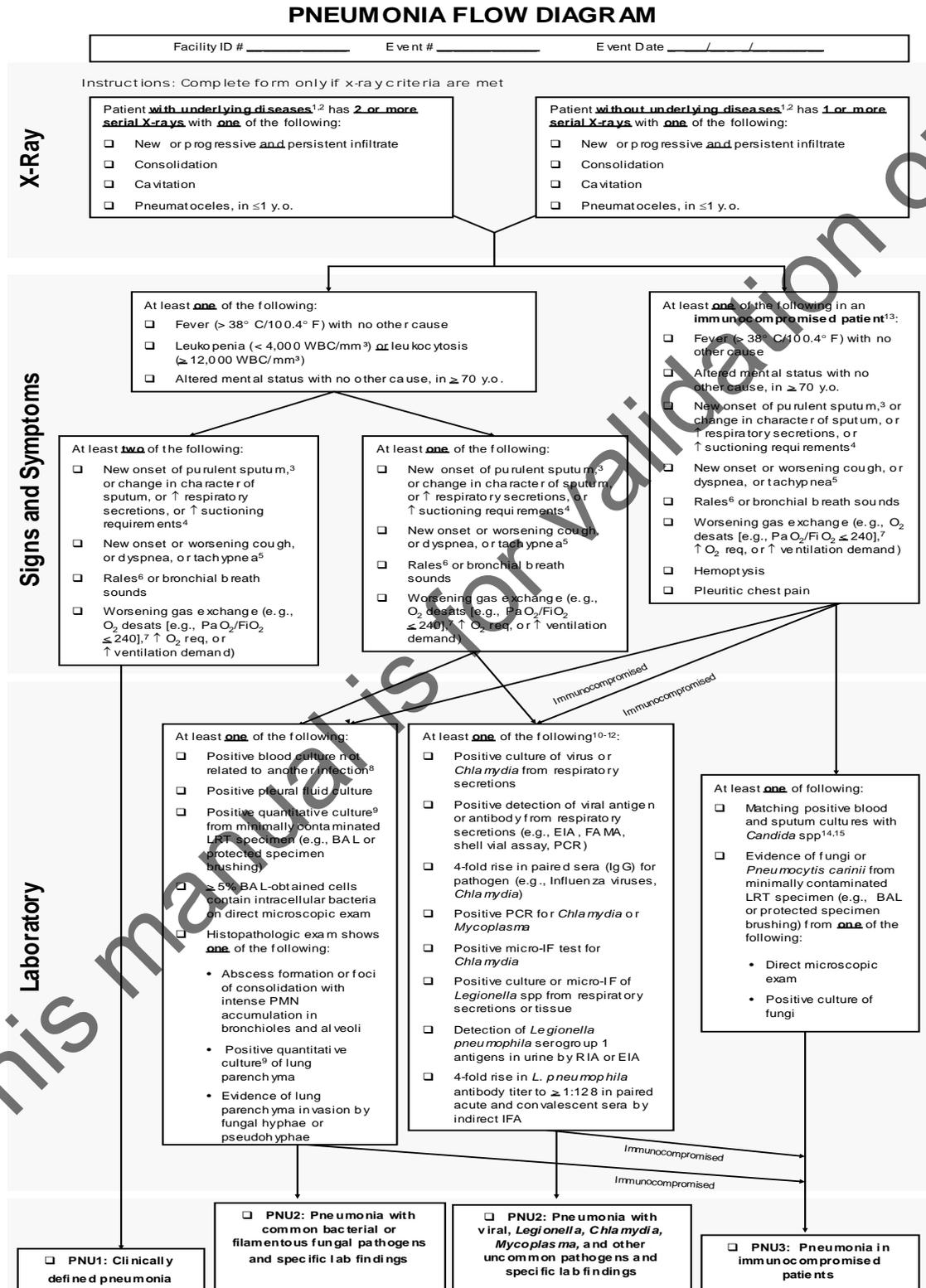
1. Occasionally, in nonventilated patients, the diagnosis of healthcare-associated pneumonia may be quite clear on the basis of symptoms, signs, and a single definitive chest radiograph. However, in patients with pulmonary or cardiac disease (for example, interstitial lung disease or congestive heart failure), the diagnosis of pneumonia may be particularly difficult. Other non-infectious conditions (for example, pulmonary edema from decompensated congestive heart failure) may simulate the presentation of pneumonia. In these more difficult cases, serial chest radiographs must be examined to help separate infectious from non-infectious pulmonary processes. To help confirm difficult cases, it may be useful to review radiographs on the day of diagnosis, 3 days prior to the diagnosis and on days 2 and 7 after the diagnosis. Pneumonia may have rapid onset and progression, but does not resolve quickly. Radiographic changes of pneumonia persist for several weeks. As a result, rapid radiographic resolution suggests that the patient does not have pneumonia, but rather a non-infectious process such as atelectasis or congestive heart failure.
2. Note that there are many ways of describing the radiographic appearance of pneumonia. Examples include, but are not limited to, “air-space disease”, “focal opacification”, “patchy areas of increased density”. Although perhaps not specifically delineated as pneumonia by the radiologist, in the appropriate clinical setting these alternative descriptive wordings should be seriously considered as potentially positive findings.



3. Purulent sputum is defined as secretions from the lungs, bronchi, or trachea that contain ≥ 25 neutrophils and ≤ 10 squamous epithelial cells per low power field (x100). If your laboratory reports these data qualitatively (e.g., “many WBCs” or “few squames”), be sure their descriptors match this definition of purulent sputum. This laboratory confirmation is required since written clinical descriptions of purulence are highly variable.
4. A single notation of either purulent sputum or change in character of the sputum is not meaningful; repeated notations over a 24 hour period would be more indicative of the onset of an infectious process. Change in character of sputum refers to the color, consistency, odor and quantity.
5. In adults, tachypnea is defined as respiration rate > 25 breaths per minute. Tachypnea is defined as > 75 breaths per minute in premature infants born at < 37 weeks gestation and until the 40th week; > 60 breaths per minute in patients < 2 months old; > 50 breaths per minute in patients 2-12 months old; and > 30 breaths per minute in children > 1 year old.
6. Rales may be described as “crackles”.
7. This measure of arterial oxygenation is defined as the ratio of the arterial tension (PaO_2) to the inspiratory fraction of oxygen (FiO_2).
8. Care must be taken to determine the etiology of pneumonia in a patient with positive blood cultures and radiographic evidence of pneumonia, especially if the patient has invasive devices in place such as intravascular lines or an indwelling urinary catheter. In general, in an immunocompetent patient, blood cultures positive for coagulase negative staphylococci, common skin contaminants, and yeasts will not be the etiologic agent of the pneumonia.
9. Refer to Threshold values for cultured specimens (Table 6). An endotracheal aspirate is not a minimally contaminated specimen. Therefore, an endotracheal aspirate does not meet the laboratory criteria.
10. Once laboratory-confirmed cases of pneumonia due to respiratory syncytial virus (RSV), adenovirus, or influenza virus have been identified in a hospital, clinician’s presumptive diagnosis of these pathogens in subsequent cases with similar clinical signs and symptoms is an acceptable criterion for presence of healthcare-associated infection.
11. Scant or watery sputum is commonly seen in adults with pneumonia due to viruses and *Mycoplasma* although sometimes the sputum may be mucopurulent. In infants, pneumonia due to RSV or influenza yields copious sputum. Patients, except premature infants, with viral or mycoplasmal pneumonia may exhibit few signs or symptoms, even when significant infiltrates are present on radiographic exam.
12. Few bacteria may be seen on stains of respiratory secretions from patients with pneumonia due to *Legionella* spp, mycoplasma, or viruses.
13. Immunocompromised patients include those with neutropenia (absolute neutrophil count $< 500/\text{mm}^3$), leukemia, lymphoma, HIV with CD4 count < 200 , or splenectomy; those who are early post-transplant, are on cytotoxic chemotherapy, or are on high dose steroids (e.g., $> 40\text{mg}$ of prednisone or its equivalent ($> 160\text{mg}$ hydrocortisone, $> 32\text{mg}$ methylprednisolone, $> 6\text{mg}$ dexamethasone, $> 200\text{mg}$ cortisone) daily for > 2 weeks).
14. Blood and sputum specimens must be collected within 48 hours of each other.
15. Semiquantitative or nonquantitative cultures of sputum obtained by deep cough, induction, aspiration, or lavage are acceptable. If quantitative culture results are available, refer to algorithms that include such specific laboratory findings



Figure 1: Pneumonia Flow Diagram



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Figure 2: Pneumonia Flow Diagram, Alternative Criteria for Infants and Children

PNEUMONIA FLOW DIAGRAM ALTERNATE CRITERIA FOR INFANTS AND CHILDREN

Facility ID # _____ Event # _____ Event Date ____/____/____

Instructions: Complete form only if x-ray criteria are met

X-Ray

Patient **with underlying diseases**^{1,2} has **2 or more serial X-rays** with **one** of the following:

- New or progressive **and** persistent infiltrate
- Consolidation
- Cavitation
- Pneumatoceles, in ≤ 1 y.o.

Patient **without underlying diseases**^{1,2} has **1 or more serial X-rays** with **one** of the following:

- New or progressive **and** persistent infiltrate
- Consolidation
- Cavitation
- Pneumatoceles, in ≤ 1 y.o.

Signs and Symptoms

Infants ≤ 1 y.o.

- Worsening gas exchange (e.g., O₂ desats [e.g., pulse oximetry $< 94\%$], \uparrow O₂ req, or \uparrow ventilation demand)

and **three** of the following:

- Temperature instability with no other recognized cause
- Leukopenia ($< 4,000$ WBC/mm³) or leukocytosis ($> 15,000$ WBC/mm³) and left shift ($\geq 10\%$ band forms)
- New onset of purulent sputum,³ or change in character of sputum⁴, or \uparrow respiratory secretions, or \uparrow suctioning requirements
- Apnea, tachypnea⁵, nasal flaring with retraction of chest wall or grunting
- Wheezing, rales⁶, or rhonchi
- Cough
- Bradycardia (< 100 beats/min.) or tachycardia (> 170 beats/min.)

Children > 1 or ≤ 12 y.o.

At least **three** of the following:

- Fever ($> 38.4^\circ$ C/ 101.1° F) or hypothermia ($< 36.5^\circ$ C/ 97.7° F) with no other recognized cause
- Leukopenia ($< 4,000$ WBC/mm³) or leukocytosis ($\geq 15,000$ WBC/mm³)
- New onset of purulent sputum,³ or change in character of sputum⁴, or \uparrow respiratory secretions, or \uparrow suctioning requirements
- New onset or worsening cough, or dyspnea, apnea, or tachypnea⁵
- Rales⁶ or bronchial breath sounds
- Worsening gas exchange (e.g., O₂ desats [e.g., pulse oximetry $< 94\%$], \uparrow O₂ req, or \uparrow ventilation demand)

PNU1:
Clinically defined pneumonia



Table 6: Threshold values for cultured specimens used in the diagnosis of pneumonia

<u>Specimen collection/technique</u>	<u>Values</u>
Lung parenchyma*	$\geq 10^4$ cfu/g tissue
Bronchoscopically (B) obtained specimens	
Bronchoalveolar lavage (B-BAL)	$\geq 10^4$ cfu/ml
Protected BAL (B-PBAL)	$\geq 10^4$ cfu/ml
Protected specimen brushing (B-PSB)	$\geq 10^4$ cfu/ml
Nonbronchoscopically (NB) obtained (blind) specimens	
NB-BAL	$> 10^4$ cfu/ml
NB-PSB	$\geq 10^3$ cfu/ml

cfu = colony forming units
g = gram
ml = milliliter

COMMENT:

* Open-lung biopsy specimens and immediate post-mortem specimens obtained by transthoracic or transbronchial biopsy

Numerator Data: The *Pneumonia (PNEU)* from (CDC 57.111) is used to collect and report each VAP that is identified during the month selected for surveillance. The *Instructions for Completion of Pneumonia Form* (Tables of Instructions, Tables 4 and 2a) includes brief instructions for collection and entry of each data element on the form. The pneumonia form includes patient demographic information and information on whether or not mechanically assisted ventilation was present. Additional data include the specific criteria met for identifying pneumonia, whether the patient developed a secondary bloodstream infection, whether the patient died, and the organisms isolated from cultures and their antimicrobial susceptibilities.

REPORTING INSTRUCTIONS:

- If no VAPs are identified during the month of surveillance, the Report No Events box must be checked on the appropriate denominator summary screen, e.g., Denominators for Intensive Care Unit (ICU)/Other locations (Not NICU or SCA), etc.



Denominator Data: Device days and patient days are used for denominators (see [Chapter 16](#) Key Terms). Ventilator days, which are the number of patients managed with a ventilatory device, are collected daily, at the same time each day, according to the chosen location using the appropriate form (CDC 57.116, 57.117, and 57.118). These daily counts are summed and only the total for the month is entered into NHSN. Ventilator and patient days are collected for each of the locations monitored. When denominator data are available from electronic sources (e.g., ventilator days from respiratory therapy), these sources may be used as long as the counts are not substantially different (+/- 5%) from manually-collected counts, validated for a minimum of 3 months.

Data Analyses: The SIR is calculated by dividing the number of observed infections by the number of expected infections. The number of expected infections, in the context of statistical prediction, is calculated using PNEU rates from a standard population during a baseline time period as reported in the NHSN Report.

NOTE: The SIR will be calculated only if the number of expected HAIs (numExp) is ≥ 1 .

$$\text{SIR} = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}$$

While the PNEU SIR can be calculated for single locations, the measure also allows you to summarize your data by multiple locations, adjusting for differences in the incidence of infection among the location types. For example, you will be able to obtain one PNEU SIR adjusting for all locations reported. Similarly, you can obtain one PNEU SIR for all specialty care areas in your facility.

The VAP rate per 1000 ventilator days is calculated by dividing the number of VAPs by the number of ventilator days and multiplying the result by 1000. The Ventilator Utilization Ratio is calculated by dividing the number of ventilator days by the number of patient days. These calculations will be performed separately for the different types of ICUs, SCAs, and other locations in the institution, as well as by each birthweight category in NICUs.



¹ Klevens RM, Edward JR, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Reports* 2007;122:160-166.

² Dudeck MA, Horan TC, et al. National Healthcare Safety Network (NHSN) Report, Data Summary for 2010, Device-associated Module. Available at <http://www.cdc.gov/nhsn/PDFs/dataStat/2011NHSNReport.pdf>

³ Centers for Disease Control and Prevention. Guidelines for preventing health-care-associated pneumonia, 2003: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee. *MMWR* 2004;53(No. RR-3).

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Catheter-Associated Urinary Tract Infection (CAUTI) Event

Introduction: The urinary tract is the most common site of healthcare-associated infection, accounting for more than 30% of infections reported by acute care hospitals¹. Virtually all healthcare-associated urinary tract infections (UTIs) are caused by instrumentation of the urinary tract.

CAUTI can lead to such complications as cystitis, pyelonephritis, gram-negative bacteremia, prostatitis, epididymitis, and orchitis in males and, less commonly, endocarditis, vertebral osteomyelitis, septic arthritis, endophthalmitis, and meningitis in all patients. Complications associated with CAUTI cause discomfort to the patient, prolonged hospital stay, and increased cost and mortality. Each year, more than 13,000 deaths are associated with UTIs.¹

Prevention of CAUTIs is discussed in the CDC/HICPAC document, *Guideline for Prevention of Catheter-associated Urinary Tract Infections*².

Settings: Surveillance will occur in any inpatient locations where denominator data can be collected, which may include critical intensive care units (ICU), specialty care areas (SCA), step down units, and long term care wards. Neonatal ICUs are NOT included. A complete listing of inpatient locations can be found in [Chapter 15](#).

NOTE: It is not required to monitor for CAUTIs after the patient is discharged from the facility. However, if discovered, any CAUTI occurring within 48 hours after discharge should be reported to NHSN. No additional indwelling catheter days are reported.

NOTE: Neonatal ICUs may participate but only off plan (not as a part of their monthly reporting plan).

Requirements: Surveillance for CAUTI is performed in at least one inpatient location in the healthcare institution for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106).

Definitions: As for all infections reported to NHSN, infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection area not considered healthcare associated. Therefore, infections that become apparent within the first few days of admission must be carefully reviewed to determine whether they should be considered healthcare associated.

Urinary tract infections (UTI) are defined using symptomatic urinary tract infection (SUTI) criteria or Asymptomatic Bacteremic UTI (ABUTI) criteria (Table 1 and Figure



1). Report UTIs that are catheter-associated (i.e. patient had an indwelling urinary catheter at the time of or within 48 hours before onset of the event).

NOTES:

1. There is no minimum period of time that the catheter must be in place in order for the UTI to be considered catheter-associated. EXAMPLE: Patient has a Foley catheter in place on an inpatient unit. It is discontinued, and 4 days later patient meets the criteria for a UTI. This is not reported as a CAUTI because the time since Foley discontinuation exceeds 48 hours.
2. SUTI 1b and 2b and other UTI (OUTI) cannot be catheter-associated.

Location of attribution: The location where the patient was assigned on the date of the UTI event, which is further defined as the date when the first clinical evidence appeared or the date the specimen used to meet the criterion was collected, whichever came first.

EXAMPLE: Patient, who had no clinical signs or symptoms of UTI upon arrival to the Emergency Department, has a Foley catheter inserted there before being admitted to the MICU. Within 24 hours of admission to the MICU, patient meets criteria for UTI. This is reported to the NHSN as a CAUTI for the MICU because the Emergency Department is not an inpatient location and no denominator data are collected there.

EXCEPTION:

Transfer Rule: If a CAUTI develops within 48 hours of transfer from one inpatient location to another in the same facility, or a new facility, the infection is attributed to the transferring location. This is called the Transfer Rule and examples are shown below.

- Patient with a Foley catheter in place in the SICU is transferred to the surgical ward. Thirty six (36) hours later, the patient meets the criteria for UTI. This is reported to NHSN as a CAUTI for the SICU.
- Patient is transferred to the medical ward from the MSICU after having the Foley catheter removed. Within 24 hours, patient meets criteria for a UTI. This is reported to NHSN as a CAUTI for the MSICU.
- Patient with a Foley catheter in place is transferred from the medical ward to the coronary care ICU (CCU). After 4 days in the CCU, the patient meets the criteria for UTI. This is reported to NHSN as a CAUTI for the CCU.
- EXAMPLE: Patient on the urology ward of Hospital A had the Foley catheter removed and is discharged home a few hours later. The ICP from Hospital B calls the next day to report that this patient has been admitted to Hospital B with a UTI. This CAUTI should be reported to NHSN for Hospital A and attributed to the urology ward.

Indwelling catheter: a drainage tube that is inserted into the urinary bladder through the urethra is left in place, and it is connected to a closed collection system, e.g., not used for irrigation also called a Foley catheter, does not include straight in-and-out catheters.



Numerator Data: The *Urinary Tract Infection (UTI) Form* (CDC 57.114) is used to collect and report each CAUTI that is identified during the month selected for surveillance. The *Instructions for Completion of Urinary Tract Infection Form* (Tables of Instructions, Tables 5 and 2a) includes brief instructions for collection and entry of each data element on the form. The UTI form includes patient demographic information and information on whether or not an indwelling urinary catheter was present. Additional data include the specific criteria met for identifying the UTI, whether the patient developed a secondary bloodstream infection, whether the patient died, and the organisms isolated from cultures and their antimicrobial susceptibilities.

REPORTING INSTRUCTIONS:

- If no CAUTIs are identified during the month of surveillance, the Report No Events box must be checked on the appropriate denominator summary screen, e.g., Denominators for Intensive Care Unit (ICU)/other locations (Not NICU or SCA), etc.

Denominator Data: Device days and patient days are used for denominators (See [Chapter 16](#) Key Terms). Indwelling urinary catheter days, which are the number of patients with an indwelling urinary catheter device, are collected daily, at the same time each day, according to the chosen location using the appropriate form (CDC 57.117, and 57.118). When denominator data are available from electronic databases, these sources may be used as long as the counts are not substantially different (+/- 5%) from manually collected counts, validated for a minimum of 3 months. These daily counts are summed and only the total for the month is entered into NHSN. Indwelling urinary catheter days and patient days are collected separately for each of the locations monitored.

Data Analyses: The SIR is calculated by dividing the number of observed infections by the number of expected infections. The number of expected infections, in the context of statistical prediction, is calculated using CAUTI rates from a standard population during a baseline time period as reported in the NHSN Report.

NOTE: The SIR will be calculated only if the number of expected HAIs (numExp) is ≥ 1 .

$$\text{SIR} = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}$$

While the CAUTI SIR can be calculated for single locations, the measure also allows you to summarize your data by multiple locations, adjusting for differences in the incidence of infection among the location types. For example, you will be able to obtain one CAUTI SIR adjusting for all locations reported. Similarly, you can obtain one CAUTI SIR for all specialty care areas in your facility.



The CAUTI rate per 1000 urinary catheter days is calculated by dividing the number of CAUTIs by the number of catheter days and multiplying the result by 1000. The Urinary Catheter Utilization Ratio is calculated by dividing the number of urinary catheter days by the number of patient days. These calculations will be performed separately for the different types of ICUs, specialty care areas, and other locations in the institution, except for neonatal locations.

¹Klebens RM, Edward JR, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Reports* 2007;122:160-166.

²Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA. Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol.* 2010;31(4):319-26.

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Table 1: Urinary Tract Infection Criteria

Criterion	Urinary Tract Infection (UTI)
	<p>Symptomatic Urinary Tract Infection (SUTI) Must meet at least 1 of the following criteria</p>
1a	<p>Patient had an indwelling urinary catheter in place at the time of specimen collection or onset of signs or symptoms <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms (see Comments section below).</p> <p style="text-align: center;">-----OR-----</p> <p>Patient had indwelling urinary catheter <u>removed within the 48 hours prior to</u> specimen collection or onset of signs or symptoms <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms(see Comments section below). .</p>
1b	<p>Patient did <u>not</u> have an indwelling urinary catheter in place at the time of, or within 48 hours prior to, specimen collection or onset of signs or symptoms <i>and</i> has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C) in a patient that is ≤ 65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms(see Comments section below).</p>
2a	<p>Patient had an indwelling urinary catheter in place at the time of specimen collection or onset of signs or symptoms <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> at least 1 of the following findings:</p> <ol style="list-style-type: none"> a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine



Criterion	Urinary Tract Infection (UTI)
	<p><i>and</i> a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms(see Comments section below).</p> <p>-----OR-----</p> <p>Patient had indwelling urinary catheter <u>removed within the 48 hours</u> prior to specimen collection or onset of signs or symptoms <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm^3 of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine <i>and</i> a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms(see Comments section below).</p>
2b	<p>Patient did <u>not</u> have an indwelling urinary catheter in place at the time of, or within 48 hours prior to, specimen collection or onset of signs or symptoms <i>and</i> has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$) in a patient that is ≤ 65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite. pyuria (urine specimen with ≥ 10 WBC/mm^3 of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine <i>and</i> a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms(see Comments section below).</p>
3	<p>Patient ≤ 1 year of age with* or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$ core), hypothermia ($< 36^\circ\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting <i>and</i> a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of</p>



Criterion	Urinary Tract Infection (UTI)
	<p>microorganisms(see Comments section below). . *The indwelling urinary catheter was in place within 48 hours prior to specimen collection or onset of signs or symptoms.</p>
4	<p>Patient ≤ 1 year of age with* or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting <i>and</i> at least one of the following findings:</p> <ul style="list-style-type: none"> b. positive dipstick for leukocyte esterase and/or nitrite/pyuria (urine specimen with ≥ 10 WBC/mm³ of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram's stain of unspun urine <p><i>and</i> a positive urine culture of between $\geq 10^3$ and $< 10^5$ CFU/ml with no more than two species of microorganisms(see Comments section below). . *The indwelling urinary catheter was in place within 48 hours prior to specimen collection or onset of signs or symptoms.</p>
Criterion	Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)
	<p>Patient with* or without an indwelling urinary catheter has <u>no</u> signs or symptoms (i.e., for any age patient, <u>no</u> fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, <u>OR</u> for a patient ≤ 1 year of age, <u>no</u> fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnea, bradycardia, dysuria, lethargy, or vomiting) <i>and</i> a positive urine culture of $>10^5$ CFU/ml with no more than 2 species of uropathogen microorganisms** (see Comments section below). <i>and</i> a positive blood culture with at least 1 matching uropathogen microorganism to the urine culture, or at least 2 matching blood cultures drawn on separate occasions if the matching pathogen is a common skin commensal.</p> <p>*The indwelling urinary catheter was in place within 48 hours prior to specimen collection. **Uropathogen microorganisms are: Gram-negative bacilli, <i>Staphylococcus</i> spp., yeasts, beta-hemolytic <i>Streptococcus</i> spp., <i>Enterococcus</i> spp., <i>G. vaginalis</i>, <i>Aerococcus urinae</i>, and <i>Corynebacterium</i> (urease positive)⁺. ⁺Report <i>Corynebacterium</i> (urease positive) as either <i>Corynebacterium species unspecified</i> (COS) or as <i>C. urealyticum</i> (CORUR) if so speciated.</p>
Comments	<ul style="list-style-type: none"> • Laboratory cultures reported as “mixed flora” represent at least 2 species of organisms. Therefore an additional organism recovered from the same culture, would represent > 2 species of microorganisms. Such a specimen cannot be used to meet the UTI criteria. • Urinary catheter tips should not be cultured and are not acceptable for the



Criterion	Urinary Tract Infection (UTI)
	<p>diagnosis of a urinary tract infection.</p> <ul style="list-style-type: none">• Urine cultures must be obtained using appropriate technique, such as clean catch collection or catheterization. Specimens from indwelling catheters should be aspirated through the disinfected sampling ports.• In infants, urine cultures should be obtained by bladder catheterization or suprapubic aspiration; positive urine cultures from bag specimens are unreliable and should be confirmed by specimens aseptically obtained by catheterization or suprapubic aspiration.• Urine specimens for culture should be processed as soon as possible, preferably within 1 to 2 hours. If urine specimens cannot be processed within 30 minutes of collection, they should be refrigerated, or inoculated into primary isolation medium before transport, or transported in an appropriate urine preservative. Refrigerated specimens should be cultured within 24 hours.• Urine specimen labels should indicate whether or not the patient is symptomatic.• Report secondary bloodstream infection = “Yes” for all cases of Asymptomatic Bacteremic Urinary Tract Infection (ABUTI).• Report only pathogens in both blood and urine specimens for ABUTI.• Report <i>Corynebacterium</i> (urease positive) as either <i>Corynebacterium</i> species unspecified (COS) or as <i>C. urealyticum</i> (CORUR) if so speciated.

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Figure 1: Identification and Categorization of SUTI with Indwelling Catheter (see comments section page 7-8 thru 7-9 for important details)

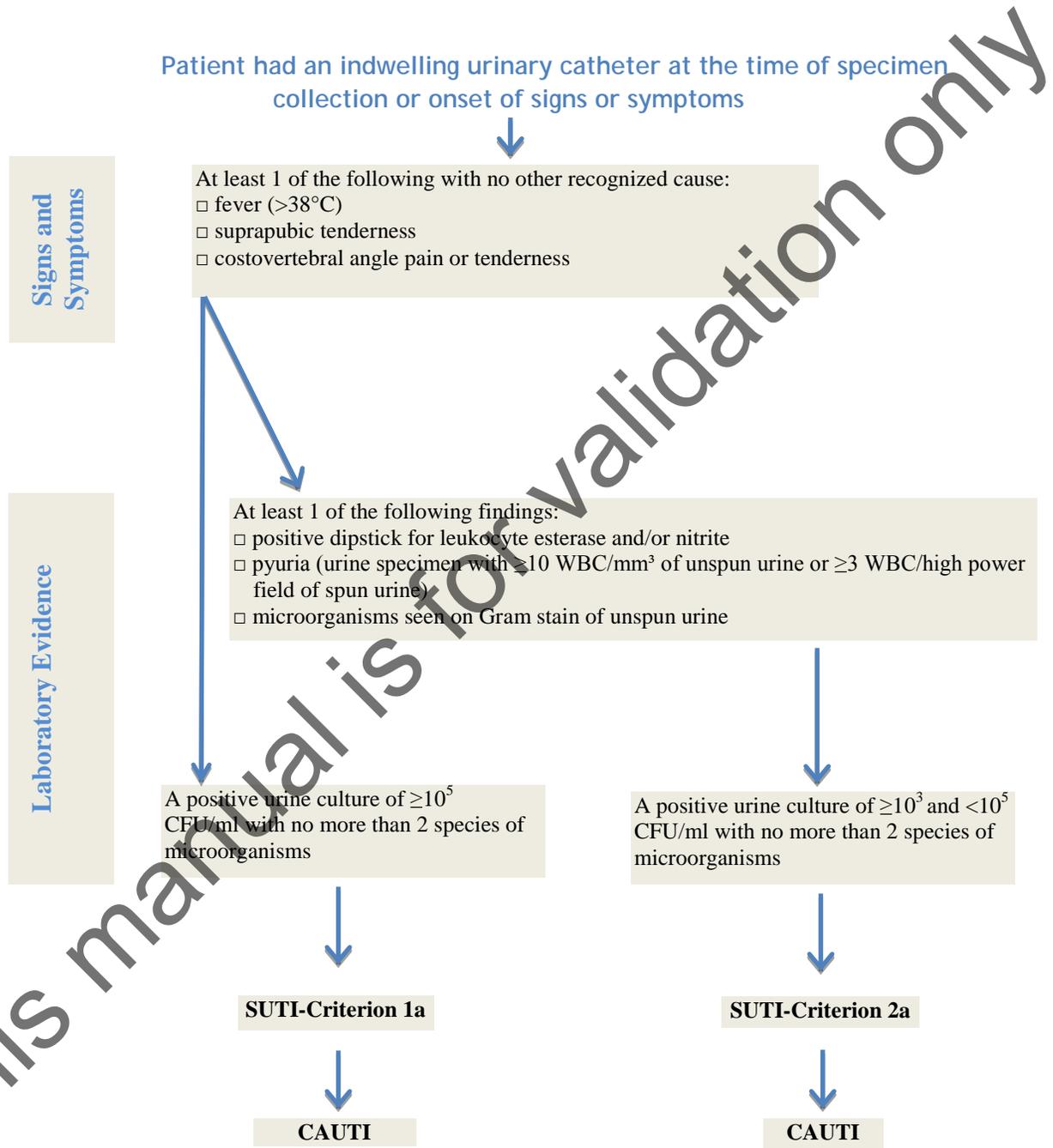
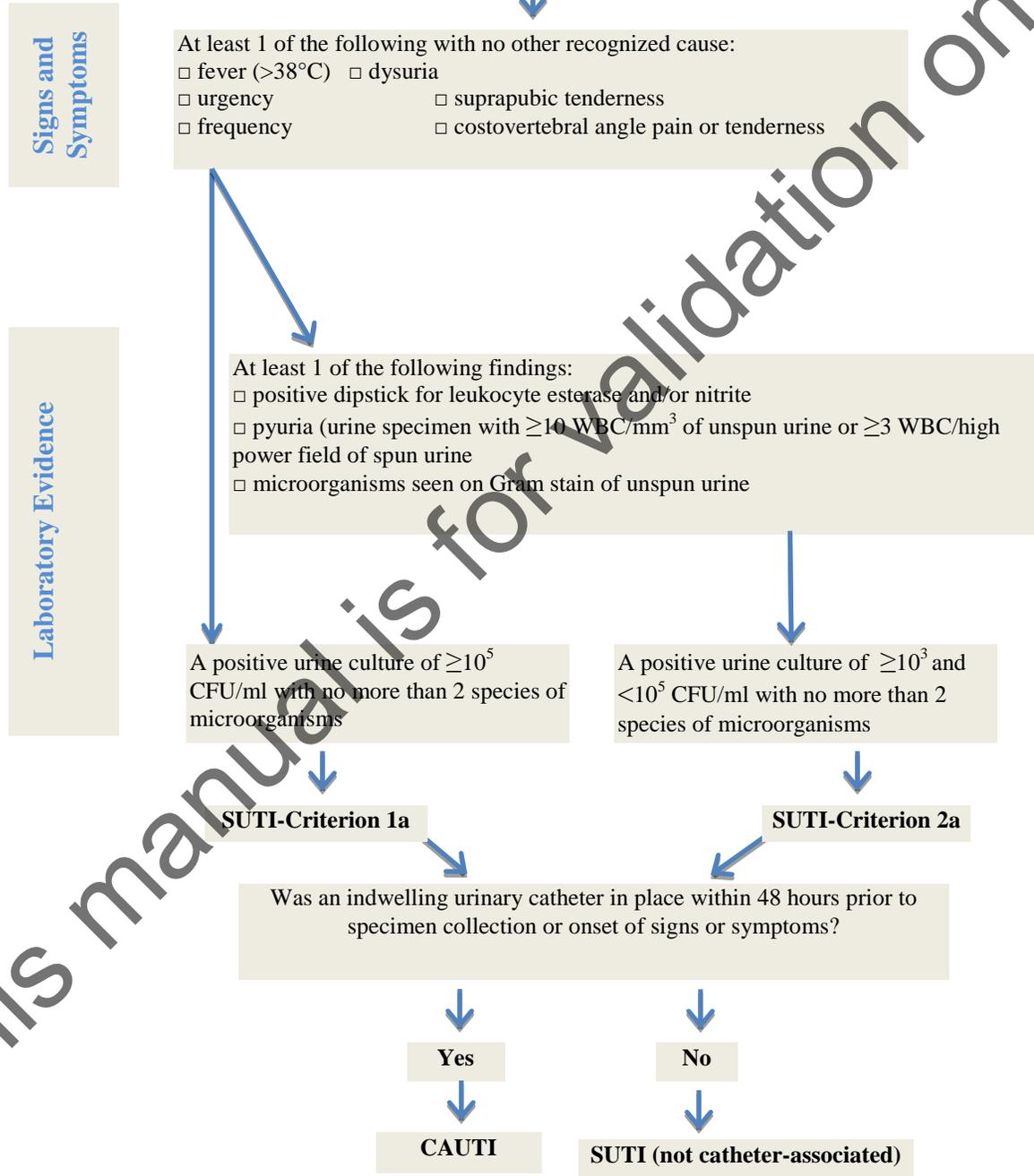




Figure 2: Identification and Categorization of SUTI Indwelling Catheter Discontinued in Prior 48 Hours (see comments section page 7-8 thru 7-9 for important details)

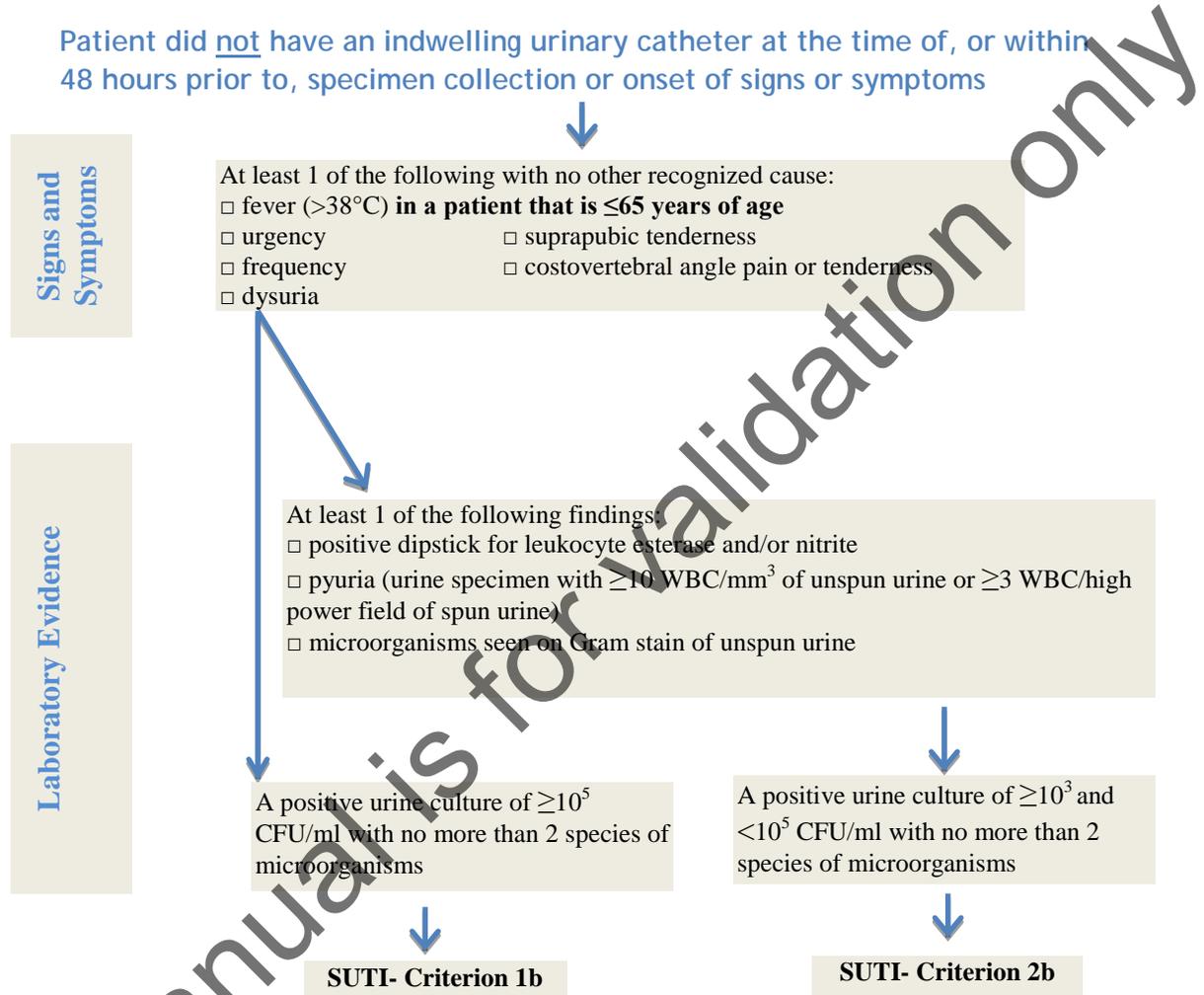
Patient had an indwelling urinary catheter discontinued within 48 hours prior to specimen collection or onset of signs or symptoms



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Figure 3: Identification and Categorization of SUTI without Indwelling Catheter (see comments section page 7-8 thru 7-9 for important details)

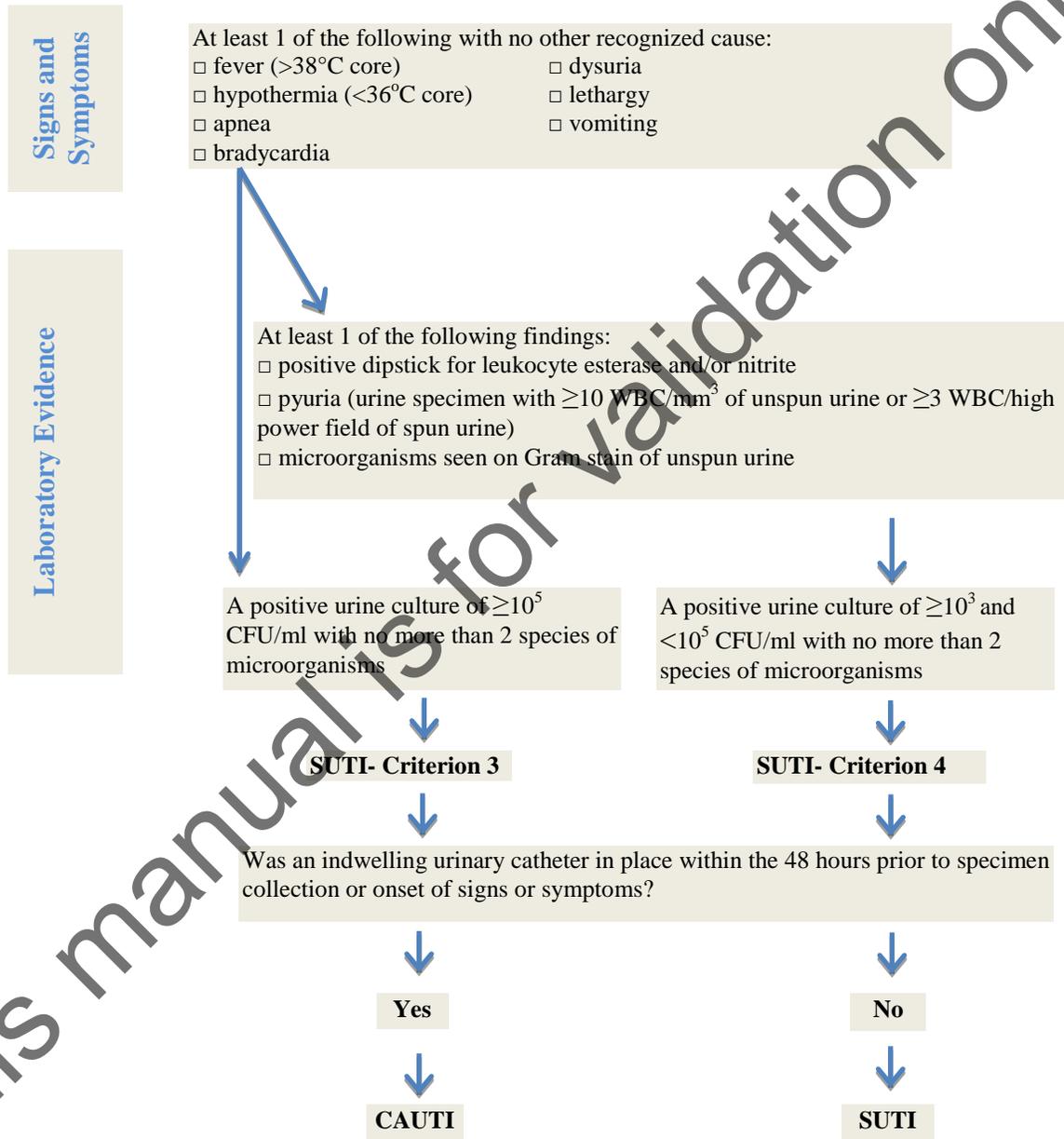


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Figure 4: Identification and Categorization of SUTI in Patient ≤1 Year of Age (see comments section page 7-8 thru 7-9 for important details)

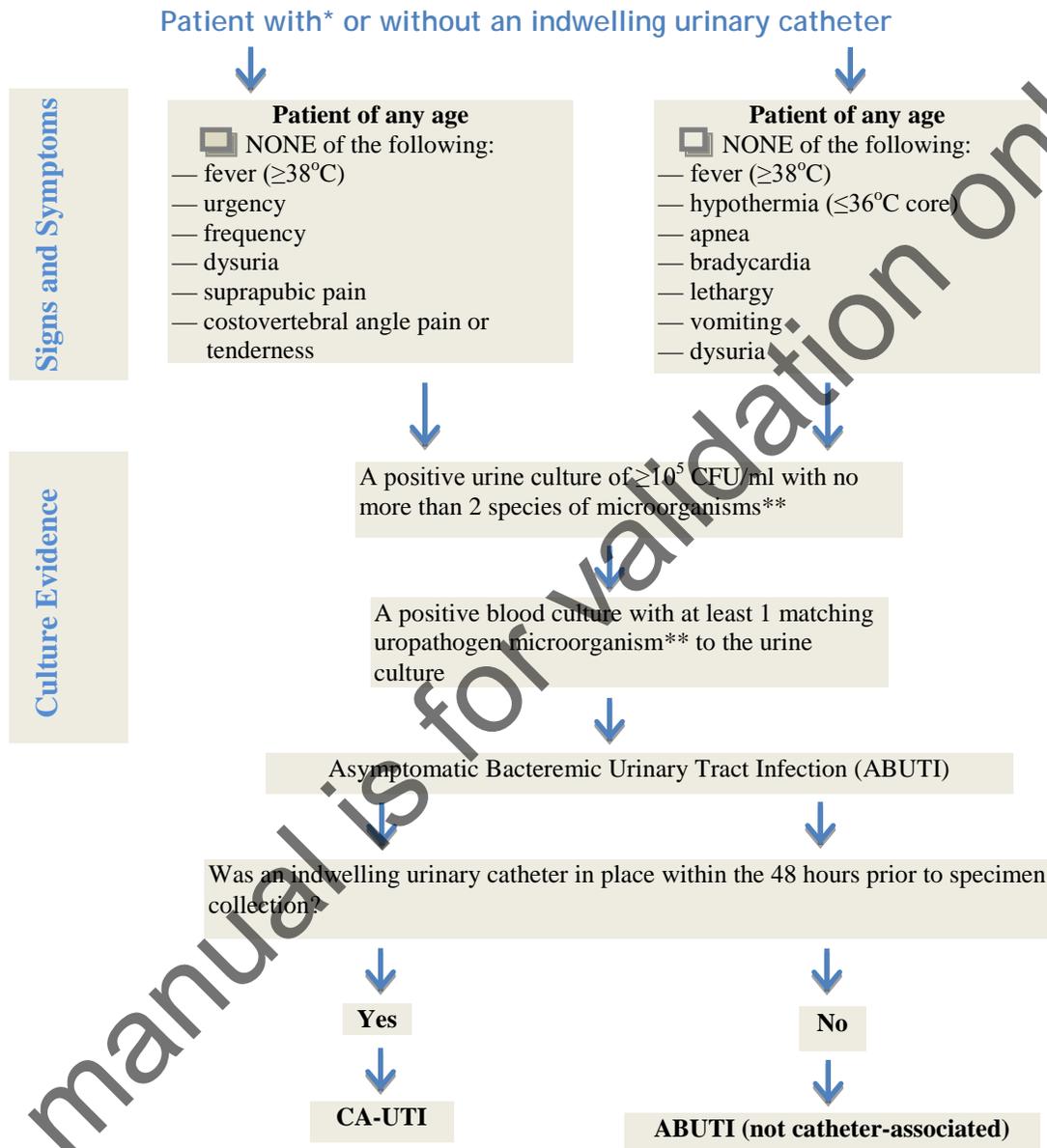
Patient ≤1 year of age (with* or without an indwelling urinary catheter)



*The indwelling urinary catheter was in place within 48 hours prior to specimen collection or onset of signs or symptoms.



Figure 5: Identification of Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)



*The indwelling urinary catheter was in place within 48 hours prior to specimen collection s.

**Uropathogen microorganisms are: Gram-negative bacilli, *Staphylococcus* spp., yeasts, beta-hemolytic *Streptococcus* spp., *Enterococcus* spp., *G. vaginalis*, *Aerococcus urinae*, *Corynebacterium* (urease positive)[†].

[†]Report *Corynebacterium* (urease positive) as either *Corynebacterium species unspecified* (COS) or as *C. urealyticum* (CORUR) if so speciated.



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Dialysis Event Protocol is available on the [NHSN Dialysis Event website](#).

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Surgical Site Infection (SSI) Event

Introduction: In 2002, in the United States, an estimated 14 million NHSN operative procedures were performed (CDC unpublished data). SSIs were the second most common healthcare-associated infection, accounting for 17% of all HAIs among hospitalized patients¹. A similar rate was obtained from NHSN hospitals reporting data in 2006-2008 (16,147 SSI following 849,659 operative procedures) with an overall rate of 1.9%.²

While advances have been made in infection control practices, including improved operating room ventilation, sterilization methods, barriers, surgical technique, and availability of antimicrobial prophylaxis, SSIs remain a substantial cause of morbidity and mortality among hospitalized patients. In one study, among nearly 100,000 HAIs reported in one year, deaths were associated with SSIs in more than 8,000 cases.³

Surveillance of SSI with feedback of appropriate data to surgeons has been shown to be an important component of strategies to reduce SSI risk.^{4,5,6,7} A successful surveillance program includes the use of epidemiologically-sound infection definitions and effective surveillance methods, stratification of SSI rates according to risk factors associated with SSI development, and data feedback.^{5,6} Recommendations are outlined in the CDC's *Guideline for Prevention of Surgical Site Infection, 1999*.⁷

Settings: Surveillance will occur with surgical patients in any inpatient/outpatient setting where the selected NHSN operative procedure(s) are performed.

Requirements: Select at least one NHSN operative procedure category (Table 1) and indicate this on the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Collect numerator and denominator data on all procedures included in the selected procedure categories for at least one month.

The *International Classification of Diseases, 9th Revision Clinical Modifications* (ICD-9-CM) codes, which are defined by the ICD-9 Coordination and Maintenance Committee of the National Center for Health Statistics and the Centers for Medicare and Medicaid Services (CMS), are developed as a tool for classification of morbidity data. The preciseness of the data, as well as their wide use, allows their use in grouping surgery types for the purpose of determining SSI rates. ICD-9-CM codes are updated annually in October and NHSN operative procedure categories are subsequently updated and changes shared with NHSN users. Table 1: NHSN Operative Procedure Category Mappings to ICD-9-CM Codes below outlines operative procedures and their grouping into NHSN operative procedure categories according to ICD-9-CM codes. In addition, for certain NHSN operative procedure categories, Current Procedural Terminology (CPT) code mapping is provided. A general description of the types of operations contained in the NHSN operative procedure categories is also provided.



Table 1. NHSN Operative Procedure Category Mappings to ICD-9-CM Codes and CPT Codes

Legacy Code	Operative Procedure	Description	ICD-9-CM Codes / CPT Codes
AAA	Abdominal aortic aneurysm repair	Resection of abdominal aorta with anastomosis or replacement	38.34, 38.44, 38.64
AMP	Limb amputation	Total or partial amputation or disarticulation of the upper or lower limbs, including digits	84.00-84.19, 84.91
APPY	Appendix surgery	Operation of appendix (not incidental to another procedure)	47.01, 47.09, 47.2, 47.91, 47.92, 47.99
AVSD	Shunt for dialysis	Arteriovenostomy for renal dialysis	39.27, 39.42
BILI	Bile duct, liver or pancreatic surgery	Excision of bile ducts or operative procedures on the biliary tract, liver or pancreas (does not include operations only on gallbladder)	50.0, 50.12, 50.14, 50.21-50.23, 50.25, 50.26, 50.29, 50.3, 50.4, 50.61, 50.69, 51.31-51.37, 51.39, 51.41-51.43, 51.49, 51.51, 51.59, 51.61-51.63, 51.69, 51.71, 51.72, 51.79, 51.81-51.83, 51.89, 51.91-51.95, 51.99, 52.09, 52.12, 52.22, 52.3, 52.4, 52.51-52.53, 52.59-52.6, 52.7, 52.92, 52.95, 52.96, 52.99
BRST	Breast surgery	Excision of lesion or tissue of breast including radical, modified, or quadrant resection, lumpectomy, incisional biopsy, or mammoplasty	85.12, 85.20-85.23, 85.31-85.36, 85.41-85.48, 85.50, 85.53-85.55, 85.6, 85.70-85.76, 85.79, 85.93-85.96 <hr/> 19101, 19112, 19120, 19125, 19126, 19300, 19301, 19302, 19303, 19304, 19305, 19306, 19307, 19316, 19318, 19324, 19325, 19328, 19330, 19340, 19342, 19350, 19355, 19357, 19361, 19364, 19366, 19367, 19368, 19369, 19370, 19371, 19380



Legacy Code	Operative Procedure	Description	ICD-9-CM Codes / CPT Codes
CARD	Cardiac surgery	Procedures on the heart; includes valves or septum; does not include coronary artery bypass graft, surgery on vessels, heart transplantation, or pacemaker implantation	35.00-35.04, 35.06, 35.08, 35.10-35.14, 35.20-35.28, 35.31-35.35, 35.39, 35.42, 35.50, 35.51, 35.53, 35.54, 35.60-35.63, 35.70-35.73, 35.81-35.84, 35.91-35.95, 35.98-35.99, 37.10-37.12, 37.31-37.33, 37.35-37.37, 37.41, 37.49, 37.60*
CEA	Carotid endarterectomy	Enderterectomy on vessels of head and neck (includes carotid artery and jugular vein)	38.12
CBGB	Coronary artery bypass graft with both chest and donor site incisions	Chest procedure to perform direct revascularization of the heart; includes obtaining suitable vein from donor site for grafting	36.10-36.14, 36.19
CBGC	Coronary artery bypass graft with chest incision only	Chest procedure to perform direct vascularization of the heart using, for example the internal mammary (thoracic) artery	36.15-36.17, 36.2
CHOL	Gallbladder surgery	Cholecystectomy and cholecystotomy	51.03, 51.04, 51.13, 51.21-51.24 47480, 47562, 47563, 47564, 47600, 47605, 47610, 47612, 47620,
COLO	Colon surgery	Incision, resection, or anastomosis of the large intestine; includes large-to-small and small-to-large bowel anastomosis; does not include rectal operations	17.31-17.36, 17.39, 45.03, 45.26, 45.41, 45.49, 45.52, 45.71-45.76, 45.79, 45.81-45.83, 45.92-45.95, 46.03, 46.04, 46.10, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.76, 46.94 44140, 44141, 44143, 44144, 44145, 44146, 44147, 44150, 44151, 44160, 44204, 44205, 44206, 44207, 44208, 44210
CRAN	Craniotomy	Excision repair, or exploration of the brain or meninges; does not include taps or punctures	01.12, 01.14, 01.20-01.25, 01.28, 01.29, 01.31, 01.32, 01.39, 01.41, 01.42, 01.51-01.53, 01.59, 02.11-02.14, 02.91-02.93, 07.51-07.54, 07.59, 07.61-07.65, 07.68, 07.69, 07.71, 07.72, 07.79, 38.01, 38.11, 38.31, 38.41, 38.51, 38.61, 38.81, 39.28



Legacy Code	Operative Procedure	Description	ICD-9-CM Codes / CPT Codes
CSEC	Cesarean section	Obstetrical delivery by Cesarean section	74.0, 74.1, 74.2, 74.4, 74.91, 74.99
FUSN	Spinal fusion	Immobilization of spinal column	81.00-81.08
FX	Open reduction of fracture	Open reduction of fracture or dislocation of long bones with or without internal or external fixation; does not include placement of joint prosthesis	79.21, 79.22, 79.25, 79.26, 79.31, 79.32, 79.35, 79.36, 79.51, 79.52, 79.55, 79.56 <hr/> 23615, 23616, 23630, 23670, 23680, 24515, 24516, 24538, 24545, 24546, 24575, 24579, 24586, 24587, 24635, 24665, 24666, 24685, 25337, 25515, 25525, 25526, 25545, 25574, 25575, 25607, 25608, 25609, 25652, 27236, 27244, 27245, 27248, 27254, 27269, 27283, 27506, 27507, 27511, 27513, 27514, 27535, 27536, 27540, 27758, 27759, 27766, 27769, 27784, 27792, 27814, 27822, 27826, 27827, 27828
GAST	Gastric surgery	Incision or excision of stomach; includes subtotal or total gastrectomy; does not include vagotomy and fundoplication	43.0, 43.42, 43.49, 43.5, 43.6, 43.7, 43.81, 43.82, 43.89, 43.91, 43.99, 44.15, 44.21, 44.29, 44.31, 44.38-44.42, 44.49, 44.5, 44.61-44.65, 44.68-44.69, 44.95-44.98
HER	Herniorrhaphy	Repair of inguinal, femoral, umbilical, or anterior abdominal wall hernia; does not include repair of diaphragmatic or hiatal hernia or hernias at other body sites	17.11-17.13, 17.21-17.24, 53.00-53.05, 53.10-53.17, 53.21, 53.29, 53.31, 53.39, 53.41-53.43, 53.49, 53.51, 53.59, 53.61-53.63, 53.69 <hr/> 49491, 49492, 49495, 49496, 49500, 49501, 49505, 49507, 49520, 49521, 49525, , 49550, 49553, 49555, 49557, 49560, 49561, 49565, 49566, 49568, 49570, 49572, 49580, 49582, 49585, 49587, 49590, 49650, 49651, 49652, 49653, 49654, 49655, 49656, 49657, 49659, 55540
HPRO	Hip prosthesis	Arthroplasty of hip	00.70-00.73, 00.85-00.87, 81.51-81.53 <hr/> 27125, 27130, 27132, 27134, 27137, 27138, 27236, 27299



Legacy Code	Operative Procedure	Description	ICD-9-CM Codes / CPT Codes
HTP	Heart transplant	Transplantation of heart	37.51-37.55
HYST	Abdominal hysterectomy; Includes that by laparoscope	Removal of uterus through abdominal wall; includes that by laparoscope	68.31, 68.39, 68.41, 68.49, 68.61, 68.69 <hr/> 58150, 58152, 58180, 58200, 58210, 58541, 58542, 58543, 58544, 58548, 58570, 58571, 58572, 58573, 58951, 58953, 58954, 58956
KPRO	Knee prosthesis	Arthroplasty of knee	00.80-00.84, 81.54, 81.55 <hr/> 27438, 27440, 27441, 27442, 27443, 27486, 27487
KTP	Kidney transplant	Transplantation of kidney	55.61, 55.69
LAM	Laminectomy	Exploration or decompression of spinal cord through excision or incision into vertebral structures	03.01, 03.02, 03.09, 80.50, 80.51, 80.53, 80.54†, 80.59, 84.60-84.69, 84.80-84.85
LTP	Liver transplant	Transplantation of liver	50.51, 50.59
NECK	Neck surgery	Major excision or incision of the larynx and radical neck dissection; does not include thyroid and parathyroid operations	30.1, 30.21, 30.22, 30.29, 30.3, 30.4, 31.45, 40.40-40.42
NEPH	Kidney surgery	Resection or manipulation of the kidney with or without removal of related structures	55.01, 55.02, 55.11, 55.12, 55.24, 55.31, 55.32, 55.34, 55.35, 55.39, 55.4, 55.51, 55.52, 55.54, 55.91
OVRV	Ovarian surgery	Operations on ovary and related structures	65.01, 65.09, 65.12, 65.13, 65.21-65.25, 65.29, 65.31, 65.39, 65.41, 65.49, 65.51-65.54, 65.61-65.64, 65.71-65.76, 65.79, 65.81, 65.89, 65.92-65.95, 65.99
PACE	Pacemaker surgery	Insertion, manipulation or replacement of pacemaker	00.50-00.54, 17.51, 17.52, 37.70-37.77, 37.79-37.83, 37.85-37.87, 37.89, 37.94-37.99
PRST	Prostate surgery	Suprapubic, retropubic, radical, or perineal excision of the prostate; does not include transurethral resection of the prostate	60.12, 60.3, 60.4, 60.5, 60.61, 60.62, 60.69



Legacy Code	Operative Procedure	Description	ICD-9-CM Codes / CPT Codes
PVBY	Peripheral vascular bypass surgery	Bypass operations on peripheral arteries	39.29
REC	Rectal surgery	Operations on rectum	48.25, 48.35, 48.40, 48.42, 48.43, 48.49-48.52, 48.59, 48.61-48.65, 48.69, 48.74
RFUSN	Refusion of spine	Refusion of spine	81.30-81.39
SB	Small bowel surgery	Incision or resection of the small intestine; does not include small-to-large bowel anastomosis	45.01, 45.02, 45.15, 45.31-45.34, 45.51, 45.61-45.63, 45.91, 46.01, 46.02, 46.20-46.24, 46.31, 46.39, 46.41, 46.51, 46.71-46.74, 46.93
SPLE	Spleen surgery	Resection or manipulation of spleen	41.2, 41.33, 41.41-41.43, 41.5, 41.93, 41.95, 41.99
THOR	Thoracic surgery	Noncardiac, nonvascular thoracic surgery; includes pneumonectomy and hiatal hernia repair or diaphragmatic hernia repair (except through abdominal approach)	32.09, 32.1, 32.20-32.23, 32.25, 32.26, 32.29, 32.30, 32.39, 32.41, 32.49, 32.50, 32.59, 32.6, 32.9, 33.0, 33.1, 33.20, 33.25, 33.28, 33.31-33.34, 33.39, 33.41-33.43, 33.48, 33.49, 33.98, 33.99, 34.01-34.03, 34.06, 34.1, 34.20, 34.26, 34.3, 34.4, 34.51, 34.52, 34.59, 34.6, 34.81-34.84, 34.89, 34.93, 34.99, 53.80-53.84
THYR	Thyroid and/or parathyroid surgery	Resection or manipulation of thyroid and/or parathyroid	06.02, 06.09, 06.12, 06.2, 06.31, 06.39, 06.4, 06.50-06.52, 06.6, 06.7, 06.81, 06.89, 06.91-06.95, 06.98, 06.99
VHYS	Vaginal hysterectomy; includes that by laparoscope	Removal of uterus through vagina; includes that by laparoscope	68.51, 68.59, 68.71, 68.79
VSHN	Ventricular shunt	Ventricular shunt operations, including revision and removal of shunt	02.21*, 02.22, 02.31-02.35, 02.39, 02.42, 02.43, 54.95 [^]
XLAP	Abdominal surgery	Abdominal operations not involving the gastrointestinal tract or biliary system; includes diaphragmatic hernia repair through abdominal approach	53.71, 53.72, 53.75, 54.0, 54.11, 54.12, 54.19, 54.3, 54.4, 54.51, 54.59, 54.61, 54.63, 54.64, 54.71-54.75, 54.92, 54.93



*NOTE: The procedure represented by this ICD-9-CM code can be performed in a number of ways. However, as for all surgeries, if, at the end of the procedure, the skin incision edges do not meet because of drains, wires, or other objects extruding through the incision, the incision is not considered primarily closed. Therefore, the procedure is not considered an NHSN operative procedure and any subsequent infection is not considered a procedure-associated infection (i.e., not an SSI or PPP).

†NOTE: If this procedure is performed percutaneously, it is not considered an NHSN operative procedure and should not be included in LAM denominator data.

^NOTE: Include only if this procedure involves ventricular shunt.

For a complete mapping of all ICD-9-CM codes to their assignment as an NHSN operative procedure category, a surgical procedure other than an NHSN operative procedure (OTH), or a non-operative procedure (NO), see ICD-9-CM Procedure Code Mapping to NHSN Operative Procedure Categories at <http://www.cdc.gov/nhsn/library.html>.

Definitions:

An NHSN operative procedure is a procedure

1) that is performed on a patient who is an NHSN inpatient or an NHSN outpatient; 2) takes place during an operation (defined as a single trip to the operating room (OR) where a surgeon makes at least one incision through the skin or mucous membrane, including laparoscopic approach, and closes the incision before the patient leaves the OR; and 3) that is included in Table 1.

*NOTE: If the skin incision edges do not meet because of wires or devices or other objects extruding through the incision, the incision is not considered primarily closed and therefore the procedure is not considered an operation. Further, any subsequent infection is not considered a procedure-associated infection (i.e., not an SSI or PPP).

NHSN Inpatient: A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.

NHSN Outpatient: A patient whose date of admission to the healthcare facility and date of discharge are the same calendar day.

Operating Room (OR): A patient care area that met the Facilities Guidelines Institute's (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated.⁸ This may include an operating room, C-Section room, interventional radiology room, or a cardiac catheterization lab.

Implant: A nonhuman-derived object, material, or tissue that is placed in a patient during an operative procedure. Examples include: porcine or synthetic heart valves, mechanical heart, metal rods, mesh, sternal wires, screws, cements, internal staples, hemoclips, and other devices. Non-absorbable sutures are excluded because Infection Preventionists may not easily identify and/or differentiate the soluble nature of suture material used.



For surveillance purposes, this object is considered an implant until it or the area/structures contiguous with the implant are manipulated for diagnostic or therapeutic purposes. If infection develops after such manipulation, do not attribute it to the operation in which the implant was inserted; instead attribute it to the latter procedure. If the latter procedure is an NHSN operative procedure, subsequent infection can be considered SSI if it meets criteria. If the latter procedure is not an NHSN operative procedure, subsequent infection cannot be considered an SSI but may meet criteria for other HAI and be reported as such.

REPORTING INSTRUCTIONS:

- Some products are a combination of human- and nonhuman-derived materials, such as demineralized human bone matrix with porcine gel carrier. When placed in a patient during an operative procedure, indicate “Yes” for the Implant field.

A **superficial incisional SSI** must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure and involves only skin and subcutaneous tissue of the incision and

patient has at least one of the following:

- a. purulent drainage from the superficial incision.
- b. organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
- c. at least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision are deliberately opened by surgeon, and are culture-positive or not cultured. A culture-negative finding does not meet this criterion.
- d. diagnosis of superficial incisional SSI by the surgeon or attending physician.

NOTE: There are two specific types of superficial incisional SSIs:

1. **Superficial Incisional Primary (SIP)** – a superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
2. **Superficial Incisional Secondary (SIS)** – a superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

REPORTING INSTRUCTIONS:

- Do not report a stitch abscess (minimal inflammation and discharge confined to the points of suture penetration) as an infection.
- Do not report a localized stab wound infection as SSI. While it would be considered either a skin (SKIN) or soft tissue (ST) infection, depending on its depth, it is not reportable under this module.
- “Cellulitis”, by itself, does not meet the criteria for Superficial Incisional SSI.



- If the incisional site infection involves or extends into the fascial and muscle layers, report as a deep-incisional SSI.
- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.
- An infected circumcision site in newborns is classified as CIRC. Circumcision is not an NHSN operative procedure. CIRC is not reportable under this module.
- An infected burn wound is classified as BURN and is not reportable under this module.

A **deep incisional SSI** must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure and involves deep soft tissues (e.g., fascial and muscle layers) of the incision and

patient has at least one of the following:

- a. purulent drainage from the deep incision but not from the organ/space component of the surgical site
- b. a deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured and the patient has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
- c. an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- d. diagnosis of a deep incisional SSI by a surgeon or attending physician.

NOTE: There are two specific types of deep incisional SSIs:

1. **Deep Incisional Primary (DIP)** – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
2. **Deep Incisional Secondary (DIS)** – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

REPORTING INSTRUCTIONS:

- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.

An **organ/space SSI** involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure. Specific sites are assigned to organ/space SSI to further identify the location of the infection. The table below lists the specific sites that must be used to differentiate organ/space SSI. An example is appendectomy with subsequent subdiaphragmatic abscess, which would be reported as an organ/space SSI at the intraabdominal specific site (SSI-IAB). Specific sites of organ/space (Table 2) have specific criteria which must be met in order to qualify as an NHSN event. These criteria are in addition to the general criteria for organ/space SSI and can be found in [Chapter 17](#).



An **organ/space SSI** must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure and

infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure and

patient has at least one of the following:

- a. purulent drainage from a drain that is placed through a stab wound into the organ/space
- b. organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- c. an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- d. diagnosis of an organ/space SSI by a surgeon or attending physician.

REPORTING INSTRUCTIONS:

- Occasionally an organ/space infection drains through the incision and is considered a complication of the incision. Therefore, classify it as a deep incisional SSI.
- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.
- If meningitis (MEN) and a brain abscess (IC) are present together after operation, report as SSI-IC.
- Report CSF shunt infection as SSI-MEN if it occurs ≤ 1 year of placement; if later or after manipulation/access, it is considered CNS-MEN and is not reportable under this manual.
- Report spinal abscess with meningitis as SSI-MEN following spinal surgery.
- Episiotomy is not considered an operative procedure in NHSN.

Table 2. Specific sites of an organ/space SSI. Criteria for these sites can be found in the NHSN Help System (must be logged in to NHSN) or [Chapter 17](#).

Code	Site	Code	Site
BONE	Osteomyelitis	JNT	Joint or bursa
BRST	Breast abscess or mastitis	LUNG	Other infections of the respiratory tract
CARD	Myocarditis or pericarditis	MED	Mediastinitis
DISC	Disc space	MEN	Meningitis or ventriculitis
EAR	Ear, mastoid	ORAL	Oral cavity (mouth, tongue, or gums)
EMET	Endometritis	OREP	Other infections of the male or female reproductive tract
ENDO	Endocarditis	OUTI	Other infections of the urinary tract
EYE	Eye, other than conjunctivitis	SA	Spinal abscess without meningitis
GIT	GI tract	SINU	Sinusitis
HEP	Hepatitis	UR	Upper respiratory tract
IAB	Intraabdominal, not specified	VASC	Arterial or venous infection



Code	Site	Code	Site
	else-where		
IC	Intracranial, brain abscess or dura	VCUF	Vaginal cuff

Numerator Data: All patients having any of the procedures included in the selected NHSN operative procedure category(s) are monitored for signs of SSI. The *Surgical Site Infection (SSI)* form (CDC 57.120) is completed for each such patient found to have an SSI. If no SSI events are identified during the surveillance month, check the Report No Events field in the Missing PA Events tab of the Incomplete/Missing List.

NOTES:

1. If a patient has several NHSN operative procedures prior to an infection, report the operative procedure code of the operation that was performed most closely in time prior to the infection date, unless there is evidence that the infection is associated with a different operation.
2. If a procedure from more than one NHSN operative procedure category was done through a single incision, attempt to determine the procedure that is thought to be associated with the infection. If it is not clear (as is often the case when the infection is a superficial incisional SSI), or if the infection site being reported is not an SSI, use the NHSN Principal Operative Procedure Category Selection Lists (Table 3) to select which operative procedure to report.

Table 3. NHSN Principal Operative Procedure Category Selection Lists

The following lists are derived from Table 1, NHSN Operative Procedure Categories. The operative procedures with the highest risk of surgical site infection are listed before those with a lower risk.

Priority	Code	Abdominal Operations
1	SB	Small bowel surgery
2	KTP	Kidney transplant
3	LTP	Liver transplant
4	BILI	Bile duct, liver or pancreatic surgery
5	REC	Rectal surgery
6	COLO	Colon surgery
7	GAST	Gastric surgery
8	CSEC	Cesarean section
9	SPLE	Spleen surgery
10	APPY	Appendix surgery
11	HYST	Abdominal hysterectomy
12	VHYS	Vaginal Hysterectomy
13	OVRV	Ovarian surgery
14	HER	Herniorrhaphy
15	CHOL	Gall bladder surgery
16	AAA	Abdominal aortic aneurysm repair
17	NEPH	Kidney surgery
18	XLAP	Laparotomy



The following lists are derived from Table 1, NHSN Operative Procedure Categories. The operative procedures with the highest risk of surgical site infection are listed before those with a lower risk.

Priority	Code	Thoracic Operations
1	HTP	Heart transplant
2	CBGB	Coronary artery bypass graft with donor incision(s)
3	CBGC	Coronary artery bypass graft, chest incision only
4	CARD	Cardiac surgery
5	THOR	Thoracic surgery
Priority	Code	Neurosurgical (Spine) Operations
1	RFUSN	Refusion of spine
2	FUSN	Spinal fusion
3	LAM	Laminectomy
Priority	Code	Neurosurgical (Brain) Operations
1	VSHN	Ventricular shunt
2	CRAN	Craniotomy
Priority	Code	Neck Operations
1	NECK	Neck surgery
2	THYR	Thyroid and or parathyroid surgery

The *Instructions for Completion of Surgical Site Infection* form (Tables of Instructions, Tables 12 and 2a) includes brief instructions for collection and entry of each data element on the form. The SSI form includes patient demographic information and information about the operative procedure, including the date and type of procedure. Information about the SSI includes the date of SSI, specific criteria met for identifying the SSI, when the SSI was detected, whether the patient developed a secondary bloodstream infection, whether the patient died, and the organisms isolated from cultures and the organisms' antimicrobial susceptibilities.

Denominator Data: For all patients having any of the procedures included in the NHSN Operative Procedure category(s) selected for surveillance during the month, complete the *Denominator for Procedure* form (CDC 57.121). The data are collected individually for each operative procedure performed during the month specified on the *Patient Safety Monthly Surveillance Plan* (CDC 57.106). The *Instructions for Completion of Denominator for Procedure* form (Tables of Instructions, Table 13) includes brief instructions for collection and entry of each data element on the form.

NOTES:

1. If procedures in more than one NHSN operative procedure category are performed during the same trip to the OR even if performed through the same incision, a Denominator for Procedure (CDC 57.121) record is reported for each NHSN operative procedure category being monitored.



For example, if a CARD and CBGC are done through the same incision, a *Denominator for Procedure* record is reported for each.

EXCEPTION: If a patient has both a CBGC and CBGB during the same trip to the OR, report only as a CBGB. Only report as a CBGC when there is a chest incision only. CBGB and CBGC are never reported for the same patient for the same trip to the OR. For bilateral operative procedures see #4 below.

2. If procedures of different ICD-9-CM codes from the same NHSN Operative Procedure Category are performed through the same incision, record only one procedure for that category. For example, a facility is performing surveillance for both CBGB and CARD procedures. A patient undergoes an aortocoronary bypass of one coronary vessel (36.11, CBGB) and the replacement of both the mitral and tricuspid valves (35.23 and 35.27, both CARD) during the same trip to the OR. You would complete a *Denominator for Procedure* record for the CBGB and another one for the CARD because ICD-9-CM codes 35.23 and 35.27 fall in the same operative procedure category (CARD).
3. If more than one NHSN operative procedure category is performed through the same incision, record the combined duration of all procedures, which is the time from skin incision to primary closure.
4. For bilateral operative procedures (e.g., KPRO), two separate *Denominator for Procedure* (CDC 57.121) records are completed. To document the duration of the procedure, indicate the incision time to closure time for each procedure separately or, alternatively, take the total time for both procedures and split it evenly between the two.
5. Laparoscopic hernia repairs are considered one procedure, regardless of the number of hernias that are repaired in that trip to the OR. In most cases there will be only one incision time documented for this procedure. If more than one time is documented, total the durations. Open [i.e., non-laparoscopic] hernia repairs are reported as one procedure for each hernia repaired via a separate incision, i.e., if two incisions are made to repair two defects, then two procedures will be reported. It is anticipated that separate incision times will be recorded for these procedures. If not, take the total time for both procedures and split it evenly between the two.
6. Following laparoscopic surgeries, if more than one of the incisions should become infected, only report as a single SSI.
7. If a patient goes to the OR more than once during the same admission and another procedure is performed through the same incision within 24 hours of the original operative incision, report only one procedure on the *Denominator for Procedure* (CDC 57.121) form combining the durations for both procedures. For example, a patient has a CBGB lasting 4 hours. He returns to the OR six hours later to correct a bleeding vessel. The surgeon reopens the initial incision, makes the repairs, and recloses in 1.5 hours. Record the operative procedure as one CBGB and the duration of operation as 5 hour 30 minutes. If the wound class has changed, report the higher wound class. If the ASA class has changed, report the higher ASA class.
8. Do not include in the procedural denominators, procedures during which the patient expired in the operating theatre.



Data Analyses: The SIR is calculated by dividing the number of observed infections by the number of expected infections. The number of expected infections, in the context of statistical prediction, is calculated using SSI probabilities estimated from multivariate logistic regression models constructed from NHSN data during a baseline time period to represent a standard population²

NOTE: The SIR will be calculated only if the number of expected HAIs (numExp) is ≥ 1 .

While the SSI SIR can be calculated for single procedure categories, and for specific surgeons, the measure also allows you to summarize your data across multiple procedure categories, while adjusting for differences in the estimated probability of infection among the patients included across the procedure categories. For example, you will be able to obtain one SSI SIR adjusting for all procedures reported. Alternatively, you can obtain one SSI SIR for all colon surgeries (COLO) only within your facility.

SSI rates per 100 operative procedures are calculated by dividing the number of SSIs by the number of specific operative procedures and multiplying the results by 100. SSI will be included in the numerator of a rate based on the date of procedure, not the date of event. Rate calculations can be performed separately for the different types of operative procedures and stratified by the basic risk index. SSI rate calculation options are available in the advanced analysis feature of the NHSN application.

- **Basic SSI Risk Index.** The index used in NHSN assigns surgical patients into categories based on the presence of three major risk factors:
 1. Operation lasting more than the duration cut point hours, where the duration cut point is the approximate 75th percentile of the duration of surgery in minutes for the operative procedure.
 2. Contaminated (Class 3) or Dirty/infected (Class 4) wound class.
 3. ASA classification of 3, 4, or 5.

The patient's SSI risk category is simply the number of these factors present at the time of the operation.

¹Klebens RM, Edwards JR, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Reports* 2007;122:160-166.

²Yi M, Edwards JR, et al. Improving risk-adjusted measures of surgical site information for the National Healthcare Safety Network. *Infect Control Hosp Epidemiol* 2011; 32(10):970-986.

³Emori TG, Gaynes RP. An overview of healthcare-associated infections, including the role of the microbiology laboratory. *Clin Microbiol Rev* 1993;6(4):428-42.

⁴Condon RE, Schulte WJ, Malangoni MA, Anderson-Teschendorf MJ. Effectiveness of a surgical wound surveillance program. *Arch Surg* 1983;118:303-7.



⁵ Society for Healthcare Epidemiology of America, Association for Professionals in Infection Control and Epidemiology, Centers for Disease Control and Prevention, Surgical Infection Society. Consensus paper on the surveillance of surgical wound infections. *Infect Control Hosp Epidemiol* 1992;13(10):599-605.

⁶ Haley RW, Culver DH, White JW, Morgan WM, Emori TG, Munn VP. The efficacy of infection surveillance and control programs in preventing healthcare-associated infections in US hospitals. *Am J Epidemiol* 1985;121:182-205.

⁷ Centers for Disease Control and Prevention. Guideline for prevention of surgical site infection, 1999. *Infect Control Hosp Epidemiol*, 1999;20(4):247-278.

⁸ Facilities Guidelines Institute. Guidelines for design and construction of health care facilities. American Society for Healthcare Engineering; Chicago IL; 2010.

This manual is for validation only



This manual is for validation only



Post-Procedure Pneumonia (PPP) Event

Introduction: Patients, who undergo thoraco-abdominal operations, are at increased risk of acquiring healthcare-associated pneumonia, even in the absence of mechanical ventilation.^{1,2,3} Based on NNIS system reports, pneumonia was the third most frequently reported healthcare-associated infection among hospitalized surgical patients (15%), and among thoracic surgery patients, 34% of the healthcare-associated infections reported were pneumonia. Furthermore, when NNIS surgical patients with healthcare-associated infections died and the death was attributed to the infection, pneumonia was the most frequently associated infection (38%). In this group, the risk of surgical patient death due to healthcare-associated pneumonia was similar whether or not a mechanical ventilator was used.⁴ Prevention of postoperative pneumonia includes ambulation and deep breathing as soon as possible after operation and, in some patients, the use of incentive spirometry.

Settings: Surveillance of surgical patients will occur in any inpatient setting where the selected NHSN operative procedure(s) are performed.

Requirements: Select at least one NHSN operative procedure and indicate selected operation on the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Collect numerator and denominator data on all selected operations for at least one month.

Definitions: Pneumonia (PNEU) is identified by using a combination of radiologic, clinical, and laboratory criteria (see definitions section under VAP event [Chapter 6]).

Post-procedure pneumonia: A pneumonia that meets the criteria after an inpatient operation takes place.

REPORTING INSTRUCTIONS:

- Report as PPP those pneumonias that are detected prior to discharge following inpatient operations.
- Do not report PPP following outpatient operations.

Numerator Data: All inpatients having any of the procedures included in the selected NHSN operative procedure category(s) are monitored for signs of PPP. The *Pneumonia (PNEU)* form (CDC 57.111) is completed for each such patient found to have a PPP. The *Instructions for Completion of Pneumonia Form* (Tables of Instructions, Tables 4 and 2a) includes brief instructions for collection and entry of each data element on the form. The *PNEU* form includes patient demographic information and information about the operative procedure, including the date and type of procedure. Additional data include the specific criteria met for identifying the PNEU, whether the PNEU was also associated with the use of a ventilator, whether the patient developed a secondary bloodstream infection, whether the patient died, the organisms isolated from cultures and the organisms' antimicrobial susceptibilities.



Denominator Data: For all patients having any of the procedures included in the NHSN operative procedure category(s) selected for surveillance during the month, complete a *Denominator for Procedure form* (CDC 57.121). The data are collected individually for each inpatient operative procedure performed during the month specified on the *Patient Safety Monthly Surveillance Plan* (CDC 57.106). The *Instructions for Completion of Denominator for Procedure* (Tables of Instructions, Table 13) includes brief instructions for collection and entry of each data element on the form.

Data Analyses: The PPP rates per 100 operative procedures are calculated by dividing the number of PPPs by the number of specific operative procedures and multiplying the results by 100. These calculations will be performed separately for the different types of operative procedures.

¹ Celis R, Torres A, Gatell JM, Almela M, Rodriguez-Roisin R, Agusti-Vidal A. Healthcare-associated pneumonia: a multivariate analysis of risk and prognosis. *Chest* 1988;93:318-24.

² Hooton TM, Haley RW, Culver DH, White JW, Morgan WM, Carroll RC. The joint association of multiple risk factors with the occurrence of healthcare-associated infection. *Am J Med* 1981;70:960-70.

³ Windsor JA, Hill GL. Risk factors for postoperative pneumonia: the importance of protein depletion. *Am Surg* 1988;208:209-14.

⁴ Horan TC, Culver DH, Gaynes RP, Jarvis WR, Edwards JR, Reid CR, and the National Healthcare-associated Infections Surveillance (NNIS) System. Healthcare-associated infections in surgical patients in the United States, January 1986-June 1992. *Infect Control Hosp Epidemiol* 1993;14:73-80.



Antimicrobial Use and Resistance (AUR) Option

Antimicrobial Use and Resistance (AUR) Option

Introduction

Rates of resistance to antimicrobial agents continue to increase at hospitals in the United States.¹ The two main reasons for this increase are patient-to-patient transmission of resistant organisms and selection of resistant organisms because of antimicrobial exposure.² Previous studies have shown that feedback of reliable reports of rates of antimicrobial use and resistance to clinicians can improve the appropriateness of antimicrobial usage.³⁻⁵

The goal of this National Healthcare Safety Network (NHSN) AUR Option is to provide a mechanism for facilities to report and analyze antimicrobial use and/or resistance as part of antimicrobial stewardship efforts at their facility.⁶ This module contains two options, one focused on antimicrobial usage and the second on antimicrobial resistance. To participate in either option, the facility must coordinate with their software provider to configure their system to enable the generation of standard formatted file(s) to be imported into NHSN. The format provided for data submission follows the HL7 Clinical Document Architecture (CDA).⁷ Manual data entry is not available for the AUR Module.

1. Antimicrobial Use (AU) Option

Objectives: The primary objective of the Antimicrobial Use option is to facilitate risk-adjusted inter- and intra-facility benchmarking of antimicrobial usage. A secondary objective is to evaluate trends of antimicrobial usage over time at the facility and national levels.

Methodology: The primary antimicrobial usage metric reported to this module is antimicrobial days per 1000 days present. An antimicrobial day (also known as day of therapy) is defined by any amount of a specific antimicrobial agent administered in a calendar day to a particular patient as documented in the electronic medication administration record (eMAR) and/or bar coding medication record (BCMA) (refer to Numerator Data Section); all antimicrobial days for a specific agent administered across a population are summed in aggregate.⁸⁻¹¹ Days present are defined as the aggregate number of patients housed to a patient-care location or facility anytime throughout a day during a calendar month (refer to Denominator Data Section). For each facility, the numerator (i.e., antimicrobial days) is aggregated by month for each patient-care location and overall for inpatient areas facility-wide (i.e., facility-wide-inpatient). Similarly, the denominator (i.e., days present) is calculated for the corresponding patient-care-location-month or facility-wide-inpatient-month. A secondary antimicrobial usage metric for facility-wide-inpatient also reported to this module is antimicrobial days per 1000 admissions. The numerator and denominators are further defined below and must adhere



to the data format prescribed by the HL7 CDA Implementation Guide developed by the CDC and HL7.⁷

Settings: NHSN encourages submission of all NHSN-defined inpatient locations, facility-wide-inpatient, and select outpatient acute-care settings (i.e., outpatient emergency department, pediatric emergency department, 24-hour observation area) at each facility (Table 1). The patient-care areas may include adult, pediatric, or neonatal units as defined by NHSN Codes (Chapter 15 CDC Locations and Descriptions). A comprehensive submission will enable a facility to optimize inter- and/or intra-facility comparisons among specific wards, combined wards, and hospital-wide data. The optional and minimal requirements for participation in the Antimicrobial Use option are listed in Table 1.

The minimal requirement for participation is submission of data for all four of the following locations (if applicable to facility): 1) all medical critical care units(s) and surgical critical care units(s) [if combined units, then report as medical/surgical critical care unit(s)]; 2) all medical ward(s) and surgical ward(s) [if combined wards, then report as medical/surgical ward(s)]; 3) at least one specialty care area; and 4) facility-wide-inpatient (both days present and admissions must be reported for this location).

Table 1. CDC Location^a: Optional and Minimal Requirements for AU Option

Inpatient Locations	Minimal Submission Requirements (if applicable for facility)
Adult Critical Care Units	<p>Requirement: For facilities with only adult critical care unit(s): submit all medical critical care unit(s) and surgical critical care units(s) [if combined units, then report as medical/surgical critical care unit(s)].</p> <p>For facilities with adult and pediatric critical care unit(s), the minimum requirement is the submission of data from all adult and pediatric critical care locations.</p>
Pediatric Critical Care Units	<p>Requirement: For facilities with only pediatric critical care unit(s): submit all medical critical care unit(s) and surgical critical care units(s) [if combined units, then report as medical/surgical critical care unit(s)].</p> <p>For facilities with adult and pediatric critical care unit(s), the minimum requirement is the submission of data from all adult and pediatric critical care locations.</p>
Neonatal Units	Optional (i.e., no minimal submission requirement)
Inpatient Specialty Care Areas	Requirement: At least one Specialty Care Area
Inpatient Adults Wards	<p>Requirement: For facilities with only adult medical and surgical ward(s), submit all medical ward(s) and surgical ward(s) [if combined wards, then report as medical/surgical ward(s)].</p> <p>For facilities with adult and pediatric medical and surgical ward(s), the</p>



Inpatient Locations	Minimal Submission Requirements (if applicable for facility)
	minimum requirement is the submission of data from all adult and pediatric medical and surgical ward locations.
Inpatient Pediatric Wards	<p>Requirement: For facilities with only pediatric medical and surgical ward(s), submit all medical ward(s) and surgical ward(s) [if combined wards, then report as medical/surgical ward(s)].</p> <p>For facilities with adult and pediatric medical and surgical ward(s), the minimum requirement is the submission of data from all adult and pediatric medical and surgical ward locations.</p>
Step Down Units	Optional (i.e., no minimal submission requirement)
Operating Rooms	Optional (i.e., no minimal submission requirement)
Long Term Care	Optional (i.e., no minimal submission requirement)
Facility-Wide	Minimal Submission Requirements (if applicable for facility)
Facility-wide-inpatient	Requirement: Facility-wide-inpatient
Outpatient Locations	Minimal Submission Requirements (if applicable for facility)
Select Acute Care Settings Outpatient Emergency Department Pediatric Emergency Department 24-Hour Observation Area	Optional (i.e., no minimal submission requirement)

^a**CDC Location:** A CDC-defined designation given to a patient-care area housing patients who have similar disease conditions or who are receiving care for similar medical or surgical specialties. Each facility location that is monitored is “mapped” to one CDC Location. 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).

Requirements:

An acceptable minimal month of data includes:

- a. Data submitted for all four of the following locations (if applicable to facility): 1) all medical critical care unit(s) and surgical critical care unit(s) [if combined units, then report as medical/surgical critical care unit(s)]; 2) all medical ward(s) and surgical ward(s) [if combined wards, then report as medical/surgical ward(s)]; 3) at least one specialty care area, and 4) facility-wide-inpatient (both days present and admissions must be reported for this location).
- b. Each month, the facility must choose to monitor antimicrobial use data on the *Patient Safety Monthly Reporting Plan* (CDC 57.106)
- c. All data fields outlined in the Table of Instructions (Appendix A) for the AU option are completed via CDA for each location.

Numerator Data (Antimicrobial Days):

Antimicrobial Days (Days of Therapy): Defined as the aggregate sum of days for which any amount of a specific antimicrobial agent was administered to individual patients as documented in the eMAR and/or BCMA.⁸⁻¹¹ Appendix B provides a list of antimicrobial agents. Aggregate antimicrobial days are reported monthly for inpatient locations, facility-wide-inpatient, and select outpatient acute-care settings (e.g., outpatient



emergency department, pediatric emergency department, 24-hour observation area) for select antimicrobial agents and stratified by route of administration (e.g., intravenous, intramuscular, digestive and respiratory). Refer to Table 2 and 3 for definitions of drug-specific antimicrobial days and stratification based on route of administration. For example, a patient to whom 1 gram vancomycin is administered intravenously twice daily for three days will be attributed three “Vancomycin Days (total)” and three “Vancomycin Days (IV)” when stratified by intravenous route of administration. Appendix C provides additional examples for the calculation of antimicrobial days. Table 4 summarizes the data elements for numerator calculation. Please note that “zero” should be recorded when no aggregate usage occurred during a given reporting period for a specific antimicrobial agent at a facility in which the agent is used, while “not applicable” should be recorded when data are not available for a specific antimicrobial agent at a facility (e.g., the agent can’t be electronically captured at that facility). A value (e.g., a specific number, “zero”, or “not applicable”) should be reported for every antimicrobial agent listed in Appendix B.

Table 2. Classification and Definitions of Route of Administrations for Antimicrobial Days

Classification: Route of Administration^a	Definition^{b,c}
Intravenous	An intravascular route that begins with a vein.
Intramuscular	A route that begins within a muscle.
Digestive Tract	A route that begins anywhere in the digestive tract extending from the mouth through rectum.
Respiratory Tract	A route that begins within the respiratory tract, including the oropharynx and nasopharynx.

^aOther routes of administration are excluded in this module (e.g., antibiotic locks, intraperitoneal, intraventricular, irrigation, topical).

^bDefinitions per SNOMED Reference Terminology

^cMapping of standardized terminology for route of administration are provided via the hai-voc spreadsheet.

Table 3. Example Stratification of Antimicrobial Days by Route of Administration

Month/ Year- Location	Antimicrobial Agent	Drug-specific Antimicrobial Days				
		Total^a	IV	IM	Digestive^b	Respiratory
Month- Year/ Location	Tobramycin	Tobramycin Days (Total)	Tobramycin Days (IV)	Tobramycin Days (IM)	Tobramycin Days (Digestive)	Tobramycin Days (Respiratory)

^aDrug-specific antimicrobial days (total) attributes one antimicrobial day for any of the specified routes of administration. For example, a patient to whom tobramycin was administered intravenously and via a respiratory route on the same day would be attributed “one Tobramycin Day (Total)”; the stratification by route of administration would be “one Tobramycin Day (IV)” and “one Tobramycin Day (Respiratory)”.

^bFor purposes of example of route stratification only (tobramycin is not FDA approved for administration via the digestive route).



Table 4. Data Elements for Antimicrobial Days

	Antimicrobial Days
Antimicrobial Agents	Defined as select antimicrobial agents and stratified by route of administration (i.e., intravenous, intramuscular, digestive and respiratory). Refer to Appendix B for a complete list of antimicrobial agents. The list of select antimicrobial agents will evolve with time as new agents become commercially available. <i>Topical antimicrobial agents are not included in this module option.</i>
Data source	Antimicrobial days are derived from administered data documented in the eMAR and/or BCMA only. Usage derived from other data sources (e.g., pharmacy orders, doses dispensed, doses billed) cannot be submitted.
Location	Antimicrobial days are aggregated for inpatient locations, facility-wide-inpatient, and select outpatient acute-care settings (i.e., outpatient emergency department, pediatric emergency department, 24-hour observation area) per NHSN location definitions.
Time Unit	Antimicrobial days for a specific antimicrobial agent and stratification by route of administration are aggregated monthly per location.

Denominator Data (Days Present and Admissions): The numerator will be analyzed against the denominator of days present and also admissions for facility-wide-inpatient only. The denominators are further defined below.

Days present: Defined as time period during which a given patient is at risk for antimicrobial exposure for a given patient location. The definition of days present differs from conventional definition of patient days used in other NHSN modules and that recommended by the SHEA/HIPAC guidance for surveillance of multidrug-resistant organisms.¹² Days present is further defined below in context of calculation for patient care location specific analyses and facility-wide-inpatient analyses. Please note that a separate calculation for days present is required for patient-care location compared to facility-wide-inpatient.

For patient-care location-specific analyses, days present is calculated as the number of patients who were present for any portion of each day of a calendar month for a patient-care location; the aggregate measure is calculated by summing up all of the days present for that location and month. The day of admission, discharge, and transfer to and from locations will be included in days present. For example, a patient admitted to the medical ward on Monday and discharged two days later on Wednesday will be attributed three days present on that medical ward. Another example, on the day a patient is transferred from a medical critical-care unit to a medical ward, the patient will be attributed one day present on the medical critical care unit as well as one day present on the medical ward. Similarly, a patient's exposure to the operating room or emergency department will be included in days present for these types of units. However, one patient can account for only one day present for a specific location per calendar day (e.g., one patient cannot contribute more than 1 day present to any one unique location on the same day, but can contribute a day present to two different locations on the same day). For example, a patient transferred from the



surgical ward to the operating room and back to the surgical ward in a calendar day contributes one day present to the surgical ward and one day present to the operating room.

For facility-wide-inpatient analyses, days present is calculated as the number of patients who were present for any portion of each day of a calendar month at the facility-wide-inpatient location; the aggregate measure is calculated by summing up all of the days present for facility-wide-inpatient for a given month. Thus, a sum of days present from location-specific analyses would be higher than days present for the facility, because transfers between wards can account for multiple location “days present” for a given patient. Therefore, the individual summing of days present for location-specific analyses to achieve facility-wide-inpatient is not permissible. The calculation must be a separate summation for facility-wide-inpatient analyses.

Admissions: Admissions are defined as the aggregate number of patients admitted to the facility (i.e., facility-wide-inpatient) starting on first day of each calendar month through the last day of the calendar month. This is the same definition for admissions utilized in the NHSN MDRO/CDI Module. In the AU option, admissions are reported only for facility-wide-inpatient.

Table 5. Location-specific and Facility-wide-inpatient Metrics

Metric Collected	Metric Definition	Comments
Patient Care Location-Specific Analyses		
Antimicrobial Days/ Days present	Drug-specific antimicrobial days per patient-care location per month/Days present per patient-care location per month	One patient can contribute only one day present per calendar day for each specific location. Summed total may be higher when compared to facility-wide measure (reflecting transfers between locations).
Facility-wide-inpatient Analyses		
Antimicrobial Days/ Days present	Drug-specific antimicrobial days for a facility per month/Days present per facility-wide-inpatient per month	One patient can contribute only one day present per calendar day for a facility. Thus, one denominator is obtained for an entire facility. The day present measure for facility-wide-inpatient may be lower when compared to sum total from location-specific comparison.
Antimicrobial Days/ Admissions	Drug-specific antimicrobial days for a facility per month/Admissions per facility-wide-inpatient per month	Only calculated for facility-wide-inpatient for AU Option.



Data Analyses:

Antimicrobial use data are expressed as incidence density rates of antimicrobial days per days present stratified by patient-care location and facility-wide-inpatient.

Antimicrobials may be grouped during analysis by route of administration, spectrum of activity, therapeutic indication, or drug classification. A secondary metric, antimicrobial days per admissions, will also be analyzed for facility-wide-inpatient.

2. Antimicrobial Resistance Option

Decisions regarding the Antimicrobial Resistance option are still under consideration, and the timeline for launching will be updated in NHSN E-News and on the NHSN AUR website.

This manual is for validation only



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Appendix A. Table of Instructions: Antimicrobial Use

Data Field	Instructions for CDA of Antimicrobial Use Data
Facility identifier	Required. Must be assigned to facility and included in the importation file prior to submission to CDC.
Month	Required. Record the 2-digit month during which the data were collected for this location.
Year	Required. Record the 4-digit year during which the data were collected for this location.
Location	Required. Record location; must be (if applicable to facility): 1) all medical critical care unit(s) and surgical critical care unit(s) [if combined units, then report as medical/surgical critical care unit(s)]; 2) all medical ward(s) and surgical ward(s) [if combined wards, then report as medical/surgical ward(s)]; 3) at least one specialty care area; and 4) facility-wide-inpatient
Numerator: Antimicrobial days per month per location	Required. Antimicrobial days are defined as the aggregate sum of the days of exposure for which a <u>specific</u> antimicrobial was administered. These are required to be extracted from electronic medication administration record (eMAR) and/or bar coding medication record (BCMA). Antimicrobials days will be collected for select antimicrobial agents (refer to Appendix B) <u>and</u> stratified by route of administration.
Denominator: Days present	Required. Days present is defined as risk for antimicrobial exposure per time unit of analysis stratified by location. For patient-care location-specific analyses, days present is calculated as the number of patients who were present for any portion of each day of a calendar month for a patient-care location. For facility-wide-inpatient analyses, days present is calculated as the number of patients who were present for any portion of each day of a calendar month at the facility-wide-inpatient location.
Admissions	Admissions are defined as the aggregate number of patients admitted to the facility (i.e., facility-wide-inpatient) starting on first day of each calendar month through the last day of the calendar month. In the AU Option, admissions are only reported for facility-wide-inpatient.



Appendix B. List of Antimicrobials¹³

Please note that mapping of standardized terminology (RXNORM) are provided via the hai-voc spreadsheet.

Antimicrobial Agent	Antimicrobial Category	Antimicrobial Class ^a	Antimicrobial subclass ^a
AMANTADINE	Anti-influenza	M2 ion channel inhibitors	
AMIKACIN	Antibacterial	Aminoglycosides	
AMOXICILLIN	Antibacterial	Penicillins	Aminopenicillin
AMOXICILLIN/ CLAVULANATE	Antibacterial	Penicillins	B-lactam/ B-lactamase inhibitor combination
AMPHOTERICIN B	Antifungal	Polyenes	
AMPHOTERICIN B LIPOSOMAL	Antifungal	Polyenes	
AMPICILLIN	Antibacterial	Penicillins	Aminopenicillin
AMPICILLIN/ SULBACTAM	Antibacterial	Penicillins	B-lactam/ B-lactamase inhibitor combination
ANIDULAFUNGIN	Antifungal	Echinocandins	
AZITHROMYCIN	Antibacterial	Macrolides	
AZTREONAM	Antibacterial	Monobactams	
CASPOFUNGIN	Antifungal	Echinocandins	
CEFACLOR	Antibacterial	Cephalosporins	Cephalosporin 2 nd generation
CEFADROXIL	Antibacterial	Cephalosporins	Cephalosporin 1 st generation
CEFAZOLIN	Antibacterial	Cephalosporins	Cephalosporin 1 st generation
CEFDINIR	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFDITOREN	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFEPIME	Antibacterial	Cephalosporins	Cephalosporin 4 th generation
CEFIXIME	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFOTAXIME	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFOTETAN	Antibacterial	Cephalosporins	Cephameycin
CEFOXITIN	Antibacterial	Cephalosporins	Cephameycin
CEFODOXIME	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFPROZIL	Antibacterial	Cephalosporins	Cephalosporin 2 nd generation
CEFTAROLINE	Antibacterial	Cephalosporins	Cephalosporin with anti-MRSA activity
CEFTAZIDIME	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFTIBUTEN	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation



CEFTIZOXIME	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFTRIAZONE	Antibacterial	Cephalosporins	Cephalosporin 3 rd generation
CEFUROXIME	Antibacterial	Cephalosporins	Cephalosporin 2 nd generation
CEPHALEXIN	Antibacterial	Cephalosporins	Cephalosporin 1 st generation
CHLORAMPHENICOL	Antibacterial	Phenicol	
CIPROFLOXACIN	Antibacterial	Fluoroquinolones	
CLARITHROMYCIN	Antibacterial	Macrolides	
CLINDAMYCIN	Antibacterial	Lincosamides	
COLISTIMETHATE	Antibacterial	Polymyxins	
DAPTOMYCIN	Antibacterial	Lipopeptides	
DICLOXACILLIN	Antibacterial	Penicillins	Penicillinase-stable penicillins
DORIPENEM	Antibacterial	Carbapenems	
DOXYCYCLINE	Antibacterial	Tetracyclines	
ERTAPENEM	Antibacterial	Carbapenems	
ERYTHROMYCIN	Antibacterial	Macrolides	
ERYTHROMYCIN/ SULFISOXAZOLE	Antibacterial	Folate pathway inhibitors/ Sulfonamides	
FIDAXOMICIN	Antibacterial	Macrocyclic	
FLUCONAZOLE	Antifungal	Azoles	
FOSFOMYCIN	Antibacterial	Fosfomycins	
GEMIFLOXACIN	Antibacterial	Fluoroquinolones	
GENTAMICIN	Antibacterial	Aminoglycosides	
IMIPENEM/ CILASTATIN	Antibacterial	Carbapenems	
ITRACONAZOLE	Antifungal	Azoles	
LEVOFLOXACIN	Antibacterial	Fluoroquinolones	
LINEZOLID	Antibacterial	Oxazolidinones	
MEROPENEM	Antibacterial	Carbapenems	
METRONIDAZOLE	Antibacterial	Nitroimidazoles	
MICAFUNGIN	Antifungal	Echinocandins	
MINOCYCLINE	Antibacterial	Tetracyclines	
MOXIFLOXACIN	Antibacterial	Fluoroquinolones	
NAFCILLIN	Antibacterial	Penicillins	Penicillinase-stable penicillins
NITROFURANTOIN	Antibacterial	Nitrofurans	
OSELTAMIVIR	Anti-influenza	Neuraminidase	



		inhibitors	
OXACILLIN	Antibacterial	Penicillins	Penicillinase-stable penicillins
PENICILLIN G	Antibacterial	Penicillins	Penicillin
PENICILLIN V	Antibacterial	Penicillins	Penicillin
PIPERACILLIN	Antibacterial	Penicillins	Ureidopenicillin
PIPERACILLIN/ TAZOBACTAM	Antibacterial	Penicillins	B-lactam/ B-lactamase inhibitor combination
POLYMYXIN B	Antibacterial	Polymyxins	
POSACONAZOLE	Antifungal	Azoles	
QUINUPRISTIN/ DALFOPRISTIN	Antibacterial	Streptogramins	
RIFAMPIN	Antibacterial	Rifampin	
RIMANTADINE	Anti-influenza	M2 ion channel inhibitors	
SULFAMETHOXAZOLE/ TRIMETHOPRIM	Antibacterial	Folate pathway inhibitors	
SULFISOXAZOLE	Antibacterial	Folate pathway inhibitors	
TELAVANCIN	Antibacterial	Lipo-glycopeptides	
TELITHROMYCIN	Antibacterial	Ketolides	
TETRACYCLINE	Antibacterial	Tetracyclines	
TICARCILLIN/ CLAVULANATE	Antibacterial	Penicillins	B-lactam/ B-lactamase inhibitor combination
TIGECYCLINE	Antibacterial	Glycylcyclines	
TINIDAZOLE	Antibacterial	Nitroimidazoles	
TOBRAMYCIN	Antibacterial	Aminoglycosides	
VANCOMYCIN	Antibacterial	Glycopeptides	
VORICONAZOLE	Antifungal	Azoles	
ZANAMIVIR	Anti-influenza	Neuraminidase inhibitors	

^a Adapted from CLSI January 2011



Appendix C. Example Calculations of Antimicrobial Days

Example 1. Example eMAR and Calculation of Antimicrobial Days

This example illustrates the calculation of antimicrobial days from a patient receiving meropenem 1gram intravenously every 8 hours and amikacin 1000mg intravenously every 24 hours in the medical ward. Table 1 provides an example of administered doses for this patient documented in eMAR. Table 2 illustrates the calculation of meropenem and amikacin days by drug-specific (total) and stratified by route of administration based upon the administered doses of meropenem and amikacin documented in eMAR. Table 3 illustrates the contribution of this patient’s antimicrobial days to the aggregate monthly report per patient-care location.

Table 1. Example eMAR for Patient housed in Medical Ward

Medical Ward	Monday December 28	Tuesday December 29	Wednesday December 30
Meropenem 1gram intravenously every 8 hours	Given: 2300	Given: 0700 Given: 1500 Given: 2300	Given: 0700
Amikacin 1000mg intravenously every 24 hours	Given: 2300	Given: 2300	

Table 2. Example of calculation of antimicrobial days

Calculation	Monday December 28	Tuesday December 29	Wednesday December 30
Drug-specific Antimicrobial Days (total)	Meropenem Days = 1 Amikacin Days = 1	Meropenem Days = 1 Amikacin Days = 1	Meropenem Days = 1 Amikacin Days = 0
Drug-specific Antimicrobial Days by Stratification of Route of Administration	Meropenem Days (IV) = 1 Amikacin Days (IV) = 1	Meropenem Days (IV) = 1 Amikacin Days (IV) = 1	Meropenem Days (IV) = 1 Amikacin Days (IV) = 0

Table 3. Example of antimicrobial days per month per patient-care location

Month/ Year- Location	Antimicrobial Agent	Drug-specific Antimicrobial Days				
		Total	IV	IM	Digestive	Respiratory
December Medical Ward	Meropenem	3	3	0	0	0
December Medical Ward	Amikacin	2	2	0	0	0



Example 2. Differences in Calculation for Patient-Care Location and Facility-Wide-Inpatient for a Patient Transferred Between Patient-Care Locations

This example illustrates the calculation of antimicrobial days from a patient receiving vancomycin 1 gram every 8 hours that was transferred from the MICU to a medical ward on December 1. Table 1 provides an example of doses documented in eMAR administered to this patient in the MICU and medical ward. Table 2 illustrates the calculation of vancomycin days by drug-specific (total) and stratified by route of administration based upon the administered doses of vancomycin documented in eMAR. Table 3 illustrates the contribution of this patient's vancomycin days to the aggregate monthly report per patient-care location and facility-wide-inpatient.

Table 1. Example eMAR for Patient transferred from MICU to Medical Ward on December 1.

	Tuesday December 1 Location: MICU	Tuesday December 1 Location: Medical Ward
Vancomycin 1gram intravenously every 8 hours	Given: 0700	Given: 1500 Given: 2300

Table 2. Example of calculation of antimicrobial days for December 1

Calculation	Tuesday December 1 Location: MICU	Tuesday December 1 Location: Medical Ward
Drug-specific Antimicrobial Days (total)	Vancomycin Days = 1	Vancomycin Days = 1
Drug-specific Antimicrobial Days by Stratification of Route of Administration	Vancomycin Days (IV) = 1	Vancomycin Days (IV) = 1

Table 3. Example of antimicrobial days per month per patient-care location and facility-wide inpatient contributed from December 1

Month/ Year- Location	Antimicrobial Agent	Drug-specific Antimicrobial Days				
		Total	IV	IM	Digestive	Respiratory
December MICU	Vancomycin	1	1	0	0	0
December Medical Ward	Vancomycin	1	1	0	0	0
December Facility- wide- inpatient	Vancomycin	1	1	0	0	0



Example 3. Calculation of Antimicrobial Days for a Patient-Care Location when a Patient Admission extends over Two Different Months

This example illustrates the calculation of antimicrobial days from a patient receiving ceftriaxone 1gram intravenously every 24 hours for two days in the surgical ward (but spanning different months). Table 1 provides an example of administered doses for this patient documented in eMAR. Table 2 illustrates the calculation of ceftriaxone days by drug-specific (total) and stratification of route of administration based upon the administered doses of ceftriaxone documented in eMAR. Table 3 illustrates the contribution of this patient’s ceftriaxone days to the aggregate monthly report per patient-care location.

Table 1. Example eMAR for Patient housed in Surgical Ward

	Thursday December 31 Location: Surgical Ward	Friday January 1 Location: Surgical Ward
Ceftriaxone gram intravenously every 24 hours	Given: 0800	Given: 0800

Table 2. Example of calculation of antimicrobial days

Calculation	Thursday December 31 Location: Surgical Ward	Friday January 1 Location: Surgical Ward
Drug-specific Antimicrobial Days (total)	Ceftriaxone Day = 1	Ceftriaxone Day = 1
Drug-specific Antimicrobial Days by Stratification of Route of Administration	Ceftriaxone Day (IV) = 1	Ceftriaxone Day (IV) = 1

Table 3. Example of antimicrobial days per month per patient-care location

Month/ Year- Location	Antimicrobial Agent	Drug-specific Antimicrobial Days				
		Total	IV	IM	Digestive	Respiratory
December/ Surgical Ward	Ceftriaxone	1	1	0	0	0
January/ Surgical Ward	Ceftriaxone	1	1	0	0	0



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±Multidrug-Resistant Organism & *Clostridium difficile* Infection (MDRO/CDI) Module

Background: Methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* spp. (VRE) and certain gram-negative bacilli have increased in prevalence in U.S. hospitals over the last three decades, and have important implications for patient safety. A primary reason for concern about these multidrug-resistant organisms (MDROs) is that options for treating patients with these infections are often extremely limited, and MDRO infections are associated with increased lengths of stay, costs, and mortality. Many of these traits have also been observed for *Clostridium difficile* infection (CDI). The Healthcare Infection Control Practices Advisory Committee (HICPAC) approved guidelines for the control of MDROs.¹ These are available at (<http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf>). The MDRO and CDI module of the NHSN can provide a tool to assist facilities in meeting some of the criteria outlined in the guidelines. In addition, many of the metrics used in this module are consistent with “Recommendations for Metrics for Multidrug-Resistant Organisms in Healthcare Settings: SHEA/HICPAC Position Paper.”²

Clostridium difficile is responsible for a spectrum of *C. difficile* infections (CDI) [originally referred to as *C. difficile*-associated disease or CDI], including uncomplicated diarrhea, pseudomembranous colitis, and toxic megacolon which can, in some instances, lead to sepsis and even death. Current CDC definitions for healthcare-associated infections (HAIs), while adequate for the site of infection, do not take into account the special characteristics of disease caused by *C. difficile*. Although CDI represents a subset of gastroenteritis and gastrointestinal tract infections, specific standard definitions for CDI³ should be incorporated to obtain a more complete understanding of how *C. difficile* is being transmitted in a healthcare facility.

As outlined in the HICPAC guideline¹, these MDRO and *C. difficile* pathogens may require specialized monitoring to evaluate if intensified infection control efforts are required to reduce the occurrence of these organisms and related infections. The goal of this module is to provide a mechanism for facilities to report and analyze these data that will inform infection control staff of the impact of targeted prevention efforts. This module contains two options, one focused on MDROs and the second on CDI. Reporting options are summarized in Table 1, below.

Table 1. Required and Optional Reporting Choices for MDRO and CDI Module

Reporting Choices	MRSA or MRSA/MSSA	VRE	<i>Klebsiella</i> spp. (CephR or CRE), <i>E. coli</i> (CRE), <i>Acinetobacter</i> spp. (MDR)	<i>C. difficile</i>
Required	Method	Method	Method	Method
Infection Surveillance (*Location Specific for ≥ 3 months) Choose ≥ 1 organism	A, B	A, B	A, B	±A, B
OR				
<u>Proxy Infection Measures</u>	A, B, C, D	A, B, C, D	B, C, D	±A, B, C



[§] Laboratory-Identified (LabID) Event (*Location Specific for ≥ 3 consecutive months) Choose ≥ 1 organism				
Optional	Method	Method	Method	Method
<u>Prevention Process Measures Options:</u> Hand Hygiene Adherence Gown and Gloves Use Adherence Active Surveillance Testing (AST) Adherence	B	B	B	B
<u>AST Outcome Measures</u> Incident and Prevalent Cases using AST	B	B	N/A	N/A

*Location: Patient care area selected for monitoring and reported in Monthly Reporting Plan.

N/A – not available or contraindicated

[‡]No surveillance for CDI will be performed in Neonatal Intensive Care Units (NICU), Well Baby Nurseries, or Well Baby Clinics. And, if conducting facility-wide monitoring (Method C) the denominator counts (admissions, patient-days, encounters) for these locations must be removed.

[§] LabID Events can be reported Overall facility-wide for all inpatient areas, Overall facility-wide for all outpatient areas, or by location for full facility or select location coverage.

Method (minimum requirement is 3 months for Infection Surveillance or 3 consecutive months for LabID Event reporting using one of the methods below):

A – Facility-wide by location. Requires the most effort but provides the most detail for local and national statistical data. Report for each location separately and cover all locations in a facility.

B – Selected locations within the facility (1 or more). Report separately from a few specific locations within a facility ideal for use during targeted prevention programs.

C – Overall facility-wide. Report only one denominator for the entire facility and individual LabID events from each patient location. Ideal for CDI or MDRO infrequently encountered, or smaller hospitals. Options include overall Facility-wide Inpatient (FacWideIN) to cover all inpatient locations or Overall Facility-wide Outpatient (FacWideOUT) to cover all outpatient locations.



D – Overall facility-wide: Blood Specimens Only. Available for MDROs only (no CDI). Targets the most invasive events. Options include overall Facility-wide Inpatient (FacWideIN) to cover all inpatient locations or Overall Facility-wide Outpatient (FacWideOUT) to cover all outpatient locations.

I. MDRO Option

Methodology: Facilities may choose to monitor one or more of the following MDROs: MRSA, MRSA and MSSA, VRE, CephR- *Klebsiella* spp., CRE-*Klebsiella* spp., CRE-*E. coli*, and multidrug-resistant *Acinetobacter* spp. (See definitions in Section A, Option 1). For *S. aureus*, both the resistant (MRSA) and the susceptible (MSSA) phenotypes can be tracked to provide concurrent measures of the susceptible pathogens as a comparison to those of the resistant pathogens in a setting of active prevention efforts targeted at the resistant pathogen.

Participants must choose 1 or both of the 2 required reporting options described below and then may also choose to participate in either or both of the 2 additional optional monitoring methods described below (see Table 1):

Required Reporting Options:

- MDRO infection surveillance, i.e., for each patient care area selected, surveillance for all NHSN-defined healthcare-associated infections caused by at least one MDRO.
AND/OR
- LabID Event reporting of proxy infection measures of MDRO healthcare acquisition, exposure burden, and infection burden by using primarily laboratory data. Laboratory testing results can be used without clinical evaluation of the patient, allowing for a much less labor-intensive means to track MDROs. These can be monitored facility-wide for inpatient areas – FacWideIN or facility-wide for outpatient areas – FacWideOUT or for specific locations (Method A or B with unique denominator data), allowing for both location-specific and facility-wide measures. If either/both FacWideIN or FacWideOUT methods are utilized, facilities may choose Method C-all specimens or Method D-blood specimens only.

Additional Optional Monitoring Methods:

- Prevention process measures that allow facilities to systematically collect data on hand hygiene and gown and gloves use adherence, and for those conducting active surveillance testing (AST), adherence to obtaining AST.
- AST outcome measures that can be reported if AST is performed, providing incidence and prevalence rates for selected MDROs.

The data collections in the MDRO Option will enable participating facilities and CDC to calculate several measures, depending on which reporting methods the facility chooses to follow (see Table 2 at the end of this chapter). NHSN forms should be used to collect all required data, using the definitions of each data field as outlined in this protocol and in the “Instructions for Completion of MDRO/CDI Forms”. When denominator data are available from electronic databases, these sources may be used as long as the counts are not substantially different (+ or – 5%) from manually collected counts, after validating for at least 3 months.

Active, patient-based, prospective surveillance of the chosen MDRO infections by a trained infection preventionist (IP) is required for MDRO infection surveillance. This means that the IP shall seek to confirm



and classify infections caused by the MDRO(s) chosen for monitoring during a patient's stay in at least one patient care location during the surveillance period. Some process measures require direct observation as described in Section IB. Personnel other than the IP may be trained to perform these observations and collect the required data elements.

A. Required Reporting

Option 1. MDRO Infection Surveillance – (MRSA, MRSA/MSSA, VRE, CephR-*Klebsiella* spp., CRE-*Klebsiella* spp., CRE-*E. coli* spp., and MDR-*Acinetobacter* spp.).

Settings: Infection Surveillance can occur in any inpatient location where such infections may be identified and where denominator data can be collected, which may include critical/intensive care units (ICU), specialty care areas (SCA), neonatal units, stepdown units, wards, and long term care units.

Requirements: Surveillance for all types of NHSN-defined healthcare-associated infections (HAIs) of the MDRO selected for monitoring in at least one location in the healthcare facility for at least 3 months in a calendar year as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106).

Definitions: MDROs included in this module are defined below. Refer to Chapter 17 for infection site criteria. Refer to [Key Terms](#) for assistance with variable definitions.

MRSA: Includes *S. aureus* cultured from any specimen that tests oxacillin-resistant, ceftazidime-resistant, or methicillin-resistant by standard susceptibility testing methods, or by a laboratory test that is FDA-approved for MRSA detection from isolated colonies; these methods may also include a positive result by any FDA-approved test for MRSA detection from that source.

MSSA: *S. aureus* cultured from any specimen testing intermediate or susceptible to oxacillin, ceftazidime, or methicillin by standard susceptibility testing methods, or by a negative result from a test that is FDA-approved for MRSA detection from isolated colonies; these methods may also include a positive result from any FDA-approved test for MSSA detection from that source.

VRE: Any *Enterococcus* spp. (regardless of whether identified to the species level), that is resistant to vancomycin, by standard susceptibility testing methods or by results from any FDA-approved test for VRE detection from that source.

CephR-*Klebsiella*: Any *Klebsiella* spp. testing non-susceptible (i.e., resistant or intermediate) to ceftazidime, ceftazidime/avibactam, ceftazidime/meropenem, ceftazidime/meropenem/ceftiofur, ceftazidime/meropenem/ceftiofur/ceftiofur, ceftazidime/meropenem/ceftiofur/ceftiofur/ceftiofur, or ceftiofur.

CRE-*E. coli*: Any *E. coli* testing non-susceptible (i.e., resistant or intermediate) to imipenem, meropenem, or doripenem, by standard susceptibility testing methods or by a positive result by a FDA-approved test for carbapenemase detection from that source.



CRE-Klebsiella: Any *Klebsiella* spp. testing non-susceptible (i.e., resistant or intermediate) to imipenem, meropenem, or doripenem, by standard susceptibility testing methods or by a positive result for any method FDA-approved for carbapenemase detection.

MDR-Acinetobacter: Any *Acinetobacter* spp. testing non-susceptible (i.e., resistant or intermediate) to at least one agent in at least 3 antimicrobial classes of the following 6 antimicrobial classes:

β-lactam/β-lactam β-lactamase inhibitor combination	Aminoglycosides	Carbapenems	Fluoroquinolones
Piperacillin Piperacillin/tazobactam	Amikacin Gentamicin Tobramycin	Imipenem Meropenem Doripenem	Ciprofloxacin Levofloxacin
Cephalosporins	Sulbactam		
Cefepime Ceftazidime	Ampicillin/sulbactam		

Location of Attribution and Transfer Rule applies – See [Key Terms](#).

Reporting Instructions: If participating in MDRO/CDI Infection Surveillance and/or LabID Event Reporting, along with the reporting of HAIs through the Device-Associated and/or Procedure-Associated Modules, see *Appendix 1: Guidance for Handling MDRO/CDI Module Infection Surveillance and LabID Event Reporting When Also Following Other NHSN Modules*, for instructions on unique reporting scenarios.

Numerator Data: Number of healthcare-associated infections (HAIs), by MDRO type. Infections are reported on the appropriate NHSN forms: *Primary Bloodstream Infection, Pneumonia, Urinary Tract Infection, Surgical Site Infection, or MDRO or CDI Infection Event (CDC 57.108, 57.111, 57.114, 57.120, and 57.126, respectively.)* (See *Tables of Instructions, Tables 2, 2a, 4, 5, 12, and 19, respectively, for completion instructions.*)

Denominator Data: Number of patient days and admissions. Patient days and admissions are reported using the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127). (See *Tables of Instructions, Table 21, for completion instructions.*)

Data Analysis: Data are stratified by time (e.g., month, quarter, etc.) and patient care location.

$MDRO\ Infection\ Incidence\ Rate = \text{Number of HAIs by MDRO type} / \text{Number of patient days} \times 1000$

Option 2. Laboratory-Identified (LabID) Event

Introduction: To calculate proxy measures of MDRO infections, exposures, and healthcare acquisition facilities may choose to monitor laboratory-identified MDRO events. This method allows the facility to rely



almost exclusively on easily obtained data from the clinical microbiology laboratory. However, some data elements such as date admitted to the patient care location and facility may require other data sources. Please be aware that the LabID Event reporting is ONLY for collecting and tracking positive cultures that are taken for "clinical" purposes (i.e., for diagnosis and treatment), which means that NO Active Surveillance Culture/Testing (ASC/AST) results are to be included in this reporting of individual results. Do NOT enter surveillance nasal swabs or other surveillance cultures as reports of LabID Events. AST tracking should be recorded under Process & Outcome Measures.

Laboratory and admission data elements can be used to calculate a variety of distinct proxy measures including: admission prevalence rate and overall patient prevalence rate based on clinical testing (measures of exposure burden), MDRO bloodstream infection incidence rate (measure of infection burden and healthcare acquisition), and overall MDRO infection/colonization incidence rate (measure of healthcare acquisition). MDRO positive laboratory results can be reported for one or more organisms. For *S. aureus*, both the resistant (MRSA) and the susceptible (MSSA) phenotypes can be tracked to provide concurrent measures of the susceptible pathogens as a comparison to those of the resistant pathogens in a setting of active prevention efforts targeted at the resistant pathogen.

Settings: MDRO LabID Event reporting can occur in any location: inpatient or outpatient.

Requirements: Facilities choose at least 1 of 4 reporting methods: (A) Facility-wide by location: report location-specific data for the entire facility, requiring separate denominator submissions for each location; (B) Selected locations: report location-specific data for only selected locations; and (C or D) Overall facility-wide (Options include Overall Facility-wide Inpatient for all inpatient locations, and/or Overall Facility-wide Outpatient for all outpatient locations.) report only one denominator for the entire facility and either all specimens (Method C) or blood specimens only (Method D) (see protocol Table 1). Facilities must indicate each reporting choice chosen for the calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Surveillance for positive laboratory results must be reported for 3 consecutive months to provide meaningful measures.

For each MDRO being monitored, all MDRO test results are evaluated using the algorithm in Figure 1 to determine reportable LabID events for each calendar month, for each facility location as determined by the reporting method chosen. All first MDRO isolates (chronologically) per patient, per month, per location are reported as a LabID event regardless of specimen source (EXCLUDES tests related to active surveillance testing); if a duplicate MDRO isolate is from blood, it is reported as a LabID event only if it represents a unique blood source (i.e., no prior isolation of the MDRO in blood from the same patient and location in ≤ 2 weeks, even across calendar months) (Figure 1). As a general rule, at a maximum, there should be no more than 2 blood isolates reported, (which would be very rare), and 1 first MDRO isolate (that is a specimen other than blood) reported on any patient during a calendar month for each location chosen for reporting. If a blood isolate is entered as the first specimen of the month, then no non-blood specimens can be entered that month for that patient and location. Report a single LabID Event per form.



Definitions:

MDRO Isolate: Any specimen obtained for clinical decision making testing positive for a MDRO (as defined above). (EXCLUDES tests related to active surveillance testing)

Duplicate MDRO Isolate: Any MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source except unique blood source (Figure 1).

Laboratory-Identified (LabID) Event: All non-duplicate MDRO isolates from any specimen source and unique blood source MDRO isolates, including specimens collected during an Emergency Department or other outpatient clinic visit, if collected the same day as patient admission (EXCLUDES tests related to active surveillance testing). (See Algorithm Figure 1). Even if reporting at the FacWide level, all reporting must follow rules by location for reporting.

Unique Blood Source: In a patient who already has a first Lab ID event for this organism, location and month, a MDRO isolate from blood in a patient with no prior positive blood culture for the same MDRO and location in ≤ 2 weeks, even across calendar months (Figure 1). There should be a full 14 days with no positive blood culture result from the laboratory for the patient, MDRO, and location before another Blood LabID Event is entered into NHSN for the patient, MDRO, and location.

Reporting Instructions: If participating in MDRO/CDI Infection Surveillance and/or LabID Event Reporting, along with the reporting of HAIs through the Device-Associated and/or Procedure-Associated Modules, see *Appendix 1: Guidance for Handling MDRO/CDI Module Infection Surveillance and LabID Event Reporting When Also Following Other NHSN Modules*, for instructions on unique reporting scenarios.

Numerator Data: Data will be reported using the *Laboratory-identified MDRO or CDI Event* form (CDC 57.128). (See Tables of Instructions, Table 20, for completion instructions.)

Denominator Data: Patient days, admissions, (for inpatient locations) and encounters (for ER and outpatient locations) are reported using the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127). (See Tables of Instructions, Table 21, for completion instructions.) When determining a patient's admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an "observation" patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location. For further information on counting patient days and admissions, go to http://www.cdc.gov/nhsn/PDFs/PatientDay_SumData_Guide.pdf for Summary Data Collection: Observation vs. Inpatients.

Data Analysis: Based on data provided on the LabID Event form, each event can be categorized by NHSN to populate different measures. Of note, NHSN will categorize LabID Events as healthcare facility-onset vs. community-onset to ensure that all healthcare facility-onset cases have been hospitalized at least a full 48



hours before specimen collection. Considering: 1) variable times of day that admissions occur and 2) the absence of clinical data to confirm if cultures represent infection incubating at the time of admission, this is operationalized by classifying positive cultures obtained on day 1 (admission date), day 2, and day 3 of admission as community-onset (CO) LabID Events and positive cultures obtained on or after day 4 as healthcare facility-onset (HO) LabID Events.

The following categorizations and prevalence and incidence calculations are built into the analysis capabilities of NHSN, and are based on timing of admission to one facility and/or location and specimen collection, and location where specimen was collected. Descriptions are provided to explain how the categories and metrics are defined in NHSN.

Categorizing MDRO LabID Events – Based on Date Admitted to Facility and Date Specimen Collected:

Community-Onset (CO): LabID Event specimen collected as an outpatient or an inpatient ≤ 3 days after admission to the facility (i.e., days 1, 2, or 3 of admission).

Healthcare Facility-Onset (HO): LabID Event specimen collected > 3 days after admission to the facility (i.e., on or after day 4).

Proxy Measures for Exposure Burden of MDROs – All specimens:

Inpatient Reporting:

Admission Prevalence Rate = Number of 1st LabID Events per patient per month identified ≤ 3 days after admission to the location (if monitoring by inpatient location), or the facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

Location Percent Admission Prevalence that is Community-Onset = Number of Admission Prevalent LabID Events to a location that are CO / Total number Admission Prevalent LabID Events x 100

Location Percent Admission Prevalence that is Healthcare Facility-Onset = Number of Admission Prevalent LabID Events to a location that are HO / Total number of Admission Prevalent LabID Events x 100

Overall Patient Prevalence Rate = Number of 1st LabID Events per patient per month regardless of time spent in location (i.e., prevalent + incident, if monitoring by inpatient location), or facility (i.e., CO + HO, if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

Outpatient Reporting:

Outpatient Prevalence Rate = Number of 1st LabID Events per patient per month for the location (if monitoring by outpatient location), or the facility (if monitoring by overall facility-wide outpatient = FacWideOUT) / Number of patient encounters for the location or facility x 100

Proxy Measures for MDRO Bloodstream Infection:



(Calculated when monitoring either All specimens or Blood specimens only.) Remember, the Blood specimens only option can only be used at the FacWideIN and FacWideOUT levels.

Inpatient Reporting:

MDRO Bloodstream Infection Admission Prevalence Rate = Number of all unique blood source LabID Events per patient per month identified ≤ 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

MDRO Bloodstream Infection Incidence or Incidence Density Rate = Number of all unique blood source LabID Events per patient per month identified > 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100 or Number of patient days for the location or facility x 1,000

MDRO Bloodstream Infection Overall Patient Prevalence Rate = Number of 1st Blood LabID Events per patient per month regardless of time spent in location (i.e., prevalent + incident, if monitoring by inpatient location), or facility (i.e., CO + HO, if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

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Outpatient Reporting:

MDRO Bloodstream Infection Outpatient Prevalence Rate = Number of all unique blood source LabID Events per patient per month for the location (if monitoring by outpatient location), or the facility (if monitoring by overall facility-wide outpatient=FacWideOUT) / Number of patient encounters for the location or facility x 100

Proxy Measures for MDRO Healthcare Acquisition:

Overall MDRO Infection/Colonization Incidence Rate = Number of 1st LabID Events per patient per month among those with no documented prior evidence of previous infection or colonization with this specific organism type from a previously reported LabID Event, and identified > 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

Overall MDRO Infection/Colonization Incidence Density Rate = Number of 1st LabID Events per patient per month among those with no documented prior evidence of previous infection or colonization with this specific organism type from a previously reported LabID Event, and identified > 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient days for the location or facility x 1,000

B. Optional Reporting

1. Prevention Process Measures Surveillance

a. Monitoring Adherence to Hand Hygiene

Introduction: This option will allow facilities to monitor adherence to hand hygiene after a healthcare worker (HCW) has contact with a patient or inanimate objects in the immediate vicinity of the patient. Research studies have reported data suggesting that improved after-contact hand hygiene is associated with reduced MDRO transmission. While there are multiple opportunities for hand hygiene during patient care, for the purpose of this option, only hand hygiene after contact with a patient or inanimate objects in the immediate vicinity of the patient will be observed and reported. (<http://www.cdc.gov/handhygiene/>)

Settings: Surveillance will occur in any location: inpatient or outpatient.

Requirements: Surveillance for adherence to hand hygiene in at least one location in the healthcare institution for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Ideally, this should be done in patient care locations also selected for Infection Surveillance or LabID Event reporting.

In participating patient care locations, perform at least 30 different unannounced observations after contact with patients for as many individual HCWs as possible. For example, try to observe all types of HCWs performing a variety of patient care tasks during the course of the month, not only nurses, or not only during catheter or wound care. No personal identifiers will be collected or reported.



Definitions: Antiseptic handwash: Washing hands with water and soap or other detergents containing an antiseptic agent.

Antiseptic hand rub: Applying an antiseptic hand-rub product to all surfaces of the hands to reduce the number of microorganisms present.

Hand hygiene: A general term that applies to either: handwashing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis.

Handwashing: Washing hands with plain (i.e., non-antimicrobial) soap and water.

Numerator: Hand Hygiene Performed = Total number of observed contacts during which a HCW touched either the patient or inanimate objects in the immediate vicinity of the patient and appropriate hand hygiene was performed.

Denominator: Hand Hygiene Indicated = Total number of observed contacts during which a HCW touched either the patient or inanimate objects in the immediate vicinity of the patient and therefore, appropriate hand hygiene was indicated.

Hand hygiene process measure data are reported using the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127). (See Tables of Instructions, Table 21, for completion instructions.)

Data Analysis: Data are stratified by time (e.g., month, quarter, etc.) and patient care location.

Hand Hygiene Percent Adherence = Number of contacts for which hand hygiene was performed / Number of contacts for which hand hygiene was indicated X 100

b. Monitoring Adherence to Gown and Gloves Use as Part of Contact Precautions

Introduction: This option will allow facilities to monitor adherence to gown and gloves use when a HCW has contact with a patient or inanimate objects in the immediate vicinity of the patient, when that patient is on Transmission-based Contact Precautions. While numerous aspects of adherence to Contact Precautions could be monitored, this surveillance option is only focused on the use of gown and gloves.

(http://www.cdc.gov/ncidod/dhqp/gl_isolation_contact.html)

Settings: Surveillance can occur in any of 4 types of inpatient locations: (1) intensive care units (ICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, inpatient dialysis units, solid organ transplant units, long term acute care areas), (3) neonatal intensive care units (NICU), and (4) any other inpatient care location in the institution (e.g., surgical wards).

Requirements: Surveillance for adherence to gown and gloves use in at least one location in the healthcare institution for at least 1 calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Ideally, this should be done in patient care locations also selected for Infection Surveillance or LabID Event reporting.



Among patients on Transmission-based Contact Precautions in participating patient care locations, perform at least 30 unannounced observations. A total of thirty different contacts must be observed monthly among HCWs of varied occupation types. For example, try to observe all types of HCWs performing a variety of patient care tasks during the course of the month, not only nurses, or not only during catheter or wound care. Both gown and gloves must be donned prior to contact for compliance. No personal identifiers will be collected or reported.

Definitions:

Gown and gloves use: In the context of Transmission-based Contact Precautions, the donning of both a gown and gloves prior to contact with a patient or inanimate objects in the immediate vicinity of the patient. Both a gown and gloves must be donned prior to contact for compliance.

Numerator: Gown and Gloves Used = Total number of observed contacts between a HCW and a patient or inanimate objects in the immediate vicinity of the patient for which gown and gloves had been donned prior to the contact.

Denominator: Gown and Gloves Indicated = Total number of observed contacts between a HCW and a patient on Transmission-based Contact Precautions or inanimate objects in the immediate vicinity of the patient and therefore, gown and gloves were indicated.

Gown and gloves use process measure data are reported using the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127). (See Tables of Instructions, Table 21, for completion instructions.)

Data Analysis: Data are stratified by time (e.g., month, quarter, etc.) and patient care location.

Gown and Glove Use Percent Adherence = Number of contacts for which gown and gloves were used / Number of contacts for which gown and gloves were indicated X 100

c. Monitoring Adherence to Active Surveillance Testing

Introduction: This option will allow facilities to monitor adherence to active surveillance testing (AST) of MRSA and/or VRE, using culturing or other methods.

Settings: Surveillance will occur in any of 4 types of inpatient locations: (1) intensive care units (ICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, inpatient dialysis units, solid organ transplant units, long term acute care areas), (3) neonatal intensive care units (NICU), and (4) any other inpatient care location in the institution (e.g., surgical wards).

Requirements: Surveillance of AST adherence in at least one location in the healthcare facility for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). A facility may choose to report AST for MRSA and/or VRE in one or multiple patient care locations, as the facility deems appropriate. Ideally, this should be done in patient care locations also selected for Infection Surveillance or LabID Event reporting. To improve standardization of applying timing rules relating to when AST specimens are obtained, classify admission specimens as those obtained on day 1 (admission date), day 2, or



day 3 (i.e., ≤ 3 days). Classify discharge/transfer AST specimens as those collected on or after day 4 (i.e., > 3 days).

Definitions:

AST Eligible Patients: Choose one of two methods for identifying patients that are eligible for AST:

All = All patients in the selected patient care area regardless of history of MRSA or VRE infection or colonization.

OR

NHx = All patients in the selected patient care area who have NO documented positive MRSA or VRE infection or colonization during the previous 12 months (as ascertained by either a facility's laboratory records or information provided by referring facilities); and no evidence of MRSA or VRE during stay in the patient care location (i.e., they are not in Contact Precautions).

Timing of AST: Choose one of two methods for reporting the timing of AST:

Adm = Specimens for AST obtained ≤ 3 days after admission,

OR

Both = Specimens for AST obtained ≤ 3 days after admission and, for patients' stays of > 3 days, at the time of discharge/transfer. Discharge/transfer AST should include all discharges (including discharges from the facility or to other wards or deaths) and can include the most recent weekly AST if performed > 3 days after admission to the patient care location. Discharge/transfer AST should not be performed on patients who tested positive on AST admission.

Numerator and Denominator Data: Use the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127) to indicate: 1) AST was performed during the month for MRSA and/or VRE, 2) AST-eligible patients, and 3) the timing of AST. No personal identifiers will be collected or reported. (See Tables of Instructions, Table 21, for completion instructions.)

Numerator: For each month during which AST is performed:

Admission AST Performed = Number of patients eligible for admission AST who had a specimen obtained for testing ≤ 3 days after admission,

AND/OR

Discharge/Transfer AST Performed = For patients' stays > 3 days, the number of discharged or transferred patients eligible for AST who had a specimen obtained for testing prior to discharge, not including the admission AST.

Denominator: For each month during which AST is performed:

Admission AST Eligible = Number of patients eligible for admission AST (All or NHx),

AND/OR

Discharge/Transfer AST Eligible = Number of patients eligible for discharge/transfer AST (All or NHx) AND in the facility location > 3 days AND negative if tested on admission.

Data Analysis: Data are stratified by patient care location and time (e.g., month, quarter, etc.), according to AST-eligible patients monitored and the timing of AST.



Admission AST Percent Adherence = Number of patients with admission AST Performed / Number of patients admission AST eligible X 100

Discharge/transfer AST Percent Adherence = Number of patients with discharge/transfer AST performed / Number of patients discharge/transfer AST eligible x 100

2. Active Surveillance Testing Outcome Measures

Introduction: This option will allow facilities to use the results of AST to monitor the prevalent and incident rates of MRSA and/or VRE colonization or infection. This information will assist facilities in assessing the impact of intervention programs on MRSA or VRE transmission.

Settings: Surveillance will occur in any of 4 types of inpatient locations: (1) intensive care units (ICU), (2) specialty care areas (includes hematology/oncology wards, bone marrow transplant units, inpatient dialysis units, solid organ transplant units, long term acute care areas), (3) neonatal intensive care units (NICU), and (4) any other inpatient care location in the institution (e.g., surgical wards).

Requirements: Surveillance for prevalent and/or incident MRSA or VRE cases in at least one location in the healthcare facility for at least one calendar month as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). This can be done ONLY in locations where AST adherence is being performed. A minimum AST adherence level will be required for the system to calculate prevalence and incidence. A facility may choose to report AST for MRSA and/or VRE in one or multiple patient care locations, as the facility deems appropriate. Ideally, this should be done in patient care locations also selected for Infection Surveillance or LabID Event reporting. To improve standardization of applying timing rules relating to when AST specimens are obtained, classify admission specimens as those obtained on day 1 (admission date), day 2, or day 3 (i.e., ≤ 3 days). Classify discharge/transfer AST specimens as those collected on or after day 4 (i.e., > 3 days). Only the first specimen positive for MRSA or VRE from a given patient in the patient care location is counted, whether obtained for AST or as part of clinical care. If an Admission AST specimen is not collected from an eligible patient, assume the patient has no MRSA or VRE colonization.

Definitions:

AST Admission Prevalent case:

Known Positive = A patient with documentation on admission of MRSA or VRE colonization or infection in the previous 12 months (i.e., patient is known to be colonized or infected as ascertained by either a facility's laboratory records or information provided by referring facilities). (All MRSA or VRE colonized patients currently in the ICU during the month of surveillance should be considered "Known Positive"),
OR

Admission AST or Clinical Positive = A patient with MRSA or VRE isolated from a specimen collected for AST ≤ 3 days after admission or from clinical specimen obtained ≤ 3 days after admission (i.e., MRSA or VRE cannot be attributed to this patient care location).

AST Incident case: A patient with a stay > 3 days:

With no documentation on admission of MRSA or VRE colonization or infection during the previous 12 months (as ascertained either by the facility's laboratory records or information provided by referring



facilities); including admission AST or clinical culture obtained \leq 3 days after admission (i.e., patient without positive specimen),

AND

With MRSA or VRE isolated from a specimen collected for AST or clinical reasons $>$ 3 days after admission to the patient care location or at the time of discharge/transfer from the patient care location (including discharges from the facility or to other wards or deaths).

MRSA colonization: Carriage of MRSA without evidence of infection (e.g., nasal swab test positive for MRSA, without signs or symptoms of infection).

AST Eligible Patients: Choose one of two methods for identifying patients' eligible for AST:

All = All patients in the selected patient care area regardless of history of MRSA or VRE infection or colonization,

OR

NHx = All patients in the selected patient care area who have NO documented positive MRSA or VRE infection or colonization during the previous 12 months (as ascertained either by the facility's laboratory records or information provided by referring facilities); and no evidence of MRSA or VRE during stay in the patient care location (i.e., they are not in Contact Precautions).

Timing of AST: Choose one of two methods for reporting the timing of AST:

Adm = Specimens for AST obtained \leq 3 days after admission,

OR

Both = Specimens for AST obtained \leq 3 days after admission and, for patients' stays of $>$ 3 days, at the time of discharge/transfer. Discharge/transfer AST should include all discharges (including discharges from the facility or to other wards or deaths) and can include the most recent weekly AST if performed $>$ 3 days after admission to the patient care location. Discharge/transfer AST should not be performed on patients who tested positive on AST admission.

Numerator and Denominator Data: Use the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127) to indicate: 1) AST outcomes monitoring and adherence was performed during the month for MRSA and/or VRE, 2) AST eligible patients, and 3) the timing of AST. No personal identifiers will be collected or reported. (See Tables of Instructions Table 21, for completion instructions.)

If only admission AST is performed, only prevalent cases of MRSA or VRE can be detected in that patient care location. If both admission and discharge/transfer AST are performed, both prevalent and incident cases can be detected. No personal identifiers will be collected or reported.

Admission Prevalent Case:

Numerator Sources:

- Known Positive
- Admission AST or Clinical Positive = Cases \leq 3 days after admission

Denominator: Total number of admissions



Incident Case:

Numerator: Discharge/transfer AST or Clinical Positive = Cases > 3 days after admission

Denominator: Total number of patient days

NOTE: For research purposes calculating patient-days at risk (i.e., excluding patient-days in which patients were known to be MRSA or VRE colonized or infected) may be a preferable denominator, but for surveillance purposes and ease of aggregating, total number of patient days is required for this module.

Data Analysis: Data are stratified by patient care location and time (e.g., month, quarter, etc.) according to the eligible patients monitored and timing of AST.

AST Admission Prevalence rate =

For Eligible patients = All:

Number of admission AST or clinical positive / Number of admissions X 100

For Eligible patients = NHx:

Number of admission AST or clinical positive + Number of known positive / Number of admissions X 100

AST Incidence rate = Number of discharge/transfer AST or clinical positive / Number of patient days X 1000

II. *Clostridium difficile* Infection (CDI) Option

Methodology: The CDI Option also allows for a choice between two required reporting options and additional optional monitoring methods. As with MDRO monitoring, if a facility chooses to monitor *C. difficile* it must use at least one of the following reporting options: Infection Surveillance and/or Laboratory-identified (LabID) Event reporting. Process measure reporting is optional (but available only for hand hygiene and gown and gloves use – no AST). See Table 1.

C. difficile Infection (CDI) Surveillance, reporting on all NHSN-defined healthcare-associated CDIs from at least one patient care area, is one surveillance option for *C. difficile* (i.e., part of your facility's Monthly Reporting Plan). These data will enhance the ability of NHSN to aggregate national data on CDIs. This method requires active, patient-based, prospective surveillance of healthcare-associated *C. difficile* infections by a trained infection preventionist (IP). This means that the IP shall seek to confirm and classify infections caused by *C. difficile* during a patient's stay in at least one patient care location during the surveillance period.

Laboratory-identified (LabID) Events reporting is the second surveillance option and allows laboratory testing data to be used without clinical evaluation of the patient, allowing for a much less labor intensive method to track *C. difficile*. These provide proxy measures of *C. difficile* healthcare acquisition, exposure burden, and infection burden based solely on laboratory data and limited admission date data. Reporting of



LabID Events for the entire facility (Method C – All specimens) (i.e., Overall facility-wide inpatient – FacWideIN and Overall facility-wide outpatient – FacWideOUT) can provide easily obtainable and valuable information for the facility. LabID Events can also be monitored for specific locations with unique denominator data required from each specific location (i.e., All Facility-wide locations separately for coverage – Method A or Selected locations – Method B). This allows for both location-specific and facility-wide measures.

Process measure monitoring includes optional reporting aspects that allow facilities to systematically report information on *C. difficile* prevention process measures for hand hygiene and gown and gloves use. These measures require direct observation and are described in Sections I.B.1.a. and I.B.1.b. (MDRO Option - Prevention Process Measures). Personnel other than the IP may be trained to perform these observations and the collection of data elements.

Use NHSN forms to collect all required data, using the definitions of each data field as indicated in the Tables of Instructions (Tables, 19, 20, and 21). When denominator data are available from electronic databases, these sources may be used as long as the counts are not substantially different (+ or – 5%) from manually collected counts.

A. Required Reporting

Option 1. *Clostridium difficile* Infection Surveillance

Settings: Infection Surveillance will occur in any inpatient location where denominator data can be collected, which may include critical/intensive care units (ICU), specialty care areas (SCA), stepdown units, wards, and long term care units. Surveillance will NOT be performed in Neonatal Intensive Care Units (NICU) or Well Baby Nurseries.

Requirements: Surveillance for CDI should be performed in at least one location in the healthcare institution for at least 3 calendar months as indicated in the *Patient Safety Monthly Reporting Plan* (CDC **Definitions:** Report all healthcare-associated infections where *C. difficile* identified a positive toxin result are the associated pathogen. Refer to specific definitions (Chapter 17) for gastroenteritis (GI-GE) or gastrointestinal tract (GI-GIT) infections criteria.

Cases of CDI (i.e., *C. difficile* pathogen identified with a positive toxin result) that are not present or incubating at the time of admission (i.e., meets criteria for a healthcare-associated infection) should be reported as gastroenteritis (GI-GE) or gastrointestinal tract (GI-GIT) infections, whichever is appropriate. Report the pathogen as *C. difficile* on the *MDRO or CDI Infection Event* form (CDC 57.126). If the patient develops both GI-GE and GI-GIT CDI, report only GI-GIT using the date of onset as that of GI-GE CDI. (This CDI HAI reporting corresponds to surveillance for healthcare-onset, healthcare facility-associated CDI in recently published recommendations³, which is considered the minimum surveillance for CDI.)

CDI Complications: CDI in a case patient within 30 days after CDI symptom onset with the following: Admission to an intensive care unit for complications associated with CDI (e.g., for shock that requires vasopressor therapy);



Surgery (e.g., colectomy) for toxic megacolon, perforation, or refractory colitis
AND/OR

Death caused by CDI within 30 days after symptom onset and occurring during the hospital admission.

Location of Attribution and Transfer Rule applies – See [Key Terms](#).

Numerator and Denominator Data: The numerator data are reported on the *MDRO or CDI Infection Event* form (CDC 57.126). (See Tables of Instructions, Table 19, for completion instructions). The patient day and admission denominator data are reported using the *MDRO and CDI and Outcome Measures Monthly Monitoring* form (CDC 57.127). (See Tables of Instructions, Table 21, for completion instructions.)

C. Difficile Infections:

Numerator: The total number of HAI CDI cases identified during the surveillance month.

Denominator: The total number of patient days and admissions during the surveillance month.

Data Analysis: Data are stratified by time (e.g., month, quarter, etc.) and by patient care location.

C. difficile Infection rate = Number of HAI CDI cases / Number of patient days X 10,000

Option 2. *Clostridium difficile* Laboratory-identified Event

Settings: LabID Event reporting can be performed either Overall facility-wide inpatient (FacWideIN), Overall facility-wide outpatient (FacWideOUT), or in multiple locations, where *C. difficile* testing in the laboratory is performed routinely only on unformed (i.e., conforming to the shape of the container) stool samples. Consider including *C. difficile* toxin-positive laboratory assays from all available inpatient locations as well as all available outpatient locations where care is provided to patients post discharge or prior to admission (e.g., emergency departments, outpatient clinics, and physician offices that submit samples to the facility's laboratory.) Surveillance will NOT be performed in Neonatal Intensive Care Units (NICU), Well Baby Nurseries, or Well Baby Clinics.

Requirements: Facilities must choose one or more of three reporting choices: (Method A) report LabID Events for the entire facility, but separately by each location requiring separate denominator submissions for each location, (Method B) report LabID Events for only Selected locations, and (Method C) Overall facility-wide (with only one denominator for the entire facility) (Options include Overall Facility-wide Inpatient – FacWideIN or Overall Facility-wide Outpatient – FacWideOUT) (See Table 1). Facilities must indicate each reporting choice chosen for the calendar month indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Surveillance for LabID Events must be reported for 3 consecutive months to provide meaningful measures.

Definitions:



CDI-positive laboratory assay:

A positive laboratory test result for *C. difficile* toxin A and/or B,
OR

A toxin-producing *C. difficile* organism detected by culture or other laboratory means performed on a stool sample.

Duplicate *C. difficile*-positive test: Any *C. difficile* toxin-positive laboratory result from the same patient and location, following a previous *C. difficile* toxin-positive laboratory result within the past two weeks (14 days). There should be a full 14 days with no *C. difficile* toxin-positive laboratory result for the patient and location, before another *C. difficile* LabID Event is entered into NHSN for the patient and location.

Laboratory-Identified (LabID) Event: All non-duplicate *C. difficile* toxin-positive laboratory results. Can include specimens collected during an Emergency Department or other outpatient clinic visit, if collected same day as patient admission. (See Algorithm Figure 2.)

Even if reporting at the FacWide level, all reporting must follow rules by location for reporting.

Numerator: Data will be reported using the *Laboratory-Identified MDRO or CDI Event* form (CDC 57.128). (See Tables of Instructions, Table 20, for completion instructions.)

Denominator: Patient days, admissions, (for inpatient locations) and encounters (for ER and outpatient locations) are reported using the *MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring* form (CDC 57.127). (See Tables of Instructions, Table 21, for completion instructions.) When performing facility-wide inpatient (FacWideIN) or facility-wide outpatient (FacWideOUT) LabID Event surveillance, denominator counts from neonatal intensive care units, well baby nurseries, and well baby clinics should NOT be included. Therefore, the specific *C. difficile* denominator variables should be used for FacWide reporting. When determining a patient's admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an "observation" patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location. For further information on counting patient days and admissions, go to http://www.cdc.gov/nhsn/PDFs/PatientDay_SumData_Guide.pdf for Summary Data Collection: Observation vs. Inpatients.

CDI Data Analysis: Data are stratified by time (e.g., month, quarter, etc.), incident or recurrent, and either aggregated across the entire facility or stratified by patient care location.

Categorization Based on Current Date Specimen Collected and Prior Date Specimen Collected of a previous CDI LabID Event:

Incident CDI Assay: Any LabID Event from a specimen obtained > 8 weeks after the most recent LabID Event (or with no previous LabID Event documented) for that patient.



Recurrent CDI Assay: Any LabID Event from a specimen obtained > 2 weeks and ≤ 8 weeks after the most recent LabID Event for that patient.

The incident and recurrent CDI LabID Events are further categorized within NHSN. The following categorizations and prevalence and incidence calculations are built into the analysis capabilities of NHSN, and are based on timing of admission to facility and/or location and specimen collection, location where specimen was collected, and previous discharge. Descriptions are provided to explain how the categories and metrics are defined in NHSN.

Categorizing CDI LabID Events – Based on Date Admitted to Facility and Date Specimen Collected:

Community-Onset (CO): LabID Event collected as an outpatient or an inpatient ≤ 3 days after admission to the facility (i.e., days 1, 2, or 3 of admission).

Community-Onset Healthcare Facility-Associated (CO-HCFA): CO LabID Event collected from a patient who was discharged from the facility ≤ 4 weeks prior to current date of stool specimen collection.

Healthcare Facility-Onset (HO): LabID Event collected > 3 days after admission to the facility (i.e., on or after day 4).

Calculated CDI Prevalence Rates:

Inpatient Reporting:

Admission Prevalence Rate = Number of non-duplicate CDI LabID Events per patient per month identified ≤ 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

Location Percent Admission Prevalence that is Community-Onset = Number of Admission Prevalent LabID Events to a location that is CO / Total number Admission Prevalent LabID Events x 100 (Note: The numerator in this formula does not include Admission Prevalent LabID Events that are CO-HCFA.)

Location Percent Admission Prevalence that is Community-Onset Healthcare Facility-Associated = Number of Admission Prevalent LabID Events to a location that are CO-HCFA / Total number Admission Prevalent LabID Events x 100

Location Percent Admission Prevalence that is Healthcare Facility-Onset = Number of Admission Prevalent LabID Events to a location that are HO / Total number of Admission Prevalent LabID Events x 100

Overall Patient Prevalence Rate = Number of 1st CDI LabID Events per patient per month regardless of time spent in location (i.e., prevalent + incident, if monitoring by inpatient location), or facility (i.e., CO + CO-HCFA + HO, if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100

Outpatient Reporting:



Outpatient Prevalence Rate = Number of all non-duplicate CDI LabID Events per patient per month for the location (if monitoring by outpatient location), or the facility (if monitoring by overall facility-wide outpatient=FacWideOUT) / Number of patient encounters for the location or facility x 100

Calculated CDI Incidence Rates: (see categorization of Incident, HO, and CO-HCFA above).

Location CDI Incidence Rate = Number of Incident CDI LabID Events per month identified > 3 days after admission to the location / Number of patient days for the location x 10,000

Facility CDI Healthcare Facility-Onset Incidence Rate = Number of all Incident HO CDI LabID Events per month in the facility/ Number of patient days for the facility x 10,000 (this calculation is only accurate for Overall Facility-wide Inpatient reporting)

Facility CDI Combined Incidence Rate = Number of all Incident HO and CO-HCFA CDI LabID Events per month in the facility / Number of patient days for the facility x 10,000 (this calculation is only accurate for Overall Facility-wide Inpatient reporting)

B. Optional Reporting

Prevention Process Measures Surveillance (Hand Hygiene and Gown and Gloves Use Only)
See Sections I.B.1.a. and I.B.1.b. under the MDRO Option.

¹HICPAC, Management of Multidrug-Resistant Organisms in Healthcare Settings.
 <http://www.cdc.gov/NCIDOD/DHQP/hicpac_pubs.html>.

²Cohen AL, et al. *Infection Control and Hospital Epidemiology*. Oct 2008;29:901-913.

³McDonald LC, et al. *Infect Control Hosp Epidemiol* 2007; 28:140-145.



Figure 1. MDRO Test Results Algorithm for Laboratory-Identified (LabID) Events

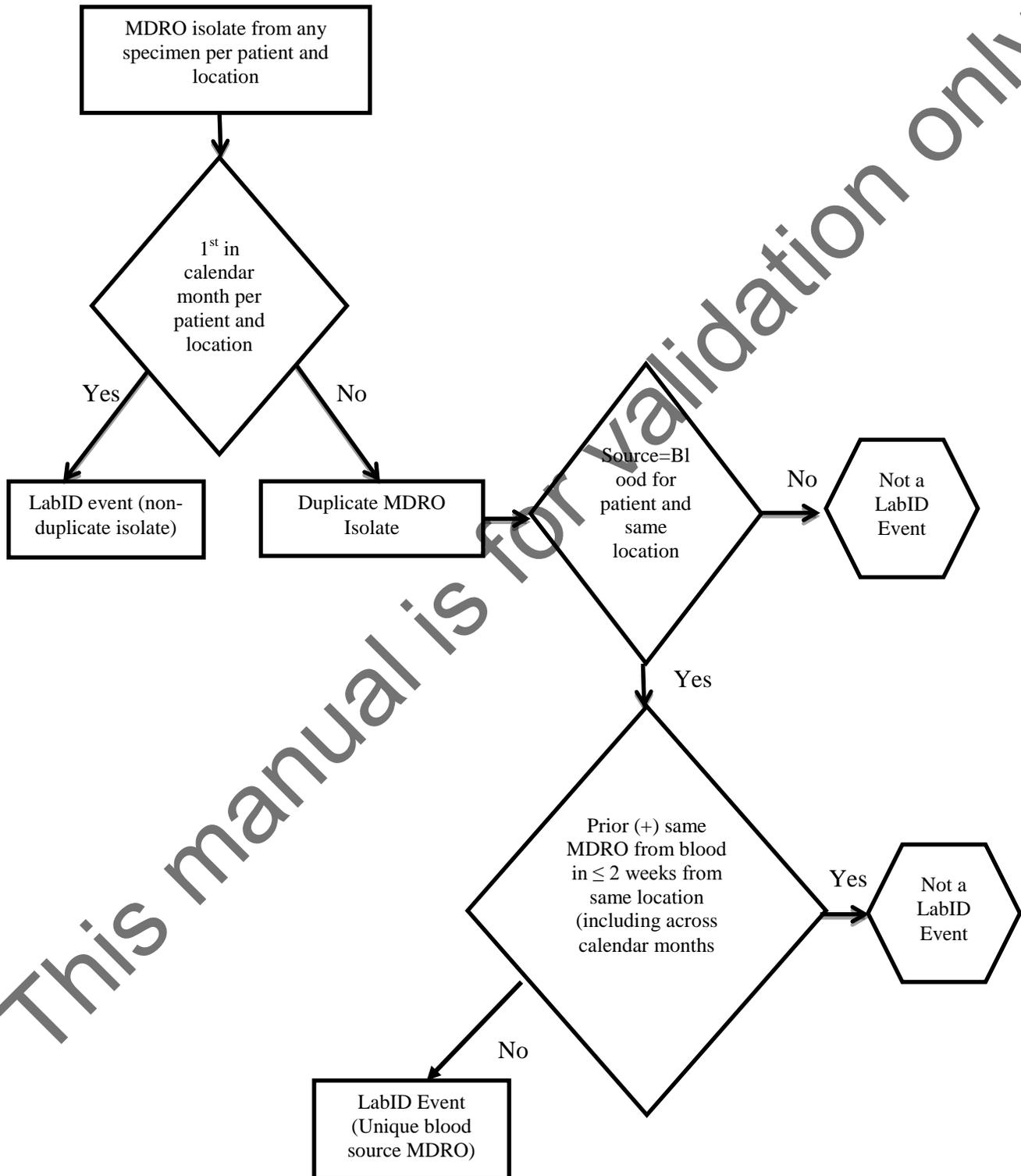




Figure 2. *C. difficile* test Results Algorithm for Laboratory-Identified (LabID) Events

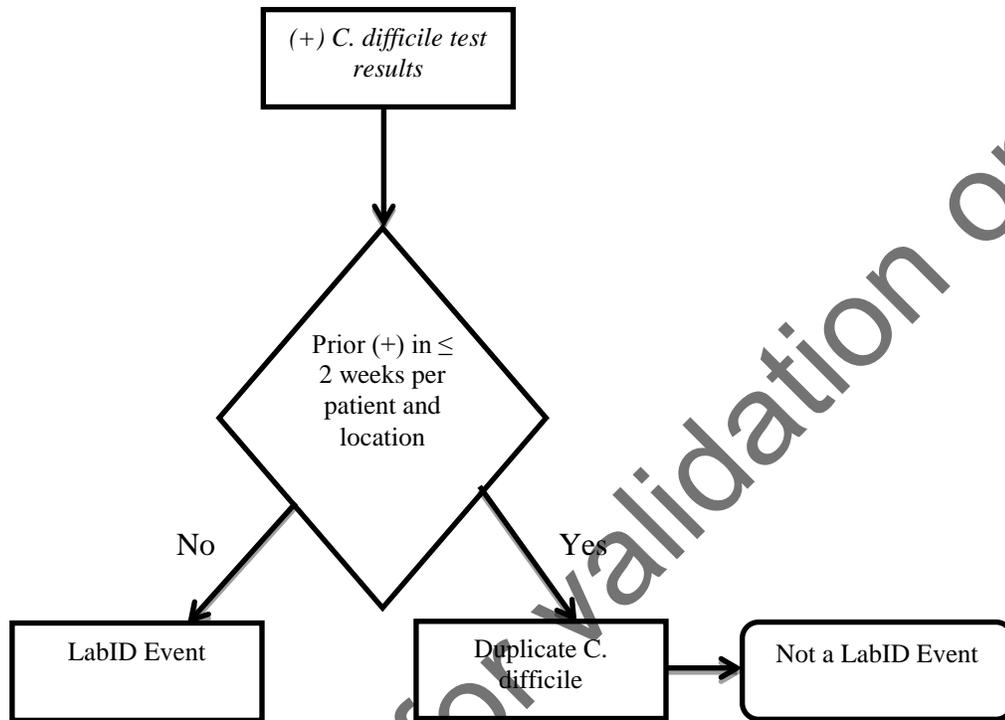




Table 2. Rates and Measures Derived from Various MDRO and CDI Protocol Surveillance Methods

Surveillance Method	Forms	Rate	Measures
MDRO Infection Surveillance	<p>Numerator:</p> <ol style="list-style-type: none"> 1) <i>Primary Bloodstream Infection</i> 2) <i>Pneumonia</i> 3) <i>Urinary Tract Infection</i> 4) <i>Surgical Site Infection</i> 5) <i>MDRO Infection Event</i> <p>Denominator:</p> <p><i>MDRO and CDI Prevention Process & Outcome Measures Monthly Monitoring</i></p>	<p>Data are stratified by time (e.g., month, year) and patient care location.</p> <p><u>MDRO Infection Incidence Rate</u> = Number of healthcare-associated infections by MDRO type/ Number of patient days x 1000</p>	Direct HAI MDRO Incidence Rate
MDRO Laboratory Identified Event	<p>Numerator:</p> <p><i>Laboratory Identified MDRO or CDI Event</i></p> <p>Denominator:</p> <p><i>MDRO and CDI Prevention Process & Outcome Measures Monthly Monitoring</i></p>	<p><u>Inpatient Reporting:</u></p> <p><u>Admission Prevalence Rate</u> = Number of 1st LabID Events per patient per month identified ≤ 3 days after admission to the location (if monitoring by inpatient location), or the facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100</p> <p><u>Location Percent Admission Prevalence that is Community-Onset</u> = Number of Admission Prevalent LabID Events to a location that are CO / Total number Admission Prevalent LabID Events x 100</p> <p><u>Location Percent Admission Prevalence that is Healthcare Facility-Onset</u> = Number of Admission Prevalent LabID Events to a location that are HO / Total number of Admission Prevalent LabID Events x 100</p> <p><u>Overall Patient Prevalence Rate</u> = Number of 1st LabID Events per patient per month</p>	Proxy Measures for MDRO Exposure Burden



Surveillance Method	Forms	Rate	Measures
		<p>regardless of time spent in location (i.e., prevalent + incident, if monitoring by inpatient location), or facility (i.e., CO + HO, if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100</p> <p><u>Outpatient Reporting:</u> <u>Outpatient Prevalence Rate</u> = Number of 1st LabID Events per patient per month for the location (if monitoring by outpatient location), or the facility (if monitoring by overall facility-wide outpatient = FacWideOUT) / Number of patient encounters for the location or facility x 100</p> <p><u>Inpatient Reporting:</u> <u>MDRO Bloodstream Infection Admission Prevalence Rate</u> = Number of all unique blood source LabID Events per patient per month identified ≤ 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100</p> <p><u>MDRO Bloodstream Infection Incidence OR Incidence Density Rate</u> = Number of all unique blood source LabID Events per patient per month identified > 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient = FacWideIN) / Number of patient admissions to the location or facility x 100 OR Number of patient days for the location or facility x 1,000</p> <p><u>MDRO Bloodstream Infection Overall Patient Prevalence Rate</u> = Number of 1st Blood LabID Events per patient per month regardless of time spent in location (i.e.,</p>	<p>Proxy Measures for Bloodstream Infection Admission Prevalence and Incidence</p>



Surveillance Method	Forms	Rate	Measures
		<p>prevalent + incident, if monitoring by inpatient location), or facility (i.e., CO + HO, if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100</p> <p><u>Outpatient Reporting:</u> <u>MDRO Bloodstream Infection Outpatient Prevalence Rate</u> = Number of all unique blood source LabID Events per patient per month for the location (if monitoring by outpatient location), or the facility (if monitoring by overall facility-wide outpatient=FacWideOUT) / Number of patient encounters for the location or facility x 100</p> <p><u>Overall MDRO Infection/Colonization Incidence Rate</u> = Number of 1st LabID Events per patient per month among those with no documented prior evidence of a previous LabID Event with this specific organism type and identified > 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient = FacWideIN) / Number of patient admissions to the location or facility x 100</p> <p><u>Overall MDRO Infection/Colonization Incidence Density Rate</u> = Number of 1st LabID Events per patient per month among those with no documented prior evidence of a previous LabID Event with this specific organism type and identified > 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient days for the location or facility x 1,000</p>	<p>Proxy Measures for MDRO Healthcare Acquisition</p>



Surveillance Method	Forms	Rate	Measures
<u>Prevention Process Measures:</u> Hand Hygiene	Numerator & Denominator: <i>MDRO and CDI Prevention Process & Outcome Measures Monthly Monitoring</i>	<u>Hand Hygiene Percent Adherence</u> = Number of contacts for which hand hygiene was performed / Number of contacts for which hand hygiene was indicated x100	Direct Adherence Percent: Hand Hygiene
Gown & Gloves Use		<u>Gown & Glove Use Percent Adherence</u> = Number of contacts during which gown and gloves were used /Number of contacts for which gown and gloves were indicated x100.	Gown & Gloves Use
Active Surveillance Testing (AST) (MRSA & VRE only)		<u>Admission AST Percent Adherence</u> = Number of patients with admission AST performed / Number of patients admission AST eligible x100 <u>Discharge/transfer AST Percent Adherence</u> = Number of patients with discharge/transfer AST performed / Number of patients discharge/transfer AST eligible x100.	Admission AST Discharge/Transfer AST
Active Surveillance Testing Outcome Measures (MRSA & VRE Only)	Numerator & Denominator: <i>MDRO and CDI Prevention Process & Outcome Measures Monthly Monitoring</i>	Eligible patients = All (All patients regardless of history of MDRO) <u>AST Admission Prevalence rate</u> = Number of admission AST or clinical positive / Number of admissions x100	Direct Admission Prevalence Rates of MDRO by AST Eligibility
		Eligible patients = NHx (No history) <u>AST Admission Prevalence rate</u> = Number of admission AST or clinical positive + Number of known positive / Number of admissions x100.	
		<u>AST Incidence Rate</u> = Number of discharge/transfer AST or clinical positive cases / Number of patient days x 1,000	Direct MDRO Healthcare Acquisition



Surveillance Method	Forms	Rate	Measures
CDI Infection Surveillance	Numerator: <i>CDI Infection Event</i>	<u>C. Difficile Infection rate</u> = Number of <i>C. difficile</i> healthcare-associated infections / Number of patient days x 10,000	Direct HAI CDI Incidence Rate
CDI Laboratory Identified Event	Denominator: <i>MDRO and CDI Prevention Process & Outcome Measures Monthly Monitoring</i> Numerator: <i>Laboratory-Identified MDRO or CDI Event</i> Denominator: <i>MDRO and CDI Prevention Process & Outcome Measures Monthly Monitoring</i>	<u>Inpatient Reporting:</u> <u>Admission Prevalence Rate</u> = Number of non-duplicate CDI LabID Events per patient per month identified ≤ 3 days after admission to the location (if monitoring by inpatient location), or facility (if monitoring by overall facility-wide inpatient = FacWideIN) / Number of patient admissions to the location or facility x 100 <u>Location Percent Admission Prevalence that is Community-Onset</u> = Number of Admission Prevalent LabID Events to a location that are CO / Total number Admission Prevalent LabID Events x 100 <u>Location Percent Admission Prevalence that is Community-Onset Healthcare Facility-Associated</u> = Number of Admission Prevalent LabID Events to a location that are CO-HCFA / Total number Admission Prevalent LabID Events x 100 <u>Location Percent Admission Prevalence that is Healthcare Facility-Onset</u> = Number of Admission Prevalent LabID Events to a location that are HO / Total number of Admission Prevalent LabID Events x 100 <u>Overall Patient Prevalence Rate</u> = Number of 1 st CDI LabID Events per patient per month regardless of time spent in location (i.e., prevalent + incident, if monitoring by inpatient location), or facility (i.e., CO +	Proxy Measures for CDI Exposure Burden



Surveillance Method	Forms	Rate	Measures
		<p>CO-HCFA + HO, if monitoring by overall facility-wide inpatient=FacWideIN) / Number of patient admissions to the location or facility x 100</p> <p><u>Outpatient Reporting:</u> <u>Outpatient Prevalence Rate</u> = Number of all non-duplicate CDI LabID Events per patient per month for the location (if monitoring by outpatient location), or the facility (if monitoring by overall facility-wide outpatient=FacWideOUT) / Number of patient encounters for the location or facility x 100</p>	
		<p><u>Location CDI Incidence Rate</u> = Number of Incident CDI LabID Events per month identified > 3 days after admission to the location / Number of patient days for the location x 10,000</p> <p><u>Facility CDI Healthcare Facility-Onset Incidence Rate</u> = Number of all Incident HO CDI LabID Events per month in the facility/ Number of patient days for the facility x 10,000 (this calculation is only accurate for Overall Facility-wide Inpatient reporting)</p> <p><u>Facility CDI Combined Incidence Rate</u> = Number of all Incident HO and CO-HCFA CDI LabID Events per month in the facility / Number of patient days for the facility x 10,000 (this calculation is only accurate for Overall Facility-wide Inpatient reporting)</p>	Proxy Measures for CDI Healthcare Acquisition



Appendix 1. Guidance for Handling MDRO and CDI Module Infection Surveillance and LabID Event Reporting When Also Following Other NHSN Modules

If a facility is monitoring CLABSIs, CAUTIs, or VAPs within the Device-Associated Module and/or SSIs or PPPs within the Procedure-Associated Module and is also monitoring MDROs (i.e., MRSA) in the MDRO and CDI Module, then there are a few situations where reporting the infection or LabID event may be confusing. The following scenarios provide guidance to keep the counts and rates consistent throughout your facility and between all of the NHSN Modules. *These rules apply to the reporting of “Big 4” infections (BSI, UTI, PNEU, and SSI) caused by an MDRO selected for monitoring.*

Device-Associated Module with MDRO and CDI Module

Scenario 1: Facility is following CLABSI, CAUTI, or VAP along with MDRO Infection Surveillance and possibly LabID Event Reporting in the same location:

Infection identified that was NOT present or incubating on admission to this location.

1. Report the infection (BSI, UTI, or PNEU).
2. Answer “Yes” to the MDRO infection question.

This fulfills the infection reporting requirements of both modules in one entry and lets the NHSN reporting tool know that this infection should be included in both the Device-Associated and the MDRO infection datasets and rates.

3. If following LabID event reporting in the same location, report also (separately) as a LabID Event (if meets the MDRO protocol criteria for LabID event).

Scenario 2: Facility is following CLABSI, CAUTI, or VAP along with MDRO Infection Surveillance and possibly LabID Event Reporting in multiple locations:

Infection identified within 48 hours of patient being transferred from one location (the transferring location) to another location (the new location).

1. Report the infection (BSI, UTI, and PNEU) and attribute to the transferring location, if transferring location was following that Event Type (BSI, UTI, PNEU) during the Date of Event.
2. Answer “Yes” to the MDRO infection question, if the transferring location was following that MDRO during the Date of Event.
3. If following LabID event reporting in the new location, report also (separately) as a LabID Event and attribute to the new location (if meets the MDRO protocol criteria for LabID event).

Procedure-Associated Module with MDRO and CDI Module

Note: SSIs and PPPs are associated with a procedure and not a patient location, but MDROs are connected with the patient location.



Scenario 3: Facility is following SSI or PPP along with MDRO Infection Surveillance and possibly LabID Event Reporting:

Patient has surgery, is transferred to a single unit for the remainder of the stay, and during the current stay acquires an SSI or PPP.

1. Report the infection (SSI, PPP) and attribute to the post-op location.
2. Answer “Yes” to the MDRO infection question, if the post-op location is following that MDRO during the month of the date of event.
3. If following LabID event reporting in the post-op location, report also (separately) as a LabID Event (if meets the MDRO protocol criteria for LabID event).

Scenario 4: Facility is following SSI along with MDRO Infection Surveillance and possibly LabID Event Reporting:

Patient has surgery, is either discharged immediately (outpatient) or transferred to a unit (inpatient), is discharged, and subsequently is readmitted with an SSI.

1. Report the infection (SSI) and attribute to the discharging (post-op) location (not the readmission location).
2. Answer “Yes” to the MDRO infection question, if the discharging (post-op) location was following that MDRO during the Date of Event*.
3. If following LabID event reporting in the readmitting location or outpatient clinic where the specimen was collected, report also (separately) as a LabID Event (if meets the MDRO protocol criteria for LabID event).

* This change corrects the guidance addressing the need to utilize a single event for different surveillance purposes, i.e., that the entry of one event (SSI) may fulfill reporting requirements in another module (MDRO Infection Surveillance option) and because of cross-over in calendar months, may result in conflicting reporting requirements for location.



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Vaccination Module

Background

Influenza infections are associated with increased medical costs, hospitalizations, lost productivity, and thousands of deaths every year in the United States. The majority of deaths from seasonal influenza occur in adults aged ≥ 65 years.¹⁻⁴ Annual influenza vaccination is the best way to reduce the risk for complications from influenza infections and in the United States is now recommended for all persons aged ≥ 6 months.

Annual epidemics of seasonal influenza usually occur during the late fall through early spring each year. During these times, rates of infection with influenza are highest among persons aged ≥ 65 years of age, in children < 2 years and persons of any age who have medical conditions placing them at increased risk for the complications of influenza.⁽⁵⁻⁷⁾ Occasionally, a variant strain of influenza will emerge that is distinct from the expected seasonal strain and requires a separate vaccination for prevention. In 2009-10, this non-seasonal strain was novel Influenza A (H1N1) 2009. Annual influenza vaccination is the most effective way to prevent influenza virus infection and its complications.

Methodology

The Vaccination Module targets the healthcare facility's inpatient population, who are greater than 6 months of age. Two separate approaches (Summary Method or Patient-Level Method) are used to report data for the Vaccination Module. The module can be completed using either retrospective medical record review (Summary Method or Patient-Level Method) or prospective surveillance (Patient-Level Method). Either method may be used during the influenza season. When vaccinations for more than one subtype are recommended during a season, use a single method and report data separately for each vaccination subtype. For example, report a Summary Method record for seasonal vaccination and one for the non-seasonal subtype. Multiple admissions by the same patient during the same month should be evaluated as separate encounters for this module.

A trained individual shall initially seek to identify all inpatient admissions as meeting criteria for seasonal vaccination during the review period, and determine if influenza vaccination was offered, and then either accepted or declined during the course of the patient's admission. Personnel other than the IP may be trained to perform these observations.

The CDC forms 57.130, 57.131, 57.133 are used to collect all required data for this module depending on whether Summary Method or Patient-Level Method is the selected surveillance approach.



An optional tool, *Influenza Vaccination Standing Orders* form (CDC 57.134), is also available to provide a chart document that will allow for the capture of needed data elements to complete this module. The minimum requirement to participate in this module is one month during the influenza season (September through April), but maximal benefit is obtained by completing the module for each month of the entire influenza season.

Summary Method

Introduction: The Summary Method requires the use of a single form, the *Vaccination Monthly Monitoring Form – Summary Method* (CDC 57.130 and Tables of Instructions, Table 14) to collect all data for the period of surveillance. There will be a Summary form completed for each month the facility is following influenza vaccination for the influenza season. This retrospective method consists of determining the total number of patients in eight separate categories during the surveillance month(s). The value of this type of surveillance is the simplicity of data collection requirements.

Settings: This is a facility-wide surveillance in which all NHSN inpatients will be monitored during the selected month(s).

Requirements: Surveillance will consist of a review of all NHSN inpatients facility-wide to determine 1) whether they meet criteria for seasonal influenza vaccination, 2) how many were previously vaccinated, and 3) the number meeting criteria who are offered and receive influenza vaccination during their admission. Two doses of seasonal influenza vaccine are required for children 6 months–8 years receiving seasonal influenza vaccine for the first time (see latest CDC/ ACIP recommendations for details). Ideally, the facility should conduct the surveillance during each month of the influenza season (September through April).

Definitions: All box numbers refer to boxes on the *Vaccination Monthly Monitoring Form–Summary Method* (CDC 57.130).

NHSN inpatient: A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.

Total number of patient admissions (Box 1): The count of all NHSN inpatients admitted to the facility.

Total number of patients aged 6 months and older meeting criteria for influenza vaccination (Box 2): The count of NHSN inpatients meeting criteria for vaccination. Include in this count any patients who have been previously vaccinated during the current influenza season.

Total number of patients previously vaccinated during current influenza season (Box 3): During the month selected for surveillance, the count of all NHSN inpatients who had previously received influenza vaccination during the current influenza season by either history or



documentation. Patients requiring a second vaccine should not be included in the count of those previously vaccinated.

Total number of patients meeting criteria not previously vaccinated during the current influenza season (Box 4): During the month selected for surveillance, the count of NHSN inpatients meeting criteria (Box 2) minus the count of NHSN inpatients meeting criteria previously vaccinated during the current influenza season (Box 3).

Patients meeting criteria offered vaccination but declining for reasons other than medical contraindication (Box 5): The count of NHSN inpatients meeting criteria offered vaccination but who declined for reasons other than medical contraindication. Refer to Table 1 for examples of personal (non-medical) reasons for declining vaccination.

Patients meeting criteria offered vaccination but having medical contraindication (Box 6): The count of NHSN inpatients offered vaccination but who declined because of medical contraindication(s). Refer to Table 1 for examples of medical contraindication.

Patients meeting criteria receiving vaccination during admission (Box 7): The count of patients with documentation in the medical record of receiving influenza vaccination during the course of their hospital admission prior to being discharged.

Total number of patients offered vaccination (Box 8): The sum of the count of all NHSN inpatients offered vaccination but who declined for reasons other than medical contraindication (Box 5) plus all patients offered vaccination but who declined because of medical contraindication (Box 6) plus all NHSN inpatients with documentation in the medical record of receiving influenza vaccination during the course of their hospital admission prior to being discharged (Box 7). The number in this box should be less than or equal to the number in Box 4.

Refer also to the *Key Terms*, [Chapter 16](#), for other definitions.

Numerator and Denominator Data: The numerator and denominator data are reported on the *Vaccination Monthly Monitoring Form–Summary Method* (CDC 57.130) in boxes 1-8 for the month(s) selected for surveillance (Tables of Instructions, Table 14).

Data Analysis: Data aggregated across the entire facility are stratified by time (e.g., month, influenza subtype, influenza season). Table 2 shows the formulas for metrics that can be calculated from the Summary Method.



Table 1: Formulas for Metrics: Summary Method
 All data come from Boxes 1-8 of the Vaccination Monthly Monitoring Form–Summary Method (CDC 57.130)

Metric		Summary Formula (x 100)
1	Prevalence rate for inpatients not previously vaccinated among all inpatient admissions	$\frac{\text{Box 4}}{\text{Box 1}}$
2	Adherence rate for offering influenza vaccination to inpatients among all eligible inpatients	$\frac{\text{Box 8}}{\text{Box 4}}$
3	Adherence rate for receiving influenza vaccination by inpatients among all inpatients	$\frac{\text{Box 7}}{\text{Box 4}}$
4	Adherence rate for receiving influenza vaccination by inpatients among all medically eligible inpatients	$\frac{\text{Box 7}}{\text{Box 4} - \text{Box 6}}$
5	Adherence rate for receiving influenza vaccination by inpatients among all medically eligible, willing inpatients	$\frac{\text{Box 7}}{(\text{Box 4} - \text{Box 6}) + \text{Box 5}}$
6	Declination rate for inpatients eligible for influenza vaccination among all inpatients offered vaccine	$\frac{\text{Box 5} + \text{Box 6}}{\text{Box 8}}$
7	Declination rate due to personal (non-medical) reasons for inpatients eligible for influenza vaccination among all inpatients offered vaccine	$\frac{\text{Box 5}}{\text{Box 8}}$
8	Declination rate due to medical contraindications for inpatients eligible for influenza vaccination among all inpatients offered vaccine	$\frac{\text{Box 6}}{\text{Box 8}}$
9	Failure rate for offering vaccine to inpatients medically eligible for influenza vaccination among all medically eligible inpatients	$\frac{\text{Box 4} - \text{Box 8}}{\text{Box 4} - \text{Box 6}}$
10	Prevalence rate of all inpatients previously vaccinated during the current influenza season among all inpatient admissions	$\frac{\text{Box 3}}{\text{Box 1}}$

Patient-Level Method

Introduction: The Patient-Level Method requires the use of two forms, the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131), and the *Patient Vaccination* form (CDC 57.133), with *Tables of Instructions*, Table 14 to collect all data for the period of surveillance. The patient vaccination forms must be completed when the facility is following influenza vaccination for inpatients. The value of this method is that the information collected will assist facilities in identifying whether NHSN inpatients meeting criteria for influenza vaccination during an admission are actually receiving vaccination, and the details of those



vaccinations. Additionally, IPs will be able to identify specific gaps in adherence and recommend changes in practices to ensure that eligible patients are being vaccinated.

Settings: This is a facility-wide surveillance in which all NHSN inpatients will be monitored during the selected month(s).

Requirements: Surveillance will consist of a review of all NHSN inpatients facility-wide to determine whether they meet criteria for influenza vaccination who are offered and receive influenza vaccination during the course of their admission. Surveillance must be conducted for at least one calendar month during the influenza season as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). During seasons when seasonal and non-seasonal subtype vaccinations are recommended, such as 2009-10, monitoring is required for all influenza vaccinations, unless both doses have been received. Patients requiring a second vaccine shouldn't be included in the count of those previously vaccinated. A *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131) and a *Patient Vaccination form* (CDC 57.133) need to be completed for each of the 2 doses given. (See latest CDC/ACIP recommendations for current season details). Ideally the facility should conduct the surveillance during each month of the influenza season (September through April).

The Patient-Level Method requires determination of the number of NHSN inpatients in the following categories for the month selected for review. (All box numbers refer to the boxes found on the *Vaccination Monthly Monitoring Form–Patient-Level Method* [CDC 57.131]):

- Total number of NHSN patient admissions (Box 1).
- Total number of NHSN patients previously vaccinated during the current influenza season (Box 2).

In addition, all NHSN inpatient admissions found to meet criteria for influenza vaccination but not previously vaccinated during the current influenza season will need to have a *Patient Vaccination form* (CDC 57.133) completed as indicated. For those patients who decline influenza vaccination, reasons for declination (medical contraindications and personal) are captured (Table 2).

Table 2: Examples of Medical Contraindications to Influenza Vaccination and of Personal Reasons for Declining Influenza Vaccinations	
Medical Contraindications	Allergy to vaccine components History of Guillain-Barré syndrome within 6 weeks of previous influenza vaccination Current febrile illness (Temp > 101.5°)
Personal (non-medical) reasons for declining vaccination	Fear of needles/injections Fear of side effects Perceived ineffectiveness of vaccine Religious or philosophical objections Concern for transmitting vaccine virus to contacts



Review all NHSN inpatient admissions and determine whether they meet the criteria for influenza vaccination. Note that all NHSN inpatients that meet criteria but have previously been vaccinated during the current influenza season do not require a *Patient Vaccination* form (CDC 57.133) to be completed, but should be totaled and entered on the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131) in Box 2.

Definitions: All box numbers refer to the boxes found on the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131).

NHSN Inpatient: A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.

Total number of patient admissions (Box 1): The count of all NHSN inpatients admitted to the facility.

Total number of patients previously vaccinated during the current influenza season (Box 2): The count of all NHSN inpatients who had previously received influenza vaccination during the current influenza season by either history or documentation. Patients requiring a second vaccine should not be included in the count of those previously vaccinated, unless both doses have been received.

Refer also to the NHSN Key Terms, [Chapter 16](#), for other definitions.

Numerator and Denominator Data: Numerator data are reported on the *Patient Vaccination* form (CDC 57.133). In addition, some numerator and denominator data are reported on the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131).

Data Analysis: Data aggregated across the entire facility are stratified by time (e.g., month, influenza subtype, influenza season). Table 3 shows the formulas for metrics that can be calculated from the Patient-Level Method.

Table 3: Formulas for Metrics: Patient-Level Method

Data come from two CDC forms:

Boxes 1 - 4 of the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131)
Patient Vaccination (PV) form (CDC 57.133)

Metric		Patient Vaccination Formula (x 100)
1	Prevalence rate for inpatients not previously vaccinated among all inpatient admissions	$\frac{\text{Box 4}}{\text{Box 1}}$



Table 3: Formulas for Metrics: Patient-Level Method

Data come from two CDC forms:

Boxes 1 - 4 of the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131)
Patient Vaccination (PV) form (CDC 57.133)

Metric		Patient Vaccination Formula (x 100)
2	Adherence rate for offering influenza vaccination to inpatients among all eligible inpatients	$\frac{\text{Total \# PV Forms "Vaccine offered" = "Yes"}}{\text{Box 4}}$
3	Adherence rate for receiving influenza vaccination inpatients among all inpatients	$\frac{\text{Total \# PV Forms "Vaccine administered" = "Yes"}}{\text{Box 4}}$
4	Adherence rate for receiving influenza vaccination by inpatients among all medically eligible inpatients	$\frac{\text{Total \# PV Forms) "Vaccine administered" = "Yes"}}{\text{Box 4} - \text{Total \# PV Forms "Vaccine declined" = "Yes" due to medical contraindications}}$
5	Adherence rate for receiving influenza vaccination by inpatients among all medically eligible, willing inpatients	$\frac{\text{Total \# PV Forms "Vaccine administered" = "Yes"}}{(\text{Box 4} - \text{Total \# PV Forms "Vaccine declined" = "Yes" due to medical contraindication}) + \text{"Vaccine declined" = "Yes" due to personal reasons}}$
6	Declination rate for inpatients eligible for influenza vaccination among all inpatients offered vaccine	$\frac{\text{Total \# PV Forms "Vaccine declined" = "Yes"}}{\text{Total \# PV Forms "Vaccine offered" = "Yes"}}$
7	Declination rate due to personal (non-medical) reasons for inpatients eligible for influenza vaccination among all inpatients offered vaccine	$\frac{\text{Total \# PV Forms "Vaccine declined" = "Yes" due to personal reasons}}{\text{Total \# PV Forms "Vaccine offered" = "Yes"}}$
8	Declination rate due to medical contraindications for inpatients eligible for influenza vaccination among all inpatients offered vaccine	$\frac{\text{Total \# PV Forms "Vaccine declined" = "Yes" due to medical contraindications}}{\text{Total \# PV Forms "Vaccine offered" = "Yes"}}$
9	Failure rate for offering vaccine to inpatients medically eligible for influenza vaccination among all medically eligible inpatients	$\frac{\text{Box 4} - \text{Total \# PV Forms "Vaccine offered" = "Yes" "Vaccine declined" = "Yes" due to medical contraindications}}$



Table 3: Formulas for Metrics: Patient-Level Method

Data come from two CDC forms:

Boxes 1 - 4 of the *Vaccination Monthly Monitoring Form–Patient-Level Method* (CDC 57.131)

Patient Vaccination (PV) form (CDC 57.133)

Metric		Patient Vaccination Formula (x 100)
10	Prevalence rate of all inpatients previously vaccinated among all inpatient admissions	$\frac{\text{Box 3}}{\text{Box 1}}$

Optional Standing Orders Form for Influenza Vaccination Data Collection

An optional *Influenza Vaccination Standing Orders* form (CDC 57-134) can be used as part of an inpatient medical record is available as part of this module to assist with data collection. See Tables of Instructions, Table 18, for completion instructions.

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Table 1. Instructions for Completion of the Patient Safety Monthly Reporting Plan Form (CDC 57.106) ([Tables of Instructions List](#))

Data Field	Instructions for Form Completion
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Month/Year	Required. Enter the month and year for the surveillance plan being recorded; use MM/YYYY format.
No NHSN Patient Safety Modules Followed this Month	Conditionally required. Check this box if you do <u>not</u> plan to follow any of the NHSN Patient Safety Modules during the month and year selected.
Device-Associated Module	
Locations	Conditionally required. If you plan to follow device-associated events, enter the location codes for those facility locations where patients are housed overnight and from which you will collect denominator data (i.e., inpatient locations). If you plan to follow CLIP (see below), any type of patient care location where central lines are inserted may be entered.
CLABSI	Conditionally required. If you plan to follow device-associated events, check this box if you will collect central line-associated bloodstream infection (CLABSI) data and corresponding summary (denominator) data for the location in the left column.
DE	Conditionally required. If you plan to follow device-associated events, check this box if you will collect dialysis event (DE) data and corresponding summary (denominator) data for the outpatient dialysis location in the left column.
VAP	Conditionally required. If you plan to follow device-associated events, check this box if you will collect ventilator-associated pneumonia (VAP) data and corresponding summary (denominator) data for the location in the left column.
CAUTI	Conditionally required. If you plan to follow device-associated events, check this box if you will collect catheter-associated urinary tract infection (CAUTI) data and corresponding summary (denominator) data for the location in the left column.
CLIP	Conditionally required. Check this box if you will collect central line insertion practice (CLIP) data for the location indicated in the left column. These locations may be any type of patient care area where central lines are inserted (e.g., ward, OR, ED, ICU, outpatient clinic, etc.).
Procedure-Associated Module	
Procedures	Conditionally required. If you plan to follow procedure-associated events, list the procedure codes for those NHSN operative procedures for which you will collect data about selected procedure-associated events and procedure-level denominator data.



Data Field	Instructions for Form Completion
SSI (Circle one setting)	Conditionally required. For each selected NHSN operative procedure in the left column, if you plan to follow SSIs, choose the patient population for which you will monitor this procedure. Circle “In” to follow only inpatients, circle “Out” to follow only outpatients, or circle “Both” to follow inpatients <u>and</u> outpatients. If SSIs will not be monitored for a listed procedure for this month, do not circle any of the choices.
Post-procedure PNEU	Conditionally required. For each selected NHSN operative procedure in the left column, if you plan to follow post-procedure pneumonia (PPP), circle “In”. If you do not monitor PPP, leave this unmarked. NOTE: Inpatient (“In”) is the only setting option for monitoring post-procedure pneumonia.
Medication-Associated Module: Antimicrobial Use and Resistance	
Locations	Conditionally required. If you plan to follow the antimicrobial use and/or resistance (AUR) options, enter the location codes for those facility locations from which you will collect data about antimicrobial use and/or resistance.
Antimicrobial Use	Conditionally required. Check if you will submit antimicrobial use data for the selected location.
Antimicrobial Resistance	Conditionally required. Check if you will submit antimicrobial resistance data for the selected location.
MDRO and CDI Module	
For reporting overall facility-wide data:	
Locations (FacWideIN/OUT)	Conditionally required. Choose either FacWideIN, to perform overall facility-wide surveillance for all inpatient locations, or FacWideOUT, to perform overall facility-wide surveillance for all outpatient locations, if you plan to perform LabID Event reporting for an organism at the facility-wide level, instead of by location (i.e., using Methods C or D). To report LabID Events from both overall facility-wide inpatient and outpatient locations, you must choose both FacWideIN and FacWideOUT. (These will be added on two separate rows.)
Specific Organism Type	Conditionally required. Enter each organism you will be following for LabID Event reporting at the facility-wide level: MRSA, MRSA/MSSA, VRE, CephR- <i>Klebsiella</i> spp., CRE- <i>E. coli</i> , CRE- <i>Klebsiella</i> spp., MDR- <i>Acinetobacter</i> spp. and/or <i>C. difficile</i> .
LabID Event (All specimens or Blood specimens only)	Conditionally required. Choose whether you plan to report the specific MDRO as LabID Events at the facility-wide level for All specimens or for Blood specimens only. <i>C. difficile</i> must be reported for All specimens for LabID Event reporting at the facility-wide level.
Locations	Conditionally required. If you plan to perform Infection Surveillance and/or LabID Event reporting by specific location (i.e., Methods A or



Data Field	Instructions for Form Completion
	B), or if you plan to monitor process and/or outcome measures, then indicate the location(s) where specific monitoring will occur. You must add/complete a row for a second and each subsequent location.
Specific Organism Type	Conditionally required. Enter the organism you will be monitoring for a specific location: MRSA, MRSA/MSSA, VRE, CephR- <i>Klebsiella</i> spp., CRE- <i>E. coli</i> , CRE- <i>Klebsiella</i> spp., MDR- <i>Acinetobacter</i> spp. and/or <i>C. difficile</i> . If you plan to monitor more than one organism in a location, then a separate row must be completed for each organism for that location.
Infection Surveillance	Conditionally required. For the given location and organism, indicate if you plan to participate in Infection Surveillance. Infection Surveillance or LabID Event reporting in at least one patient care area is required for each organism your facility chooses to monitor (MRSA, MRSA/MSSA, VRE, CephR- <i>Klebsiella</i> spp., CRE- <i>E. coli</i> , CRE- <i>Klebsiella</i> spp., MDR- <i>Acinetobacter</i> spp. and/or <i>C. difficile</i>).
AST Timing	Conditionally required. For the given location and MRSA or VRE, if you plan to perform active surveillance testing (AST) for MRSA or VRE, indicate whether testing will be done on admission (Adm) only or at admission and at discharge/transfer (Both).
AST Eligible	Conditionally required. For the given location and MRSA or VRE, circle "All" if all patients will be eligible for AST, or, circle "NHx" to indicate that the only patients eligible for testing will be those with <u>no</u> history of MRSA or VRE colonization or infection in the past 12 months as documented by the admitting facility.
Incidence	Conditionally required. Select if you plan to report incidence of the organism (MRSA or VRE) at the location listed in the left column using AST and clinical positives.
Prevalence	Conditionally required. Select if you plan to report prevalence of the organism (MRSA or VRE) at the location listed in the left column using AST, clinical positive, and known positives.
LabID Event (All Specimens)	Conditionally required. For the given location and organism, indicate if you plan to monitor for Laboratory-identified (LabID) Events. Infection Surveillance or LabID Event reporting in at least one patient care area is required for each organism your facility chooses to monitor (MRSA, MRSA/MSSA, VRE, CephR- <i>Klebsiella</i> spp., CRE- <i>E. coli</i> , CRE- <i>Klebsiella</i> spp., MDR- <i>Acinetobacter</i> spp. and/or <i>C. difficile</i>).
HH	Conditionally required. Select this if you plan to monitor Hand Hygiene adherence in the location specified. Ideally, this should be the patient care location(s) also selected for MDRO or <i>C. difficile</i> surveillance.
GG	Conditionally required. Select this if you plan to monitor gown and gloves use adherence in the location specified. Ideally, this should be



Data Field	Instructions for Form Completion
	the patient care location(s) also selected for MDRO or <i>C. difficile</i> surveillance.
Vaccination Module	
Summary-Method or Patient-level Method:	Conditionally required. If you plan to follow this module, select either Summary-Method or Patient-level Method.

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Table 2. Instructions for Completion of the Primary Bloodstream Infection (BSI) Form (CDC 57.108) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male, or Other to indicate the gender of the patient.
Date of Birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity	Optional.
Hispanic or Latino	If patient is Hispanic or Latino, check this box.
Not Hispanic or Not Latino	If patient is not Hispanic or not Latino, check this box.
Race	Optional. Check all the boxes that apply to identify the patient's race.
Event type	Required. BSI.
Date of event	Required. The date when the first clinical evidence of the BSI appeared or the date the blood culture was collected, whichever comes first. Enter date of this event using this format: MM/DD/YYYY. NOTE: If a device has been pulled on the first day of the month in a location where there are no other device days in that month, and a device-associated infection develops after the device is pulled, attribute the infection to the previous month.
Post-procedure BSI	Optional. Check Y if this event occurred after an NHSN defined procedure but before discharge from the facility, otherwise check N.
NHSN procedure code	Conditionally required. If Post-procedure BSI = Y, enter the appropriate NHSN procedure code. NOTE: A BSI cannot be "linked" to an operative procedure unless that procedure has already been added to NHSN. If the procedure was previously added, and the "Link to Procedure" button is clicked, the fields pertaining to the operation will be auto-entered by the computer.
ICD-9-CM procedure code	Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code



Data Field	Instructions for Data Collection
	<p>is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. Only those ICD-9-CM codes identified in Table 1 of the Surgical Site Infection Event Chapter (Chapter 9 of NHSN Manual: Patient Safety Component Protocol) are allowed.</p>
MDRO infection	<p>Required. Enter “Yes”, if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan: MRSA, MSSA (MRSA/MSSA), VRE, CephR-<i>Klebsiella</i>, CRE-E. coli, CRE-<i>Klebsiella</i>, MDR-<i>Acinetobacter</i> or <i>C. difficile</i>.</p> <p>If the pathogen for this infection happens to be an MDRO but your facility is not following the Infection Surveillance in the MDRO/CDI Module in your Monthly Reporting Plan, answer “No” to this question.</p>
Location	<p>Required. Enter the inpatient location to which the patient was assigned when the BSI was identified.</p> <p>If the BSI develops in a patient within 48 hours of transfer from a location, indicate the transferring location, not the current location of the patient, in accordance with the Transfer Rule (see Key Terms section).</p>
Date admitted to facility	<p>Required. Enter date patient admitted to facility using this format: MM/DD/YYYY. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. When determining a patient’s admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an “observation” patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location.</p>
Risk Factors: If ICU/Other locations, central line	<p>Required. Answer this question if the location is an intensive care unit (ICU) or location other than a specialty care area (SCA) or neonatal intensive care unit (NICU). Check Y if patient had a central line during the 48 hour period before event date, otherwise check N.</p> <p>NOTE: If the patient has both a peripheral and a central line and the BSI can clearly be attributed to the peripheral line (e.g., pus at insertion site and matching pathogen from pus and blood), check N.</p>



Data Field	Instructions for Data Collection
Risk Factors: If Specialty Care Area, Permanent central line Temporary central line	Required. Answer these questions if the location is an SCA: Check Y if patient had a tunneled or implanted central line during the 48-hour period before event date, otherwise check N. Check Y if patient had a non-tunneled central line during the 48-hour period before event date, otherwise check N. NOTE: If the patient has both a peripheral and a central line and the BSI can clearly be attributed to the peripheral line (e.g., pus at insertion site and matching pathogen from pus and blood), check N.
Risk Factors: If NICU, Central line Birthweight	Required. Answer these questions if the location is an NICU: Check Y if patient had a non-umbilical central line during the 48-hour period before event date, otherwise check N. Required. Enter patient's weight at the time of birth in grams, <u>not</u> the weight on the date of event. NOTE: If the patient has both a peripheral and a central line and the BSI can clearly be attributed to the peripheral line (e.g., pus at insertion site and matching pathogen from pus and blood), check N.
Location of device insertion	Optional. Enter the patient location where the central line was inserted. <ul style="list-style-type: none"> • If the patient has more than one central line, enter the location where the first central line was inserted. • If the patient has both a permanent and a temporary central line, enter the location where the temporary line was inserted.
Date of device insertion	Optional. Enter the date the central line was inserted. If the patient has more than one central line, enter the insertion date for the first line that was inserted.
Event Details: Specific event	Required. Check Laboratory-confirmed (LCBI).
Event Details Specify criteria used	Required. Check each of the elements of the criterion that was used to identify this infection.
Event Details: Died	Required. Check Y if patient died during the hospitalization, otherwise check N.
Event Details: BSI contributed to death	Conditionally required if patient died. Check Y if the BSI contributed to death, otherwise check N.
Event Details: Discharge date	Optional. Date patient discharged from facility using this format: MM/DD/YYYY.
Event Details: Pathogen identified	Required. This field will be auto entered by the computer as Y. Specify pathogens on reverse of form (see Table 2a for instructions).



Data Field	Instructions for Data Collection
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYY), numeric, or alphanumeric. NOTE: Each custom field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.
Comments	Optional. Enter any information on the event.

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Table 2a. Instructions for Completion of the Back of the Following Forms: Primary Bloodstream Infection (CDC 57.108); Pneumonia (CDC 57.111); Urinary Tract Infection (CDC 57.114); Surgical Site Infection (CDC 57.120); Dialysis Event (CDC 57.109); MDRO and CDI Infection Event (CDC 57.126) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection/Entry
For specified Gram-positive, organisms, Gram-negative organisms, or other organisms, Pathogen #	<p>Up to three pathogens may be reported. If multiple pathogens are identified, enter the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report). If the species is not given on the lab report or is not found on the NHSN drop down list, then select the “spp” choice for the genus (e.g., <i>Bacillus cohnii</i> would be reported as <i>Bacillus</i> spp.).</p> <p>If the event reported is an ABUTI, then pathogen #1 must be an uropathogen. (Uropathogen microorganisms are: Gram-negative bacilli, <i>Staphylococcus</i> spp., yeasts, beta-hemolytic <i>Streptococcus</i> spp., <i>Enterococcus</i> spp., <i>G. vaginalis</i>, <i>Aerococcus urinae</i>, and <i>Corynebacterium</i> (urease positive)+.</p> <p>Note:** +Report <i>Corynebacterium</i> (unrease positive) as either <i>Corynebacterium</i> species unspecified (COS) or, as <i>C. urealyticum</i> (CORUR) if so speciated.)</p>
Antimicrobial agent and susceptibility results	<p>Conditionally required if Pathogen Identified = Y.</p> <ul style="list-style-type: none"> • For those organisms shown on the back of an event form, susceptibility results are required only for the agents listed. • For organisms that are not listed on the back of an event form, enter a susceptibility result for at least <u>one</u> antimicrobial agent, even if that result is “Not Tested”. <p>Circle the pathogen’s susceptibility result using the codes on the event forms.</p> <p>Additional antimicrobial agents and susceptibility results may be reported for up to a total of 20 agents.</p>



Table 3. Instructions for Completion of the Central Line Insertion Practices Adherence Monitoring Form (CDC 57.125) ([Tables of Instructions List](#))

Data Field	Instructions for Form Completion
Facility ID	The NHSN-assigned facility ID will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name: Last, first, middle	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male or Other to indicate the gender of the patient.
Date of Birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity	Optional.
Hispanic or Latino	If patient is Hispanic or Latino, check this box.
Not Hispanic or Not Latino	If patient is not Hispanic or not Latino, check this box.
Race (specify)	Optional. Check all the boxes that apply to identify the patient's race.
Event Type	Required. CLIP.
Location	Required. Enter the location of the patient at the time of the central line insertion.
Date of insertion	Required. Enter the date of central line insertion (MM/DD/YYYY).
Person recording insertion practice data	Required. Select inserter or observer.
Central line inserter ID	Optional. Enter the HCW ID# of the person inserting the central line.
Name, Last, First	Optional. Enter last name and first name of person inserting the central line.
Occupation of inserter	Required. Check the occupational category of the person inserting the central line Fellow; IV Team; Medical Student; Other Medical Staff; Physician Assistant; Attending physician; Intern/Resident; Other student; PICC Team. If Other than these, please specify.
Reason for insertion	Required. Check the primary reason for inserting the central line: New indication (e.g., hemodynamic monitoring, fluid/medication administration,



Data Field	Instructions for Form Completion
	etc.); Replace malfunctioning central line; Suspected central line-associated infection. If Other, please specify.
If Suspected central line-associated infection, was the central line exchanged over a guidewire?	Conditionally required. Answer this only if reason for insertion is suspected central line-associated infection. Check Y if the central line was exchanged over a guidewire; otherwise Check N.
Inserter performed hand hygiene prior to central line insertion	Required. Check Y if the inserter appropriately performed hand hygiene prior to inserting central line; otherwise check N. Appropriate hand hygiene includes the use of alcohol-based hand rub or soap and water hand wash. If not observed directly, ask inserter.
Maximal sterile barriers used	Required. Indicate whether each of the 5 barriers was used appropriately, by checking Y or N. NOTE: If inserter wore either a mask or a mask with eye shield, the Y box for Mask should be checked.
Skin preparation	Required. Check all that apply; Chlorhexidine gluconate; Povidone iodine; Alcohol; Other. If Other is chosen, specify prep used.
Was skin preparation agent completely dry at time of first skin puncture?	Required. Check Y if the skin prep agent was allowed to dry completely at the time of first skin puncture; otherwise select N. If not observed directly, ask inserter.
Insertion site	Required. Check the site of insertion of the central line: Femoral; Jugular; Lower extremity; Scalp; Subclavian; Umbilical; Upper extremity.
Antimicrobial coated catheter used	Optional. Check Y if antimicrobial coated catheter was used; otherwise check N.
Central line catheter type	Required. Check the type of central line inserted: Dialysis non-tunneled; Dialysis tunneled; Non-tunneled (other than dialysis); Tunneled (other than dialysis); PICC; Umbilical. If other, please specify. 'Other' should only be marked when none of the other options apply. It should <u>not</u> be used to specify brand names or number of lumens. Most lines can be categorized accurately by selecting from the options provided.
Did this insertion attempt result in a successful central line placement?	Required. Check Y if attempt was successful; otherwise check N.
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each custom field must be set up in the Facility/Custom Options section of the application before the field can be selected for



Data Field	Instructions for Form Completion
	use.
Comments	Optional. Enter any additional information on the central line insertion.

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Table 4. Instructions for Completion of Pneumonia (PNEU) Form (CDC 57.111) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto entered by the computer.
Event #	Event ID number will be auto entered by the computer.
Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male, or Other to indicate the gender of the patient.
Date of birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity Hispanic or Latino Not Hispanic or Not Latino	Optional. If patient is Hispanic or Latino, check this box. If patient is not Hispanic or not Latino, check this box.
Race	Optional. Check all the boxes that apply to identify the patient's race.
Event type	Required. PNEU.
Date of event	Required. The date when the first clinical evidence of the PNEU appeared or the date the specimen used to make or confirm the diagnosis was collected, whichever comes first. Enter date of this event using this format: MM/DD/YYYY. NOTE: If a device has been pulled on the first day of the month in a location where there are no other device days in that month, and a device-associated infection develops after the device is pulled, attribute the infection to the previous month.
Post-procedure PNEU	Required. Check Y if this event occurred after an NHSN defined procedure but before discharge from the facility, otherwise check N.
Date of procedure	Conditionally required. If Post-procedure PNEU = Y, then enter the date the procedure was done.
NHSN procedure code	Conditionally required. Answer this question only if this patient developed the PNEU during the same admission as an operative



Data Field	Instructions for Data Collection
	<p>procedure. Enter the appropriate NHSN procedure code. NOTE: A PNEU cannot be “linked” to an operative procedure unless that procedure has already been added to NHSN. If the procedure was previously added, and the “Link to Procedure” button is clicked, the fields pertaining to the operation will be auto entered by the computer.</p>
ICD-9-CM procedure code	<p>Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto entered by the computer. If the NHSN code is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. Only those ICD-9-CM codes identified in Table 1 of the Surgical Site Infection Event Chapter (Chapter 9 of NHSN Manual: Patient Safety Component Protocol) are allowed.</p>
MDRO infection	<p>Required. Enter “Yes”, if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan: MRSA, MSSA (MRSA/MSSA), VRE, CephR-<i>Klebsiella</i>, CRE-E. coli, CRE-<i>Klebsiella</i>, MDR-<i>Acinetobacter</i> or <i>C. difficile</i>. If the pathogen for this infection happens to be an MDRO but your facility is not following the Infection Surveillance in the MDRO/CDI Module in your Monthly Reporting Plan, answer “No” to this question.</p>
Location	<p>Required. Enter the inpatient location to which the patient was assigned when the PNEU was identified. If the PNEU develops in a patient within 48 hours of transfer from a location, indicate the transferring location, not the current location of the patient.</p>
Date admitted to facility	<p>Required. Enter date patient admitted to facility using this format: MM/DD/YYYY. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. When determining a patient’s admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an “observation” patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location.</p>
Risk Factors Ventilator	<p>Required. Check Y if the patient with PNEU had a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation, inclusive of the weaning period, within the</p>



Data Field	Instructions for Data Collection
Birth weight	48-hour period before developing infection, otherwise check N. Conditionally required. If the patient is a NICU patient, enter the patient's birth weight in grams, <u>not</u> the weight on the date of event.
Location of device insertion	Optional. Enter the patient location where the intubation and ventilation procedure was performed
Date of device insertion	Optional. Enter the date the intubation and ventilation procedure was performed.
Event Details: PNEU Specific event	Required. Check one: Clinically Defined Pneumonia (PNU1), Pneumonia with specific laboratory findings (PNU2), or Pneumonia in immunocompromised patients (PNU3), whichever criteria are met for this event.
Event Details: Specify criteria used	Required. Check each of the elements that were used to identify this infection.
Event Details: Secondary bloodstream infection	Required. Check Y if there is a culture-confirmed bloodstream infection (BSI) and a related pneumonia, otherwise check N.
Event Details: Died	Required. Check Y if patient died during the hospitalization, otherwise check N.
Event Details: PNEU contributed to death	Conditionally required. If the patient died, check Y if the PNEU contributed to death, otherwise check N.
Event Details: Discharge date	Optional. Date patient discharged from facility.
Event Details: Pathogen identified	Required. This field will be auto entered by the computer as Y. Specify pathogens on reverse form (see Table 2a for instructions).
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.
Comments	Optional. Enter any information on the event.



Table 5. Instructions for Completion of Urinary Tract Infection (UTI) Form (CDC 57.114) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection/Entry
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male, or Other to indicate the gender of the patient.
Date of birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity	Optional.
Hispanic or Latino	If patient is Hispanic or Latino, check this box.
Not Hispanic or Not Latino	If patient is not Hispanic or not Latino, check this box.
Race	Optional. Check all the boxes that apply to identify the patient's race.
Event type	Required. UTI.
Date of event	Required. The date when the first clinical evidence of the UTI appeared or the date the specimen used to make or confirm the diagnosis was collected, whichever comes first. Enter date of this event using this format: MM/DD/YYYY. NOTE: If a device has been pulled on the first day of the month in a location where there are no other device days in that month, and a device-associated infection develops after the device is pulled, attribute the infection to the previous month.
Post-procedure UTI	Optional. Check Y if this event occurred after an NHSN defined procedure but before discharge from the facility, otherwise check N.
Date of procedure	Conditionally required. If Post-procedure UTI = Y, enter the date the procedure was done.
NHSN procedure code	Conditionally required. If Post-procedure UTI = Y, enter the appropriate NHSN procedure code. NOTE: A UTI cannot be "linked" to an operative procedure unless that procedure has already been added to NHSN. If the procedure was previously added, and the "Link to Procedure" button is clicked, the



Data Field	Instructions for Data Collection/Entry
	fields pertaining to the operation will be auto-entered by the computer.
ICD-9-CM procedure code	Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. Only those ICD-9-CM codes identified in Table 1 of the Surgical Site Infection Event Chapter (Chapter 9 of NHSN Manual: Patient Safety Component Protocol) are allowed.
MDRO infection	Required. Enter “Yes”, if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan: MRSA, MSSA (MRSA/MSSA), VRE, CephR- <i>Klebsiella</i> , CRE-E. coli, CRE- <i>Klebsiella</i> , MDR- <i>Acinetobacter</i> or <i>C. difficile</i> . If the pathogen for this infection happens to be an MDRO but your facility is not following the Infection Surveillance in the MDRO/CDI Module in your Monthly Reporting Plan, answer “No” to this question.
Location	Required. Enter the inpatient location to which the patient was assigned when the UTI was identified. If the UTI develops in a patient within 48 hours of transfer from a location, indicate the transferring location, not the current location of the patient.
Date admitted to facility	Required. Enter date patient admitted to facility using this format: MM/DD/YYYY. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. When determining a patient’s admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an “observation” patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location.
Risk factor: Urinary catheter status at time of specimen collection or onset of signs or symptoms	Required. Check “In place” if urinary catheter was in place at time of urine specimen collection or onset of signs and symptoms; Check “Removed within 48 hours prior” if a urinary catheter was removed within the 48 hours before urine specimen was collected or onset of signs and symptoms; Check “Not in place nor within 48 hours prior” if no urinary catheter was in place at the time of or within the 48 hours prior to urine specimen collection.
Location of device insertion	Optional. Enter the patient location where the indwelling urethral catheter was inserted.
Date of device insertion	Optional. Enter the date the indwelling urethral catheter was inserted.
Event details:	Required. Check Symptomatic UTI (SUTI), Asymptomatic Bacteremic



Data Field	Instructions for Data Collection/Entry
Specific event: UTI	UTI (ABUTI), or Other UTI (OUTI), for the specific event type you are reporting.
Event details: UTI Specify criteria used	Required. Check each of the elements of the criteria that were used to identify the specific type of UTI being reported.
Event Details: Secondary bloodstream infection	Required. Check Y if there is a culture-confirmed bloodstream infection (BSI) and a related healthcare-associated UTI, otherwise check N.
Event Details: Died	Required. Check Y if patient died during the hospitalization, otherwise check N.
Event Details: UTI contributed to death	Conditionally required. If patient died, check Y if the UTI contributed to death, otherwise check N.
Event Details: Discharge date	Optional. Date patient discharged from facility.
Event Details: Pathogens identified	Required. Enter Y if pathogen identified, N if otherwise. If Y, specify pathogens on reverse of form (see Table 2a for instructions). For SUTI with secondary BSI and ABUTI, enter only the matching organism(s) identified in <u>both</u> urine and blood cultures (See Table 2a for instructions). For ABUTI, the organism listed as pathogen number 1, must be an uropathogen (See ABUTI criterion).
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.
Comments	Optional. Enter any information on the event.

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Table 6. Instructions for the Completion of Denominators for Intensive Care Unit (ICU)/Other Locations (Not NICU or SCA) (CDC 57.118)
([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Location code	Required. Enter the location code of the unit where you collect the data.
Month	Required. Record the 2-digit month during which the data were collected for this location.
Year	Required. Record the 4-digit year during which the data were collected for this location.
Number of patients	Required. For each day of the month selected, record the number of patients on the unit. Record this number at the same time each day.
Number of patients with 1 or more central lines	<p>Conditionally required. Complete if you have chosen central line-associated bloodstream infection (CLABSI) as an event to follow in your Plan for this month.</p> <p>For each day of the month, at the same time each day, record the number of patients on the selected unit who have 1 or more central lines. NOTE: "If the patient has only a tunneled or implanted central line, begin recording days on the first day the line was accessed and continue until the line is discontinued or the patient is transferred/discharged."</p> <p>NOTE: If a device has been pulled on the first day of the month in a location where there are no other device days in that month, and a device-associated infection develops after the device is pulled, attribute the infection to the previous month.</p>
Number of patients with a urinary catheter	<p>Conditionally required. Complete if you have chosen catheter-associated urinary tract infection (CAUTI) as an event to follow in your Plan for this month.</p> <p>For each day of the month, at the same time each day, record the number of patients on the selected unit who have an indwelling urinary catheter. NOTE: If a device has been pulled on the first day of the month in a location where there are no other device days in that month, and a device-associated infection develops after the device is pulled, attribute the infection to the previous month.</p>
Number of patients on a ventilator	<p>Conditionally required. Complete if you have chosen ventilator-associated pneumonia (VAP) as an event to follow in your Plan for this month.</p> <p>For each day of the month, at the same time each day, record the number of patients on the selected unit who are on a ventilator. NOTE: If a device has been pulled on the first day of the month in a location</p>



Data Field	Instructions for Data Collection
	where there are no other device days in that month, and a device-associated infection develops after the device is pulled, attribute the infection to the previous month.
Total	Required. Totals for each column should be calculated. This is the number that will be entered into the NHSN application.
Report No Events	While not on the paper data collection form, when completing summary data entry on-line, if no events included on your monthly reporting plan are reported, you will be required to check the appropriate Report No Events box(es), i.e., CLABSI, CAUTI, VAP.
Custom Fields	<p>Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric.</p> <p>NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use.</p>

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Table 7. Instructions for Completion of the Denominators for Specialty Care Area (SCA) (CDC 57.117) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer
Location code	Required. Enter the location code of the unit where you collect the data.
Month	Required. Record the 2-digit month during which the data were collected for this location.
Year	Required. Record the 4-digit year during which the data were collected for this location.
Number of patients	Required. For each day of the month selected, record the number of patients on the unit. Record this number at the same time each day.
Number of patients with 1 or more central lines	Conditionally required. Complete if you have chosen central line-associated bloodstream infection (CLABSI) as an event to follow in your Plan for this month.
Temporary	For each day of the month, at the same time each day, record the number of patients on the selected unit who have 1 or more non-tunneled central lines.
Permanent	For each day of the month, at the same time each day, record the number of patients on the selected unit who have 1 or more tunneled or implanted central lines beginning on the first day the permanent line was accessed and continuing until the line is discontinued or the patient is transferred/discharged. NOTE: If a patient has both a temporary and a permanent line in place, count only the temporary line.
Number of patients with a urinary catheter	Conditionally required. Complete if you have chosen catheter-associated urinary tract infection (CAUTI) as an event to follow in your Plan for this month. For each day of the month, at the same time each day, record the number of patients on the selected unit who have an indwelling urinary catheter.
Number of patients on a ventilator	Conditionally required. Complete if you have chosen ventilator-associated pneumonia (VAP) as an event to follow in your Plan for this month. For each day of the month, at the same time each day, record the number of patients on the selected unit who are on a ventilator.
Total	Required. Totals for each column should be calculated. This is the number that will be entered into the NHSN application.
Report No Events	While not on the paper data collection form, when completing summary data entry on-line, if no events included on your monthly reporting plan are reported, you will be required to check the appropriate Report No



Data Field	Instructions for Data Collection
	Events box(es), i.e., CLABSI, CAUTI, VAP.
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use.

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Table 8. Instructions for Completion of the Denominators for Neonatal Intensive Care Unit (NICU) (CDC 57.116) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Location code	Required. Enter the location code of the unit where you collect the data.
Month	Required. Record the 2-digit month during which the data were collected for this location.
Year	Required. Record the 4-digit year during which the data were collected for this location.
Birthweight Categories	Required. The birthweight categories are as follows: A = ≤ 750 g; B = 751-1000 g; C = 1001-1500 g; D = 1501-2500 g; E = >2500 g. Data on this form are stratified by this category.
Number of patients (Pts)	Required. For each day of the month selected, record the number of patients in each birthweight category on the unit. Record this number at the same time each day.
Number of patients with a central line (CL):	<p>Conditionally required. Complete if you have chosen central line-associated bloodstream infection (CLABSI) as an event to follow in your Plan for this month for this unit.</p> <p>For each day of the month, at the same time each day, record the number of patients in each birthweight category on the selected unit who have 1 or more central line(s) in place.</p> <p>NOTE: Umbilical catheters are considered central lines.</p>
Number of patients on a ventilator (VNT)	<p>Conditionally required. Complete if you have chosen ventilator-associated pneumonia (VAP) as an event to follow in your Plan for this unit for this month.</p> <p>For each day of the month, at the same time each day, record the number of patients in each birthweight category on the selected unit who are on a ventilator.</p>
Number of patients with an indwelling urinary catheter (UrC)	Optional. This field can be completed even though NICU CAUTI surveillance cannot be included in your plan.
Total	Required. Totals for each column should be calculated. This is the number that will be entered into the NHSN application.
Report No Events	While not on the paper data collection form, when completing summary data entry on-line, if no events included on your monthly reporting plan are reported, you will be required to check the appropriate Report No Events box(es), i.e., CLABSI, CAUTI, VAP.
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYY),



Data Field	Instructions for Data Collection
	numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use.

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See Dialysis Manual for detailed instructions for Dialysis Event (DE) surveillance.
Table 9. Instructions for Completion of Dialysis Event (DE) form (CDC 57.109) see http://www.cdc.gov/nhsn/psc_da.html

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Instructions for the Dialysis Event Form (CDC 57.109)

Complete a dialysis event form for IV antimicrobial starts; positive blood cultures; and onsets of pus, redness, or increased swelling at vascular access sites, according to definitions and reporting instructions in the Dialysis Event Protocol.

Patient Data	
Data Fields	Instructions for Completion
Facility ID #	NHSN-assigned facility ID will be auto-entered by the computer.
Event ID #	Event ID# will be auto-entered by the computer.
*Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the healthcare facility and may consists of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient’s Medicare number.
Patient Name	Optional. Enter last, first and middle name of the patient.
*Gender	Required. Check “Female”, “Male”, or “Other” to indicate the gender of the patient.
*Date of Birth	Required. Record the date of birth using this format: MM/DD/YYYY.
Ethnicity (specify): Hispanic or Latino Not Hispanic/ Not Latino	Optional. If patient is Hispanic or Latino, check this box. If patient is not Hispanic and not Latino, check this box.
Race (specify)	Optional. Check all the boxes that apply to identify patient’s race.
Event Type, Location	
*Event Type	Required. Select DE – Dialysis Event.
*Event Date	Required. Date depends on event type: <ul style="list-style-type: none"> • For IV antimicrobial starts, enter the date of the first outpatient IV antimicrobial administration. • For positive blood cultures, enter the date the blood specimen was collected. • For pus, redness, or increased swelling at the vascular access site, enter the onset date. • If reporting more than one type of dialysis event, using the above criteria select the earliest date of what is reported. Enter date of the event using this format: MM/DD/YYYY.
*Location	Required. Enter the location code of the “outpatient hemodialysis clinic” that is collecting dialysis event information.



Risk Factors	
Data Fields	Instructions for Completion
*Vascular access type	Required. Check all vascular accesses that the patient has present at the time of the dialysis event. Include all central vascular accesses, not only those being used for dialysis.
Fistula	A surgically created connection between an artery and a vein.
Buttonhole	Conditionally required for patients with fistulas. Indicate whether the fistula is regularly accessed via buttonhole cannulation technique.
Graft	A surgically created connection between an artery and a vein created with implanted synthetic tubing.
Tunneled central line	A central venous catheter that travels a distance under the skin from the point of insertion before terminating at or close to the heart or one of the great vessels.
Nontunneled central line	A central venous catheter that is fixed in place at the point of insertion and travels directly from the skin entry site to a vein and terminates close to the heart or one of the great vessels.
Other access device	Includes hybrid access devices (e.g., HeRO®), ports, and any other vascular access devices not meeting definitions for fistula, graft, tunneled central lines, or nontunneled central lines. ¹
*Access Placement Date	Required. For each access type present, indicate the date the access was placed or check the box if placement date is unknown. Enter the date using this format: MM/YYYY.
Other Patient Information	
Data Fields	Instructions for Completion
*Transient Patient	Required. Check “Yes” if this patient was temporarily admitted for treatment at a your facility for a short time (less than 30 days or 13 treatments) due to vacation, emergency, or other short-term displacement. Check “No” if this patient is part of your regular patient census.

¹ Use of trade names and commercial sources is for identification only and does not imply endorsement.



Event Details	
Data Fields	Instructions for Completion
Specify Dialysis Event	Required. Check all that apply:
IV antimicrobial start	<p>Check “IV antimicrobial start” if the patient had an outpatient intravenous (IV) antibiotic or antifungal start, regardless of the reason for treatment (i.e., include IV antimicrobial starts unrelated to vascular access problems) and regardless of the duration of treatment. Report all IV antibiotic starts, not just vancomycin. Do not report IV antiviral starts. Report outpatient starts that are continuations of inpatient treatment.</p> <p>There must be 21 or more days from the end of the first IV antimicrobial start to the beginning of a second IV antimicrobial start for two starts to be considered separate dialysis events, even if different antimicrobials are used. If IV antimicrobials are stopped for less than 21 days and then restarted, the second start is NOT considered a new dialysis event. To apply the 21 day rule to outpatient IV antimicrobial starts that are continuations of inpatient treatment, consider the start day to be the first day of outpatient treatment.</p>
Was vancomycin the antimicrobial used for this start?	Conditionally required for IV antimicrobial start dialysis events. Indicate whether IV vancomycin was started by checking “Yes” or “No”.
Positive blood culture	<p>Check “Positive blood culture” if the patient had a positive blood culture where the specimen was collected as an outpatient or collected within 1 calendar day after a hospital admission, regardless of whether or not the patient received treatment. The date of a blood culture result is based on the date the blood specimen was collected, not the date the laboratory reported the result.</p> <p>There must be 21 or more days between positive blood cultures for each positive blood culture to be considered a separate dialysis event, even if organisms are different. If positive blood cultures occur less than 21 days apart, the second positive blood culture(s) is NOT considered a new dialysis event: add new organisms from these subsequent positive blood cultures to the first report.</p>
If positive blood culture, specify pathogen on pages 2-3	Conditionally required for positive blood culture. Indicate the pathogen(s) and antimicrobial susceptibility results on pages 2-3 of the Dialysis Event form as instructed in the Pathogens and Antimicrobial Susceptibilities section of these instructions (pages 6-7).



<p>Suspected source of positive blood culture (check one):</p>	<p>Conditionally required for positive blood culture dialysis events. Check the suspected source of the positive blood culture:</p> <ul style="list-style-type: none"> • <u>Vascular access</u>: Choose “Vascular access” if there is objective evidence of vascular access infection and the vascular access is thought to be the source of the positive blood culture. • <u>A source other than the vascular access</u>: Choose “A source other than the vascular access” if either (a) or (b) is true: <ol style="list-style-type: none"> a) a culture from another site (e.g., infected wound, urine) shows the same organism found in the blood and is thought to be the source of the positive blood culture. b) there is clinical evidence of infection at another site and the other site is thought to be the source of the positive blood culture, but the site was not sampled for culture. • <u>Contamination</u>: Choose “Contamination” if the organism isolated from the blood culture is thought by the physician, infection preventionist, or nurse manager to be a contaminant. Contamination is more likely if the organism is a common commensal and is isolated from only one blood culture. Examples of some common commensals include: diphtheroids [<i>Corynebacterium</i> spp., not <i>C. diphtheriae</i>], <i>Bacillus</i> [not <i>B. anthracis</i>] sup., <i>Propionibacterium</i> supp., coagulase-negative staphylococci [including <i>S.epidermidis</i>], viridians group streptococci, <i>Aerococcus</i> spp., <i>Micrococcus</i> spp. • <u>Uncertain</u>: Choose “Uncertain” only if there is insufficient evidence to decide among the three previous categories.
<p>Pus, redness, or increased swelling at the vascular access site</p> <p>Check the access site(s) with pus, redness, or increased swelling:</p>	<p>Check “Pus, redness, or increased swelling at the vascular access site” if the patient had a new outpatient episode of one or more symptoms of pus, greater than expected redness or greater than expected swelling at a vascular access site, regardless of whether the patient received treatment.</p> <p>There must be 21 or more days between the onset of a first episode and onset of a second episode of pus, redness, or increased swelling at a vascular access site to be considered separate dialysis events. If an episode of pus, redness, or increased swelling at a vascular access site resolves and then recurs within 21 days, the recurrence is NOT considered a new dialysis event.</p> <p>Conditionally required if there is pus, redness, or increased swelling at the vascular access site. Check vascular access site(s) with these findings.</p>



*Specify Problem(s)	Required. For each problem, check all that are present.
Fever	Check if fever $\geq 37.8^{\circ}\text{C}$ (100°F) oral is present.
Chills or rigors	Check if chills or rigors are present.
Drop in Blood Pressure	Check if abnormal drop in blood pressure is present.
Wound (NOT related to vascular access) with pus or increased redness	Check if a wound that is unrelated to the vascular access site has pus or increased redness is present.
Cellulitis	Check if cellulitis is present at a site other than the vascular access and without open wound.
Pneumonia or respiratory infection	Check if pneumonia or respiratory infection is present.
Other Problem	Check if other problem related to the IV antimicrobial start; positive blood culture; and/or pus, redness, or increased swelling at vascular access site is present. Specify the problem.
None	Check "none" if there are no problems.
*Outcome(s)	Required.
Hospitalization	Check "Yes" if the patient was hospitalized related to the event or problem. Check "No" if patient was not hospitalized. Check "Unknown" if uncertain about whether or not the patient was hospitalized.
Death	Check "Yes" if the patient died related to the event or problem. Check "No" if patient did not die. Check "Unknown" if uncertain about whether or not the patient died.

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Pathogens and Antimicrobial Susceptibilities	
Data Fields	Instructions for Completion
Pathogen # for gram-positive organisms, gram-negative organisms, and fungal organisms	Up to three pathogens may be reported per event. If multiple pathogens are identified, enter the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report).
Antimicrobial agent and susceptibility results	<p>Conditionally required if a pathogen is identified.</p> <ul style="list-style-type: none"> • For those organisms shown on the back of the event form, susceptibility results are required only for the agents listed. • For organisms that are not listed on the back of an event form, enter a susceptibility result for at least <u>one</u> antimicrobial agent, even if that result is “Not Tested”. <p>Circle the pathogen’s susceptibility result for each antimicrobial agent (see Table on page 7 for a list of antimicrobial drug codes):</p> <p>S – Susceptible I – Intermediate R – Resistant NS- Non-susceptible S-DD- Susceptible-dose dependent N – Not Tested</p> <p>For gentamicin and streptomycin high level tests, use result codes:</p> <p>S – Suseptible/Synergistic R – Resistant/Not Synergistic</p>
Custom Fields	
Data Fields	Instructions for Completion
Custom fields	<p>Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MM/DD/YYYY), numeric, or alphanumeric.</p> <p>NOTE: Each custom field must be added in advance. Within NHSN, select “Facility”, then “Customize Forms”, and then follow on-screen instructions. Form Type is “CDC-Defined – PS – Event” and form is “DE – Dialysis Event”.</p>
Comments	
Data Fields	Instructions for Completion
Comments	Optional. Enter any information on the Dialysis Event. This information might not be analyzed.

**Table: Antimicrobial Drug Codes**

AMK = amikacin	GENT = gentamicin
AMP = ampicillin	GENTHL = gentamicin –high level test
AMPSUL = ampicillin/sulbactam	IMI = imipenem
AMXCLV = amoxicillin/clavulanic acid	ITRA = itraconazole
ANID = anidulafungin	LEVO = levofloxacin
AZT = aztreonam	LNZ = linezolid
CASPO = caspofungin	MERO = meropenem
CEFAZ= cefazolin	METH = methicillin
CEFEP = cefepime	MICA = micafungin
CEFOT = cefotaxime	MINO = minocycline
CEFOX= ceftazidime	MOXI = moxifloxacin
CEFTAZ = ceftazidime	OX = oxacillin
CEFTRX = ceftriaxone	PB = polymyxin B
CEFUR= cefuroxime	PIP = piperacillin
CETET= cefotetan	PIPTAZ = piperacillin/tazobactam
CHLOR= chloramphenicol	QUIDAL = quinupristin/dalfopristin
CIPRO = ciprofloxacin	RIF = rifampin
CLIND = clindamycin	STREPHL = streptomycin –high level test
COL = colistin	TETRA = tetracycline
DAPTO = daptomycin	TICLAV = ticarcillin/clavulanic acid
DORI = doripenem	TIG = tigecycline
DOXY = doxycycline	TMZ = trimethoprim/sulfamethoxazole
ERTA = ertapenem	TOBRA = tobramycin
ERYTH = erythromycin	VANC = vancomycin
FLUCO = fluconazole	VORI = voriconazole
FLUCY = flucytosine	



Instructions for the Denominators for Outpatient Dialysis: Census Form (CDC 57.119)

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
*Location code	Required. Enter the location code for the “outpatient hemodialysis clinic” location from which you will collect data about dialysis events.
*Month	Required. Record the month during which the data were collected for this location.
*Year	Required. Record the 4-digit year during which the data were collected for this location.
*Number of Chronic Hemodialysis Patients by Vascular Access Type	<p>Required. For each type of vascular access listed, record the number of patients who received maintenance hemodialysis at this location on the first two working days of the month, including transient patients. A patient must be physically present for in-center maintenance hemodialysis on one of these days to be counted on this form (exclude patients who are hospitalized). Record each patient only once. If a patient has more than one vascular access, record the access type with highest risk for infection.</p> <p>Lowest Risk</p> <p style="text-align: center;">↓</p> <ul style="list-style-type: none"> Fistula Graft Other access device (e.g., hybrid access device) Tunneled Central Line Nontunneled Central Line <p>Highest Risk</p> <p>For example, if a patient has a fistula and a tunneled central line, count this patient under the category of tunneled central line. If the patient has a fistula and a “jump graft” record the patient as having a graft. If the patient has only a catheter-graft hybrid or a port, record as “other access device”.</p>
Number of these Fistula Patients who undergo Buttonhole Cannulation	Conditionally required. Out of the fistula patients counted above, how many undergo buttonhole cannulation.
*Total patients	Required. The sum of all patients listed above will enter automatically.
Optional fields	<p>Optional. Up to fifty alphanumeric, numeric, and/or date fields may added to this form for local use.</p> <p>NOTE: Each custom field must be added in advance. Within NHSN, select “Facility”, then “Customize Forms”, and then follow on-screen instructions. Form Type is “CDC-Defined – PS – Summary Data” and form is “DIAL – Outpatient Dialysis Census Form”.</p>



Table 10. See Instructions for Completion of Denominators for Outpatient Dialysis: Census Form (CDC 57.119) http://www.cdc.gov/nhsn/psc_da.html

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Table 11. Instructions for Completion of the AUR Option Forms (CDC 57.123 and CDC 57.124) ([Tables of Instructions List](#))

As of 2010, these forms were retired.

Please refer to Patient Safety Component Manual Chapter 11 for the protocol for collecting and reporting of Antimicrobial Use Option data, which became available for use in v6.4 (June 2011). Note that this option does not have a data collection form or manual data entry and instead uses Clinical Document Architecture (CDA) as the sole means of data reporting. Appendix A gives detailed instructions of the data field specifications.

The Antimicrobial Resistance Option is currently undergoing revision, and no data may be reported to NHSN at this time.

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Table 12. Instructions for Completion of the Surgical Site Infection (SSI) Form (CDC 57.120) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male, or Other to indicate the gender of the patient.
Date of birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity	Optional.
Hispanic or Latino	If patient is Hispanic or Latino, check this box.
Not Hispanic or Not Latino	If patient is not Hispanic or not Latino, check this box.
Race	Optional. Check all the boxes that apply to identify the patient's race.
Event type	Required. Enter SSI.
Date of event	Required. The date when the first clinical evidence of the SSI appeared or the date the specimen used to make or confirm the diagnosis was collected, whichever comes first. Enter date of this event using this format: MM/DD/YYYY.
NHSN procedure code	Required. Enter the appropriate NHSN procedure code. For detailed instructions on how to report NHSN operative procedures, see Chapter 9 of NHSN Patient Safety Component Manual. NOTE: An SSI cannot be "linked" to an operative procedure unless that procedure has already been added to NHSN. If the procedure was previously added, and the "Link to Procedure" button is clicked, the fields pertaining to the operation will be auto-entered by the computer.
Date of procedure	Required. Enter date using this format: MM/DD/YYYY.
ICD-9-CM procedure code	Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. The only allowed ICD-9-CM



Data Field	Instructions for Data Collection
	codes are shown in Table 1: NHSN Operative Procedure Category Mappings to ICD-9-CM Codes in the Surgical Site Infection Event chapter (Chapter 9 of NHSN Patient Safety Component Manual).
Outpatient Procedure	Required. Check Y if this operative procedure was performed on an NHSN outpatient; otherwise check N.
MDRO Infection Surveillance	<p>Required. Enter “Yes”, if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan: MRSA, MSSA (MRSA/MSSA), VRE, CephR-<i>Klebsiella</i>, CRE-E. coli, CRE-<i>Klebsiella</i>, MDR-<i>Acinetobacter</i> or <i>C. difficile</i>. If the pathogen for this infection happens to be an MDRO but your facility is not following the Infection Surveillance in the MDRO/CDI Module in your Monthly Reporting Plan, answer “No” to this question.</p> <p>NOTE: For an SSI, the location of attribution is the post-op location, so if-</p> <ol style="list-style-type: none"> 1. The event occurs in a different calendar month from the surgical procedure AND 2. Your facility is performing Infection Surveillance for the organism causing the SSI in the post-op location for the month reported in the Date of Event, <p>Then please answer “Yes” to this question.</p>
Location	Conditionally required if MDRO Infection Surveillance field is Yes. Enter the patient care area where the patient was assigned in the postoperative period. Inpatient or outpatient locations are allowed, but Operating Room locations are not allowed.
Date admitted to facility	Required. Enter date patient admitted to facility using this format: MM/DD/YYYY. If a patient is readmitted with a previously unreported SSI associated with an operative procedure performed during a previous admission, enter the date of admission of the facility stay in which the operative procedure was performed. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. When determining a patient’s admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an “observation” patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location.
Event details specific event SSI	<p>Required. Check the appropriate level of SSI from the list</p> <p><input type="checkbox"/> Superficial incisional primary (SIP)</p> <p><input type="checkbox"/> Superficial incisional secondary (SIS)</p> <p><input type="checkbox"/> Deep incisional primary (DIP)</p> <p><input type="checkbox"/> Deep incisional secondary (DIS)</p> <p><input type="checkbox"/> Organ/space: <input type="checkbox"/> (Indicate specific site code from Table 2. Specific Sites of</p>



Data Field	Instructions for Data Collection
	Organ/Space SSI in the Surgical Site Infection Event chapter [Chapter 9] of NHSN Patient Safety Component Manual.)
Event details: SSI Specify criteria used	Required. Check each of the elements of the definition that were used to identify the specific type of SSI. Specific Organ/space event types have their own unique criteria which must be met. They are found in Chapter 17 of the Patient Safety Component Manual: CDC/NHSN Surveillance Definition of Healthcare-Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting.
Event details: Detected	Required. Check A if SSI was identified before the patient was discharged from the facility following the operation. Check P if SSI was identified during post-discharge surveillance. Include as P those SSI identified in the Emergency Department but not readmitted to the facility. Check RF if SSI was identified due to patient readmission to the facility where the operation was performed. Check RO if SSI was identified due to readmission to facility other than where the operation was performed.
Event Details: Secondary bloodstream infection	Required. Check Y if there is a culture-confirmed bloodstream infection (BSI) and a related healthcare-associated infection at the surgical site, otherwise check N.
Event details: Died	Required. Check Y if patient died during the hospitalization, otherwise check N.
Event Details: SSI contributed to death	Conditionally required. If patient died, check Y if the SSI contributed to death, otherwise check N.
Event Details: Discharge date	Optional. Enter date patient discharged from facility using this format: MM/DD/YYYY. If a patient is readmitted with a previously unreported SSI associated with an operative procedure performed in a previous admission, enter the date of discharge of the facility stay in which the operative procedure was performed.
Event Details: Pathogens identified	Required. This field will be auto entered by the computer as Y. Specify pathogens on reverse of form (see Table 2a above for instructions).
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.
Comments	Optional. Enter any information on the event.



Table 13. Instructions for Completion of the Denominator for Procedure form (CDC 57.121) ([Tables of Instructions List](#))

This form is used for reporting data on each patient having one of the NHSN operative procedures selected for monitoring.

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID will be auto-entered by the computer.
Procedure #	The NHSN-assigned Procedure # will be auto-entered by the computer
Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Check Female, Male, or Other to indicate the gender of the patient.
Date of birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity Hispanic or Latino Not Hispanic or Not Latino	Optional. If patient is Hispanic or Latino, check this box. If patient is not Hispanic or not Latino, check this box.
Race	Optional. Check all the boxes that apply to identify the patient's race.
Event type	Required. Enter the code for procedure (PROC).
NHSN Procedure code	Required. Enter the appropriate NHSN procedure code.
ICD-9-CM procedure code	Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code is entered first, you will have the option to select the



Data Field	Instructions for Data Collection
	<p>appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. The only allowed ICD-9-CM codes are listed in Table 1: NHSN Operative Procedure Category Mappings to ICD-9-CM Codes in the Surgical Site Infection Event chapter (Chapter 9 of NHSN Patient Safety Component Manual).</p>
Date of procedure	<p>Required. Record the date when the NHSN procedure was done using this format: MM/DD/YYYY.</p>
<p>Procedure Details:</p> <p style="padding-left: 100px;">Outpatient:</p> <p style="padding-left: 100px;">Duration:</p> <p style="padding-left: 100px;">Wound class:</p> <p style="padding-left: 100px;">General anesthesia:</p> <p style="padding-left: 100px;">ASA class:</p> <p style="padding-left: 100px;">Emergency:</p> <p style="padding-left: 100px;">Trauma:</p>	<p>Required. Check Y if this operative procedure was performed on an NHSN outpatient, otherwise check N.</p> <p>Required. Enter the interval in hours and minutes between the skin incision and skin closure.</p> <p>Required. Check the appropriate wound class from the list.</p> <p>Required. Check Y if general anesthesia was used for the operative procedure, otherwise check N. General anesthesia is defined as the administration of drugs or gases that enter the general circulation and affect the central nervous system to render the patient pain free, amnesic, unconscious, and often paralyzed with relaxed muscles.</p> <p>Conditionally Required. Required for Inpatient procedures only. Check numeric ASA classification at the time of the operative procedure.</p> <p>Required. Check Y if this operative procedure was a nonelective, unscheduled operative procedure, otherwise check N. Emergency operative procedures are those that do not allow for the standard immediate preoperative preparation normally done within the facility for a scheduled operation (e.g., stable vital signs, adequate antiseptic skin preparation, colon decontamination in advance of colon surgery, etc.).</p> <p>Required. Check Y if operative procedure was performed because of blunt or penetrating traumatic injury to the patient, otherwise check N.</p>



Data Field	Instructions for Data Collection
<p>Endoscope:</p> <p>Surgeon code:</p> <p>Implant:</p>	<p>Required. Check Y if the entire operative procedure was performed using an endoscope/laparoscope/robotic assist. Check N if the endoscope incision was extended to allow hand assistance, or was fully converted to an open approach.</p> <p>NOTE: For CBGB, if the donor vessel was harvested using an endoscope, check Y.</p> <p>Optional. Enter code of the surgeon who performed the principal operative procedure.</p> <p>Required. Check Y if a nonhuman-derived object, material, or tissue was permanently placed in a patient during the operative procedure and will not be routinely manipulated for diagnostic or therapeutic purposes (see “Implant” key terms for example), otherwise check N.</p>
CSEC: Height	Conditionally required. If operative procedure is CSEC, enter patient height in feet and inches or meters and centimeters.
CSEC: Weight	Conditionally required. If operative procedure is CSEC, enter patient’s most recent weight in pounds or kilograms.
CSEC: Duration of labor	<p>Conditionally required. If operative procedure is CSEC, enter number of hours the patient labored in the hospital from beginning of active labor to delivery of the infant, expressed in hours. The documentation of active labor can be supplied in the chart by a member of the healthcare team or physician. Active labor may be defined by the individual facility’s policies and procedures.</p> <p>If a patient is admitted for a scheduled CSEC and has not yet gone into labor, the duration of labor would be 0. Hours should be rounded in the following manner: ≤ 30 minutes round down; > 30 minutes round up.</p>
Circle one: FUSN RFUSN	Conditionally required. If operative procedure is FUSN or RFUSN, circle the procedure that was done.
FUSN/RFUSN: Spinal level	<p>Conditionally required. If operative procedure is FUSN or RFUSN, check appropriate spinal level of procedure from list.</p> <ul style="list-style-type: none"> • Atlas-Axis – C1 and/or C2 only • Atlas-Axis/Cervical – C1-C7 (any combination)



Data Field	Instructions for Data Collection
	<p>excluding C1 and/or C2 only)</p> <ul style="list-style-type: none"> • Cervical – C3-C7 (any combination) • Cervical/Dorsal/Dorsolumbar – Extends from any cervical through any lumbar levels • Dorsal/Dorsolumbar – T1 – L5 (any combination of thoracic and lumbar) • Lumbar/Lumbosacral – L1-S5 (any combination of lumbar and sacral) • Not specified – Level not specified (should be used rarely) <p>If not specified, record will not be included in SIR calculations.</p>
FUSN/RFUSN: Diabetes mellitus	Conditionally required. If operative procedure is FUSN or RFUSN, check Y if patient is known to have diabetes mellitus, otherwise check N.
FUSN/RFUSN: Approach/Technique	Conditionally required. If operative procedure is FUSN or RFUSN, check appropriate surgical approach or technique from list.
HPRO:	<p>Conditionally required. If operative procedure is HPRO, select TP (Total Primary), PP (Partial Primary), TR (Total Revision) or PR (Partial Revision) from the list.</p> <p>NOTE: When hardware is inserted for the first time, use the “primary” designation; otherwise, indicate that the procedure was a revision.</p>
KPRO:	<p>Conditionally required. If operative procedure is KPRO, select T – Primary (Total), R – Revision (Total or Partial) from list.</p> <p>NOTE: When hardware is inserted for the first time, use the “primary” designation; otherwise, indicate that the procedure was a revision.</p>
Custom Fields	<p>Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric.</p> <p>NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use. Data in these fields may be analyzed.</p>



Table 14. Instructions for Completion of the Vaccination Monthly Monitoring Form – Summary Method (57.130) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID number will be auto-entered by the computer.
Vaccination type	Required; defaulted to “Influenza” by the computer.
Influenza subtype	Required. Check one: <input type="checkbox"/> Seasonal <input type="checkbox"/> Non-seasonal
Month	Required. Record using this format: MM
Year	Required. Record using this format: YYYY
1. Total # of patient admissions	Required. The count of NHSN inpatients admitted to the facility during the month being monitored.
2. Total # of patients aged 6 months and older meeting criteria for influenza vaccination	Required. The count of NHSN inpatients meeting criteria for vaccination. Include in this count any patients who have been previously vaccinated during the current influenza season.
3. Total # of patients previously vaccinated during current influenza season	Optional. The count of NHSN inpatients who had previously received influenza vaccination during the current influenza season by either history or documentation. Patients requiring a second vaccine should not be included in the count of those previously vaccinated.
4. Total patients not previously vaccinated during current influenza season (Box 2 - Box 3)	Required. The difference in the count of NHSN inpatients meeting criteria for influenza vaccination (Box 2) minus the count of NHSN inpatients who had been previously vaccinated during the current influenza season (Box 3). This number will be auto-entered by the computer.
5. Patients meeting criteria offered vaccination but declining for reasons other than medical contraindication	Required. The count of NHSN inpatients meeting criteria for influenza vaccination who were offered vaccination but who declined for reasons other than medical contraindication(s).
6. Patients meeting criteria offered vaccination but having medical contraindication	Required. The count of NHSN inpatients meeting criteria for influenza vaccination who were offered vaccination but who declined because of medical contraindication(s).
7. Patients meeting criteria receiving vaccination during admission	Required. The count of NHSN inpatients meeting criteria for influenza vaccination who had documentation in the medical record of receiving influenza vaccination during the course of their hospital admission prior to being discharged.
8. Total patients offered vaccination (Box 5 + Box 6 + Box 7)	Required. The sum of the count of NHSN inpatients who were offered influenza vaccination but who declined for reasons other than medical contraindication(s) (Box 5) plus those offered vaccination but declined because of medical contraindication(s) (Box 6) plus those with documentation in the medical record of receiving vaccination during the course of their hospital admission (Box 7). The number in this box should be less than or equal to the number in Box 4. This number will be auto-entered by the computer.
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use. Data in these fields



Data Field	Instructions for Data Collection
	may be analyzed.

This manual is for validation only



Table 15. Instructions for Completion of the Vaccination Monthly Monitoring Form – Patient-Level Method (CDC 57.131) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID number will be auto-entered by the computer.
Vaccination type	Required; defaulted to “Influenza” by the computer.
Influenza subtype	Required. Check one: <input type="checkbox"/> Seasonal <input type="checkbox"/> Non-seasonal
Month	Required. Record using this format: MM
Year	Required. Record using this format: YYYY
1. Total # of patient admissions	Required. The count of NHSN inpatients admitted to the facility during the month being monitored.
2. Total # of patients aged 6 months and older meeting criteria for influenza vaccination	Required. The count of NHSN inpatients meeting criteria for vaccination. Include in this count any patients who have been previously vaccinated during the current influenza season.
3. Total # of patients previously vaccinated during current influenza season	Optional. The count of NHSN inpatients who had previously received influenza vaccination during the current influenza season by either history or documentation. Patients requiring a second vaccine should not be included in the count of those previously vaccinated.
4. Total patients not previously vaccinated during current influenza season (Box 2 - Box 3)	Required. The difference in the count of NHSN inpatients meeting criteria for influenza vaccination (Box 2) minus the count of NHSN inpatients who had been previously vaccinated during the current influenza season (Box 3). This number will be auto-entered by the computer.
Custom Fields	<p>Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric.</p> <p>NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use. Data in these fields may be analyzed.</p>



Table 16. (Form has been retired and is no longer used.)

[\(Tables of Instructions List\)](#)

This manual is for validation only



Table 17. Instructions for Completion of the Patient Vaccination Form (CDC 57.133)

[\(Tables of Instructions List\)](#)

Data Field	Instructions for Data Collection
Facility ID #	The NHSN-assigned facility ID number will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient name	Optional. Enter the last, first, and middle name of the patient.
Gender	Required. Circle F (female), M (male) or Other to indicate the gender of the patient.
Date of Birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY
Ethnicity	Optional. Indicate the patient's ethnicity: Hispanic or Latino Not Hispanic or Not Latino
Race	Optional. Indicate the patient's race (all that apply): American Indian or Alaskan Native Asian Black or African American Native Hawaiian or Other Pacific Islander White
Event Type	Required. FLUVAX.
Influenza subtype	Required. Check one: <input type="checkbox"/> Seasonal <input type="checkbox"/> Non-seasonal.
Vaccine offered	Required. Check Yes or No.
Vaccine declined	Required. Check Yes or No.
Reason(s) vaccine declined A. Medical contraindication(s) B. Personal reason(s) for	Conditionally required. If patient declined influenza vaccination, check all that apply in either section A or section B, but not both. If reasons exist in both categories then section A, medical contraindications, takes priority and should be completed.



Data Field	Instructions for Data Collection
declining	
Vaccine administered	Required. Check Yes or No.
Date vaccine administered	Conditionally required. If vaccine administered, indicate date given using this format: MM/DD/YYYY
Type of influenza vaccine administered Seasonal or Non-seasonal	Conditionally required. If vaccine administered, indicate which vaccine (seasonal or non-seasonal) and whether it was a live attenuated vaccine (LAIV) or inactivated vaccine (TIV) formulation. If both seasonal and non-seasonal vaccines are administered to a patient, complete a separate Patient Vaccination form for each.
Manufacturer	Conditionally required. If vaccine administered, influenza vaccine manufacturer will be auto-entered by computer when vaccine type is selected.
Lot number	Conditionally required. If vaccine administered, enter the lot number of the vaccine given to the patient.
Route of administration	Conditionally required. If vaccine administered, indicate the route of administration used.
Vaccine Information Statement Provided to Patient	Optional. If vaccine administered, indicate what type of information statement was provided, if any, and the edition date using this format: MM/DD/YYYY; otherwise, check "None or unknown".
Person administering vaccine: Vaccinator ID	Optional. If vaccine administered, indicate vaccinator identifier. This is an identifier assigned by the facility and may consist of any combination of numbers and/or letters.
Person administering vaccine: Title	Optional. If vaccine administered, indicate title of vaccinator (RN, LPN, Nurse Assistant, etc.).
Person administering vaccine: Name	Optional. If vaccine administered, indicate name of vaccinator by last name, first name, middle name or initial.
Person administering vaccine: Work address, City, State, Zip code	Optional. This information will be auto-entered by the computer.
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use. Data in these fields may be analyzed.
Comments	Optional. Enter comments about this vaccination. Data in this field cannot be analyzed.



Table 18. Instructions for Completion of the Influenza Vaccination Standing Orders Form - Optional (CDC 57.134) ([Tables of Instructions List](#))

Data Field	Instructions for Data Collection
Facility ID	Required. Blank space for facility to place identification information of the facility as indicated or required by the facility.
Patient identifiers	Required. Blank space for facility to place patient identification label or stamp as indicated. Minimum information required includes the alphanumeric patient ID (i.e., the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters), gender, and date of birth.
DO NOT VACCINATE	Optional. Check one of the choices.
Vaccine offered	Required. Check Yes or No.
Influenza Subtype	Conditionally required. Check Seasonal or Non-seasonal.
Vaccine declined	Required. Check Yes or No.
Reason(s) vaccine declined	Conditionally required. If patient declined influenza vaccination, check all that apply in either section A or section B, but not both. If reasons exist in both categories then section A, medical contraindications, takes priority and should be completed.
Orders	Required. Check Vaccinate; Do NOT Vaccinate; or Standing Order – no signature required.
Physician signature	Conditionally required. Signature of ordering physician is required if standing order policy is not in place and checked.
Vaccine administered	Required. Check Yes or No.
Date administered	Conditionally required. If vaccine administered, enter date in MM/DD/YYYY format.
Type of influenza vaccine administered: Seasonal or Non-seasonal	Conditionally required. If vaccine administered, indicate which specific vaccine of the seasonal or non-seasonal type was given, and whether it was a live attenuated vaccine (LAIV) or inactivated vaccine (TIV) formulation.
Manufacturer	Conditionally required. If vaccine administered, enter name of manufacturer.
Lot number	Conditionally required. If vaccine administered, enter lot number used.
Route of administration	Conditionally required. If vaccine administered, indicate route of administration used.
Vaccine information statement (VIS) provided to patient	Optional. If vaccine administered, indicate type and edition date of vaccine information statement provided, if no vaccine information statement was provided (None), or if it is unknown.
Vaccinator ID and Title of Person Administering	Optional. If vaccine administered, indicate vaccinator identifier. This is an identifier assigned by the facility and may consist of any



Data Field	Instructions for Data Collection
Vaccine	combination of numbers and/or letters. Indicate the title of the vaccinator (RN, LPN, Nurse Assistant, etc.).
Name	Optional. If vaccine administered, indicate name of vaccinator by last name, first name, middle name or initial.
Work Address, City, State, Zip code	Optional. If vaccine administered, indicate work address of vaccinator. Typically, this would be the facility's address.

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Table 19. Instructions for Completion of the Laboratory-identified MDRO or CDI Event form (CDC 57.128) ([Tables of Instructions List](#))

Data Field	Instructions for Form Completion
Facility ID	The NHSN-assigned facility ID number will be auto-entered by the computer.
Event #	Event ID number will be auto-entered by the computer.
Patient ID	Required. Enter the alphanumeric patient ID. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters. This should be an ID that remains the same for the patient across all visits and admissions.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID	Optional. Enter any other patient ID assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient Name, Last First, Middle	Optional. Enter the name of the patient. If available, data will be auto-entered from Patient Form.
Gender	Required. Circle M (Male), F (Female) or Other to indicate the gender of the patient.
Date of Birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity (specify)	Optional. Enter the patient's ethnicity: Hispanic or Latino Not Hispanic or Not Latino
Race (specify)	Optional. Enter the patient's race: Select all that apply. American Indian or Alaska Native Asian Black or African American Native Hawaiian or Other Pacific Islander White
Event Details	
Event Type	Required. Event type = LabID.
Date Specimen Collected	Required. Enter the date the specimen was collected for this event using format: MM/DD/YYYY
Specific Organism Type	Required. Check the pathogen identified for this specimen from one of the following laboratory-identified organism types: MRSA, MSSA (if tracking MRSA & MSSA), VRE, CephR- <i>Klebsiella</i> , CRE- <i>E. coli</i> , CRE- <i>Klebsiella</i> , MDR- <i>Acinetobacter</i> or <i>C. difficile</i> . Use one form per LabID event (i.e., 1 form for each pathogen).
Outpatient	Required. Select "Yes" if the LabID Event is being reported from an outpatient location where there are no admissions (e.g., emergency department, wound care clinic, etc.). If the patient was an outpatient, Date Admitted to Facility and Date Admitted to Location are not required.
Specimen Body Site	Required. Enter the main body site from which the specimen was taken using the description that is most specific. (e.g., digestive system, central



Data Field	Instructions for Form Completion
	nervous system, etc.)
Specimen Source	Required. Enter the specific anatomic site from which the specimen was taken using the source description that is most accurate from the available choices (e.g., bile specimen, specimen from brain, etc.)
Date Admitted to Facility	Conditionally required. Enter the date the patient was admitted to facility using this format: MM/DD/YYYY. If the LabID Event was reported from an outpatient location, leave this blank. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. When determining a patient's admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an "observation" patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location.
Location	Conditionally required. Enter the patient care area where the patient was assigned when the laboratory-identified MDRO or <i>C. difficile</i> event specimen was collected (i.e., the NHSN "transfer rule" does not apply for LabID events). Special Case: If a specimen collected in the emergency department is positive for an MDRO or CDI, and the patient it is collected from is admitted to the facility on the SAME date into a location that is monitoring LabID Events for the identified MDRO or CDI, then that specimen can be reported as the first specimen for the patient in that admitting inpatient location for the month. If the facility is also monitoring LabID Events for the same MDRO or CDI in the emergency department, then the same specimen for the patient would also be reported a second time for that outpatient location.
Date Admitted to Location	Conditionally required. Enter the date the patient was admitted to the patient care area where laboratory-identified monitoring is being performed and where the specimen was collected from the patient. Any days spent in an inpatient location, whether as an officially admitted patient or as an "observation" patient, contribute to exposure risk. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. Therefore, all such days are included in the counts of patient days for the facility and specific location. Special Emergency Department Cases: Note that because of existing business rules for edit checks in NHSN, the date of specimen collection must be the same date or later than the admission date.
Documented prior evidence of infection or colonization with this specific organism type	Non-editable. "Yes" or "No" will be auto-filled by the system only, depending on whether there is prior LabID Event entered for the same organism and same patient. Cannot be edited by user. If there is a previous LabID event for this organism type entered in NHSN in a prior month, the



Data Field	Instructions for Form Completion
from a previously reported LabID Event?	system will auto-populate with a “Yes.”
Has patient been discharged from your facility in the past 3 months?	Required. Circle “Yes” if the patient has been an inpatient and discharged from your facility in the past three months, otherwise circle “No”.
Date of last discharge from your facility	Conditionally Required. If the patient was discharged from your facility in the past 3 months (previous question is circled “Yes”), enter the most recent date of discharge prior to the current admission. Use format: MM/DD/YYYY
Custom Fields	
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric. NOTE: Each Custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.
Comments	Optional. Enter any information on the Event. This information may not be analyzed.

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Table 20. Instructions for Completion of the MDRO or CDI Infection Event form (CDC 57.126) ([Tables of Instructions List](#))

Data Field	Instructions for Form Completion
Facility ID	The NHSN-assigned facility ID number will be auto-entered by the computer
Event #	Event ID number will be auto-entered by the computer
Patient ID	Required. Enter the alphanumeric patient ID. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters. This should be an ID that remains the same for the patient across all visits and admissions.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID	Optional. Enter any other patient ID assigned by the facility.
Medicare #	Optional. Enter the patient's Medicare number.
Patient Name, Last First Middle	Optional. Enter the name of the patient.
Gender	Required. Circle M (Male), F (Female) or Other to indicate the gender of the patient.
Date of Birth	Required. Record the date of the patient birth using this format: MM/DD/YYYY.
Ethnicity (specify)	Optional. Enter the patient's ethnicity: Hispanic or Latino Not Hispanic or Not Latino
Race (specify)	Optional. Enter the patient's race: (select all that apply) American Indian or Alaska Native Asian Black or African American Native Hawaiian or Other Pacific Islander White
Event Details	
Event Type	Required. Enter infection event type other than BSI, DE, Pneumonia, SSI, or UTI. For reporting MDRO infections that are BSI, Pneumonia, SSI, or UTI, use those infection forms and instructions.
Date of Event	Required. Enter the date the first clinical symptoms of infection occurred or the date the first positive specimen was collected, whichever came first. Use format: MM/DD/YYYY.
Post Procedure Event	Required. Circle "Yes" if the infection occurred after an NHSN-defined procedure but before discharge from the facility, otherwise circle "No".
Date of Procedure	Conditionally required. If an NHSN-defined procedure was performed, enter date using this format: MM/DD/YYYY.
MDRO Infection	Required. Enter "Yes", if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan: MRSA, MSSA (MRSA/MSSA), VRE, CephR-Klebsiella, CRE-E. coli, CRE-Klebsiella, MDR-Acinetobacter



Data Field	Instructions for Form Completion
	<p>or <i>C. difficile</i>. If the pathogen for this infection happens to be an MDRO but your facility is not following the Infection Surveillance in the MDRO/CDI Module in your Monthly Reporting Plan, answer “No” to this question.</p>
NHSN Procedure code	<p>Conditionally required. Answer this question only if this patient developed the MDRO or <i>C. difficile</i> infection during the same admission as an operative procedure. Enter the appropriate NHSN procedure code. NOTE: An MDRO infection cannot be “linked” to an operative procedure unless that procedure has already been added to NHSN. If the procedure was previously added, and the “Link to Procedure” button is clicked, the fields pertaining to the operation will be auto-entered by the computer.</p>
ICD-9-CM Procedure Code	<p>Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code.</p>
Specific Organism Type	<p>Required. Check the pathogen(s) identified for this infection event. You may select up to 3.</p>
Date Admitted to Facility	<p>Required. Enter date patient admitted to facility using this format: MM/DD/YYYY. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are <u>different</u> calendar days. When determining a patient’s admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an “observation” patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location.</p>
Location	<p>Required. Enter the nursing care area where the patient was assigned when the MDRO or <i>C. difficile</i> infection (CDI) was acquired. If the MDRO or CDI developed in a patient within 48 hours of discharge from a location, indicate the discharging location, not the current location of the patient.</p>
Specific Event Type	<p>Required. List the specific CDC-defined infection event type. For event type = BSI, PNEU, SSI or UTI this form should not be used. Use the form designed for that event.</p>
Signs & Symptoms	<p>Required. Using the criteria in Table 17, check all signs and symptoms used to confirm the diagnosis of this infection event in the observed patient.</p>
Laboratory or Diagnostic Testing	<p>Conditionally required. Indicate whether any blood cultures, other laboratory tests or radiologic exams were used to diagnose the infection.</p>
<i>Clostridium difficile</i> Infection	
Admitted to ICU for CDI complications	<p>Conditionally required. If pathogen is <i>C. difficile</i>, circle “Yes” to indicate admission to ICU for <i>C. difficile</i> complications (e.g., shock that requires vasopressor therapy), otherwise circle “No”.</p>



Data Field	Instructions for Form Completion
Surgery for CDI complications	Conditionally required. If pathogen is <i>C. difficile</i> , circle "Yes" to indicate surgery for <i>C. difficile</i> complications, otherwise circle "No". Surgery might include colectomy for toxic megacolon, perforation or refractory colitis.
Secondary Bloodstream Infection	Required. Circle "Yes" if there is a culture-confirmed bloodstream infection (BSI) during this admission, secondary to this infection, for the same pathogen. Otherwise circle "No".
Died	Required. Circle "Yes" if the patient died during this hospitalization, otherwise circle "No".
Event Contributed to Death	<p>Conditionally Required.</p> <p>MDRO: If the patient died during this admission, circle "Yes" if the MDRO infection contributed to death, otherwise circle "No".</p> <p>CDI: Circle "Yes" <u>only</u> if the patient died within 30 days after <i>C. difficile</i> infection symptom onset and during the current hospital admission.</p>
Discharge Date	Optional. Enter the date the patient was discharged from the facility using this format: MM/DD/YYYY. If the patient died during this admission enter the death date.
Pathogens Identified	<p>Required. Circle "Yes" if pathogen identified, "No" if otherwise; if "Yes" indicates the pathogen identified on the antibiogram on page 2. If the pathogen was <i>C. difficile</i>, enter it under <i>Other Organisms</i> but do not include antibiogram.</p> <p>NOTE: Any infection reported as an MDRO or CDI must have a pathogen identified.</p>
Custom Fields	<p>Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYYY), numeric, or alphanumeric.</p> <p>NOTE: Each custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.</p>
Comments	Optional. Enter comments for local use and the values entered. These fields may not be analyzed.



Table 21. Instructions for Completion of the MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring form (CDC 57.127) ([Tables of Instructions List](#))

Data Field	Instructions for Form Completion
Facility ID #	The NHSN-assigned facility ID number will be auto-entered by the computer
Month	Required. Enter the 2-digit month during which surveillance was performed.
Year	Required. Enter the 4-digit year during which surveillance was performed.
Location Code	Required. Enter the code of the patient care location where the outcome measures monitoring was done.
Total Patient Days	Conditionally Required. If this is a single inpatient location, enter the total number of patient days for this location for the month. If this is for FacWideIN location code, enter the total number of patient days for all facility inpatient locations combined for the month. All of the facility's inpatient locations with an overnight stay should be included, where denominators can be accurately collected and there is the possibility of the MDRO to be present, transmitted, and identified in that specific location. For further information on counting patient days, go to http://www.cdc.gov/nhsn/PDFs/PatientDay_SumData_Guide.pdf .
Total Admissions	Conditionally required. If this is a single inpatient location, enter the total number of admissions for this location for the month. If this is for FacWideIN location code, enter the total number of admissions for all facility inpatient locations combined for the month. All of the facility's inpatient locations with an overnight stay should be included, where denominators can be accurately collected and there is the possibility of the MDRO to be present, transmitted, and identified in that specific location. For further information on counting admissions, go to http://www.cdc.gov/nhsn/PDFs/PatientDay_SumData_Guide.pdf .
Total Encounters	Conditionally required. If this is for LabID Event monitoring being performed in a single outpatient and/or emergency room location, enter the total number of patient visits/encounters for the location for the month. If this is for LabID Event monitoring being performed at the FacWideOUT level, enter the total number of patient visits/encounters for all facility outpatient locations combined for the month.
Patient Days	Conditionally Required. If LabID <i>C. difficile</i> Events are being monitored at the FacWideIN level, then Total Patient Days (as calculated from guidance above) minus any patient days for NICU or Well Baby Nurseries must be entered here.
Admissions	Conditionally Required. If LabID <i>C. difficile</i> Events are being monitored at the FacWideIN level, then Total Admissions (as calculated from guidance above) minus any admissions for NICU or Well Baby Nurseries must be entered here.



Data Field	Instructions for Form Completion
Encounters	Conditionally Required. If LabID <i>C. difficile</i> Events are being monitored at the FacWideOUT level, then Total Encounters (as calculated from guidance above) minus any encounters for Well Baby Clinics must be entered here.
MDRO and CDI Infection Surveillance or LabID Event Reporting	
Infection Surveillance	Conditionally required. Selections for Infection Surveillance will be auto-filled if included in the Monthly Reporting Plan. Otherwise, select any MDRO or <i>C. difficile</i> organism for monitoring Infection Surveillance “off-plan” in the location during the time period specified.
LabID Event (All specimens)	Conditionally required. Selections for LabID Event reporting of All specimens will be auto-filled if included in the Monthly Reporting Plan. Otherwise, select any MDRO or <i>C. difficile</i> organism for monitoring LabID Events for All specimens “off-plan” in the location during the time period specified.
LabID Event (Blood specimens only)	Conditionally required. Selections for LabID Event reporting of Blood specimens only will be auto-filled if included in the Monthly Reporting Plan. Otherwise, select any MDRO for monitoring LabID Events for Blood specimens only “off-plan” at the facility-wide level during the time period specified.
Process Measures (Optional)	
Hand Hygiene Performed	Required for hand hygiene adherence process measures. Enter the total number of observed contacts during which an HCW touched either the patient or inanimate objects in the immediate vicinity of the patient and appropriate hand hygiene was <u>performed</u> (i.e., Hand Hygiene Performed).
Indicated	Required for hand hygiene adherence process measures. Enter the total number of observed contacts during which an HCW touched either the patient or inanimate objects in the immediate vicinity of the patient and therefore, appropriate hand hygiene was <u>indicated</u> (i.e., Hand Hygiene Indicated).
Gown and Gloves Used	Required for gown and gloves use adherence process measures. Among patients on Contact Precautions, enter the total number of observed contacts between an HCW and a patient or inanimate objects in the immediate vicinity of the patient for which gloves and gowns <u>had been donned</u> prior to the contact (i.e., Gown and Gloves Used).
Indicated	Required for gown and gloves use adherence process measures. Among patients on Contact Precautions, enter the total number of observed contacts between an HCW and a patient or inanimate objects in the immediate vicinity of the patient and therefore, gloves and gowns were <u>indicated</u> (i.e., Gown and Gloves Indicated).
Active Surveillance Testing (For MRSA & VRE only)	
Active Surveillance Testing performed	Required for active surveillance testing adherence process measures. For MRSA and VRE only. Selections for AST Performed will be auto-filled if included in the Monthly Reporting Plan. Otherwise, select either MRSA



Data Field	Instructions for Form Completion
	or VRE for which active surveillance testing is being done “off-plan” during the time period specified.
Timing of AST <ul style="list-style-type: none"> • Adm • Both 	Required for active surveillance testing adherence process measures. Choose the time period when surveillance testing will be performed. Specimens for AST can be obtained at the time of admission (Adm), or at the time of admission and for patients’ stays of > 3 days, at the time of discharge/transfer (Both).
AST Eligible Patients <ul style="list-style-type: none"> • All • NHx 	Required for admission surveillance testing adherence process measures. If all admitted patients were tested choose All. Circle NHx if performing AST only on those patients admitted to the patient care location with no documentation at the time of admission of MRSA and/or VRE colonization or infection in ≤ 12 months (NHx). That is, no specimen positive for MRSA and/or VRE for this patient during previous stays at this facility or from information provided by referring facilities in ≤ 12 months.
<u>Admission AST</u> <ul style="list-style-type: none"> • Performed • Eligible 	Required for admission surveillance testing adherence process measures. Enter the number of patients eligible for admission AST <u>and</u> who had a specimen obtained for testing ≤ 3 days of admission (i.e., Admission AST Performed). Enter the number of patients eligible for admission surveillance testing. (i.e., Admission AST Eligible)
<u>Discharge/Transfer AST</u> <ul style="list-style-type: none"> • Performed • Eligible 	Required for discharge/transfer active surveillance testing adherence process measures. For patients’ stays > 3 days, enter the number of discharged or transferred patients eligible for AST <u>and</u> who had a specimen obtained for testing prior to discharge or transfer, not including the admission AST (i.e., Discharge/Transfer AST Performed). For patients’ with stays of > 3 days, enter the number of patients eligible for discharge/transfer surveillance testing; were negative if tested on admission. (i.e., Discharge/Transfer AST Eligible).
Outcome Measures (Optional) - MRSA & VRE ONLY	
<u>Prevalent Cases</u> AST/Clinical Positive	Required for prevalent case - AST/clinical positive outcome measures. Enter the number of patients with MRSA and/or VRE isolated from a specimen collected for AST or for clinical reasons on admission (≤ 3 days) (i.e., the MRSA or VRE cannot be attributed to this patient care location).
Known Positive	Enter the number of patients with documentation on admission of MRSA or VRE colonization or infection, from the admitting or referring facility,



Data Field	Instructions for Form Completion
	in \leq 12 months (i.e., patient is known to be colonized or infected with MRSA and/or VRE within the last year). All MRSA or VRE colonized patients already in the ICU during the first month of surveillance should be considered "Known Positive".
Incident Cases AST/Clinical Positive	Required for incident case - AST/clinical positive outcome measures. Enter the number of patients with a stay > 3 days: <ul style="list-style-type: none">• With no documentation on admission of MRSA and/or VRE colonization or infection, from the admitting or referring facility, in \leq 12 months (i.e., patient is not known to be colonized or infected with MRSA and/or VRE within the last year and is negative if tested on admission), <u>AND</u>• MRSA and/or VRE isolated from a specimen collected for AST or clinical reasons > 3 days after admission and up to discharge/transfer from the patient care location.
Custom Fields	Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYY), numeric, or alphanumeric. NOTE: Each custom field must be set up in the Facility/Custom Options section of the application before the field can be selected for use.
Comments	Optional. Enter comments for local use and the values entered. These fields may not be analyzed.

This manual is for validation only



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CDC Location Label	NHSN Healthcare Service Location Code	CDC Location Code	Location Description
LOCATIONS			
Adult Critical Care Units			
Burn Critical Care	1026-4	IN:ACUTE:CC:B	Critical care area specializing in the care of patients with significant/major burns.
Medical Cardiac Critical Care	1028-0	IN:ACUTE:CC:C	Critical care area specializing in the care of patients with serious heart problems that do not required heart surgery.
Medical Critical Care	1027-2	IN:ACUTE:CC:M	Critical care area for patients who are being treated for nonsurgical conditions.
Medical/Surgical Critical Care	1029-8	IN:ACUTE:CC:MS	An area where critically ill patients with medical and/or surgical conditions are managed.
Neurologic Critical Care	1035-5	IN:ACUTE:CC:N	Critical care area for the care of patients with life-threatening neurologic diseases.
Neurosurgical Critical Care	1031-4	IN:ACUTE:CC:NS	Critical care area for the surgical management of patients with severe neurologic diseases or those at risk for neurologic injury as a result of surgery.
Prenatal Critical Care	1034-8	IN:ACUTE:CC:PNATL	Critical care area for the care of pregnant patients with complex medical or obstetric problems requiring a high level of care to prevent the loss of the fetus and to protect the life of the mother.
Respiratory Critical Care	1033-0	IN:ACUTE:CC:R	Critical care area for the evaluation and treatment of patients with severe respiratory conditions.
Surgical Cardiothoracic Critical Care	1032-2	IN:ACUTE:CC:CT	Critical care area specializing in the care of patients following cardiac and thoracic surgery.
Surgical Critical Care	1030-6	IN:ACUTE:CC:S	Critical care area for the evaluation and management of patients with serious illness before and/or after surgery.



Trauma Critical Care	1025-6	IN:ACUTE:CC:T	Critical care area specializing in the care of patients who require a high level of monitoring and/or intervention following trauma or during critical illness related to trauma.
Pediatric Critical Care Units			
Pediatric Burn Critical Care	1042-1	IN:ACUTE:CC:B_PED	Critical care area specializing in the care of patients ≤ 18 years old with significant/major burns
Pediatric Cardiothoracic Critical Care	1043-9	IN:ACUTE:CC:CT_PED	Critical care area specializing in the care of patients ≤ 18 years old following cardiac and thoracic surgery.
Pediatric Medical Critical Care	1044-7	IN:ACUTE:CC:M_PED	Critical care area for patients ≤ 18 years old who are being treated for nonsurgical conditions. In the NNIS system, this was called Pediatric ICU (PICU).
Pediatric Medical/Surgical Critical Care	1045-4	IN:ACUTE:CC:MS_PED	An area where critically ill patients ≤ 18 years old with medical and/or surgical conditions are managed.
Pediatric Neurosurgical Critical Care	1046-2	IN:ACUTE:NS_PED	Critical care area specializing in the surgical management of patients ≤ 18 years old with severe neurological diseases or those at risk for neurological injury as a result of surgery.
Pediatric Respiratory Critical Care	1047-0	IN:ACUTE:CC:R_PED	Critical care area for the evaluation and treatment of the patients ≤ 18 years old with severe respiratory conditions.
Pediatric Surgical Critical Care	1048-8	IN:ACUTE:CC:S_PED	Critical care area for the evaluation and management of patients ≤ 18 years old with serious illness before and/or after surgery.
Pediatric Trauma Critical Care	1049-6	IN:ACUTECC:T_PED	Critical care area specializing in the care of patients ≤ 18 years old who require a high level of monitoring and/or intervention following trauma or during critical illness related to trauma.
Neonatal Units			
Well Baby Nursery (Level I)	1038-9	IN:ACUTE:WARD:NURS	Hospital area for evaluation and postnatal care of healthy newborns. May include neonatal resuscitation and stabilization



			of ill newborns until transfer to a facility at which specialty neonatal care is provided.
Step down Neonatal Nursery (Level II)	1041-3	IN:ACUTE:STEP:NURS	<p>NOTE: The categories of Level II, listed below, are classifications from the American Academy of Pediatrics, Definitions of hospital-based newborn services.</p> <p>Level II neonatal care (specialty) Special care nursery: level II units are subdivided into 2 categories on the basis of their ability to provide assisted ventilation including continuous positive airway pressure</p> <p>Level IIA: has the capabilities to</p> <ul style="list-style-type: none"> • Resuscitate and stabilize preterm and/or ill infants before transfer to a facility at which newborn intensive care is provided • Provide care for infants born at > 32 weeks' gestation and weighing \geq 1500 g (1) who have physiologic immaturity such as apnea of prematurity, inability to maintain body temperature, or inability to take oral feedings or (2) who are moderately ill with problems that are anticipated to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis • Provide care for infants who are convalescing after intensive care <p>Level IIB has the capabilities of a level IIA nursery and the additional capability to provide mechanical ventilation for brief durations (< 24 hours) or continuous positive airway pressure</p>
Neonatal Critical Care (Level II/III)	1039-7	IN:ACUTE:CC_STEP:NURS	Combined nursery housing both Level II and III newborns and infants.
Neonatal Critical Care (Level III)	1040-5	IN:ACUTE:CC:NURS	A hospital neonatal intensive care unit (NICU) organized with personnel and equipment to provide continuous life support and comprehensive care for extremely high-risk newborn infants and those with complex and critical illness. NOTE: The



			<p>categories of Level III below are classifications from the American Academy of Pediatrics, Definitions of hospital-based newborn services. These classifications are all considered Level III nurseries in NHSN.</p> <p>Level III (subspecialty) NICU: level III NICUs are subdivided into 3 categories</p> <p>Level IIIA: has the capabilities to</p> <ul style="list-style-type: none"> • Provide comprehensive care for infants born at > 28 weeks' gestation and weighing > 1000 g • Provide sustained life support limited to conventional mechanical ventilation • Perform minor surgical procedures such as placement of central venous catheter or inguinal hernia repair <p>Level IIIB NICU: has the capabilities to provide</p> <ul style="list-style-type: none"> • Comprehensive care for extremely low birth weight infants (≤ 1000 g and ≤ 28 weeks' gestation) • Advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide for as long as required • Prompt and on-site access to a full range of pediatric medical subspecialists • Advanced imaging, with interpretation on an urgent basis, including computed tomography, magnetic resonance imaging, and echocardiography • Pediatric surgical specialists and pediatric anesthesiologists on site or at a closely related institution to perform major surgery such as ligation of patent ductus arteriosus and repair of abdominal wall defects, necrotizing enterocolitis with bowel perforation, tracheoesophageal fistula and/or esophageal atresia, and myelomeningocele <p>Level IIIC NICU: has the capabilities of a level IIIB NICU and also is located within an institution that has the capability to provide ECMO and surgical repair of complex congenital</p>
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			cardiac malformations that require cardiopulmonary bypass
Inpatient Specialty Care Areas (SCA)			
Bone Marrow Transplant SCA	1022-3	IN:ACUTE:SCA:BMT	Hospital specialty care area for the treatment of patients who undergo bone marrow (stem cell) transplant for the treatment of various disorders.
Hematology/Oncology SCA	1088-4	IN:ACUTE:SCA:HONC	Hospital specialty care area for the management and treatment of patients with cancer and/or blood disorders.
Inpatient Dialysis SCA	1198-1	IN:ACUTE:SCA:DIAL	Hospital specialty care area for patients who require dialysis as part of patient care. These patients can be chronic or acute dialysis patients.
Solid Organ Transplant SCA	1092-6	IN:ACUTE:SCA:SOTP	Hospital specialty area for the postoperative care of patients who have had a solid organ transplant (e.g., heart/lung, kidney, liver, pancreas)
Pediatric Bone Marrow Transplant SCA	1023-1	IN:ACUTE:SCA: BMT_PED	Hospital specialty care area for the treatment of patients ≤ 18 years old who undergo bone marrow (stem cell) transplant for the treatment of various disorders.
Pediatric Dialysis SCA	1091-8	IN:ACUTE:SCA: DIAL_PED	Hospital specialty care area for patients ≤18 years old that require acute dialysis as a temporary measure as part of patient care. These patients can be chronic or acute dialysis patients.
Pediatric Hematology/Oncology SCA	1089-2	IN:ACUTE:SCA: HONC_PED	Hospital specialty care area for the management and treatment of patients ≤ 18 years old with cancer and/or blood disorders.
Pediatric Solid Organ Transplant SCA	1093-4	IN:ACUTE:SCA: SOTP_PED	Hospital specialty area for the postoperative care of patients ≤ 18 years old who have had a solid organ transplant (e.g., heart/lung, kidney, liver, pancreas).
Inpatient Adult Wards			
Antenatal Care Ward	1205-4	IN:ACUTE:WARD: ANTENAT	Hospital area for observation, evaluation, treatment or surgery of high risk pregnancy patients.



Behavioral Health/Psych Ward	1051-2	IN:ACUTE:WARD:BHV	Hospital area for evaluation and treatment of patients with acute psychiatric or behavioral disorders.
Burn Ward	1052-0	IN:ACUTE:WARD:B	Hospital area for evaluation and treatment of patients who have burns.
Ear/Nose/Throat Ward	1053-8	IN:ACUTE:WARD:ENT	Hospital area for the evaluation, treatment, or surgery of patients with ear, nose, or throat disorders
Gastrointestinal Ward	1054-6	IN:ACUTE:WARD:GI	Hospital area for evaluation, treatment or surgery of patients with disorders of the gastrointestinal tract.
Genitourinary Ward	1055-3	IN:ACUTE:WARD:GU	Hospital area for the evaluation, treatment or surgery of patients with disorders of the genitourinary system.
Gerontology Ward	1056-1	IN:ACUTE:WARD:GNT	Hospital area for the evaluation, treatment or surgery of patients with age-related diseases.
Gynecology Ward	1057-9	IN:ACUTE:WARD:GYN	Hospital area for the evaluation, treatment, or surgery of female patients with reproductive tract disorders.
Jail Unit	1171-8	IN:ACUTE:WARD:JAL	Overnight stay patient care area of a hospital or correctional facility used only for those who are in custody of law enforcement during their treatment.
Labor and Delivery Ward	1058-7	IN:ACUTE:WARD:LD	Hospital area where women labor and give birth.
Labor, Delivery, Recovery, Postpartum Suite (LDRP)	1059-5	IN:ACUTE:WARD:LD_PP	Hospital suite used for labor, delivery, recovery and postpartum (LDRP) -- all within the same suite.
Medical Ward	1060-3	IN:ACUTE:WARD:M	Hospital area for the evaluation and treatment of patients with medical conditions or disorders.
Medical/Surgical Ward	1061-1	IN:ACUTE:WARD:MS	Hospital area for the evaluation of patients with medical and/or surgical conditions.
Neurology Ward	1062-9	IN:ACUTE:WARD:N	Hospital area where patients with neurological disorders are evaluated and treated.
Neurosurgical Ward	1063-7	IN:ACUTE:WARD:NS	Hospital area for care of patients whose primary reason for admission is to have neurosurgery or to be cared for by a neurosurgeon after head or spinal trauma.
Ophthalmology Ward	1064-5	IN:ACUTE:WARD:OPH	Hospital area for care of patients whose primary reason for admission is to have eye surgery or to be cared for by an



			ophthalmologist after eye trauma.
Orthopedic Ward	1065-2	IN:ACUTE:WARD:ORT	Hospital area for evaluation, treatment or surgery on bones, joints, and associated structures by an orthopedist.
Orthopedic Trauma Ward	1066-0	IN:ACUTE:WARD:T_ORT	Hospital area where patients with orthopedic injuries or disorders are evaluated and treated.
Plastic Surgery Ward	1067-8	IN:ACUTE:WARD:PLS	Hospital area for the care of patients who have reconstructive surgery performed by a plastic surgeon.
Postpartum Ward	1068-6	IN:ACUTE:WARD:PP	Hospital area for the patient who is recovering from childbirth.
Pulmonary Ward	1069-4	IN:ACUTE:WARD:PULM	Hospital area where patients with respiratory system conditions or disorders are evaluated and treated.
Rehabilitation Ward	1070-2	IN:ACUTE:WARD:REHAB	Hospital area for evaluation and restoration of function to patients who have lost function due to acute or chronic pain, musculoskeletal problems, stroke, or catastrophic events resulting in complete or partial paralysis.
School Infirmary	1172-6	IN:ACUTE:WARD:IFM	Overnight stay patient care area of a school infirmary or health center (e.g., private residential school or college campus).
Stroke (Acute) Unit	1071-0	IN:ACUTE:WARD:STRK	Hospital area for evaluation, stabilization and treatment of patients who have experienced an acute stroke.
Surgical Ward	1072-8	IN:ACUTE:WARD:S	Hospital area for evaluation and treatment of patients who have undergone a surgical procedure.
Telemetry Unit	1208-8	IN:ACUTE:WARD:TEL	Hospital area dedicated to providing evaluation and treatment of patients requiring continuous cardiac monitoring.
Vascular Surgery Ward	1073-6	IN:ACUTE:WARD:VS	Hospital area for evaluation and treatment of patients who have undergone vascular surgery.
Inpatient Pediatric Wards			
Adolescent Behavioral Health	1075-1	IN:ACUTE:WARD:BHV_ADOL	Hospital area for evaluation and treatment of patients between the ages of 13 and 18 with acute psychiatric or behavioral disorders.
Pediatric Behavioral Health	1077-7	IN:ACUTE:WARD:BHV_PED	Hospital area for evaluation and management of patients ≤18 years old with acute psychiatric or behavioral disorders.
Pediatric Burn Ward	1078-5	IN:ACUTE:WARD:	Hospital area specializing in the evaluation and treatment of



		B_PED	patients ≤18 years old who have tissue injury caused by burns.
Pediatric Ear, Nose, Throat	1079-3	IN:ACUTE:WARD: ENT_PED	Hospital area for evaluation and management of patients ≤18 years old with disorders of the ear, nose and/or throat.
Pediatric Genitourinary	1080-1	IN:ACUTE:WARD: GU_PED	Hospital area where patients ≤ 18 years old with disorders of the genitourinary system are evaluated and treated.
Pediatric Medical Ward	1076-9	IN:ACUTE:WARD: M_PED	Hospital area where patients ≤ 18 years old with medical conditions or disorders are evaluated and treated.
Pediatric Medical/Surgical Ward	1081-9	IN:ACUTE:WARD: MS_PED	Hospital area where patients ≤ 18 years old with medical and/or surgical conditions are managed.
Pediatric Neurosurgical Ward	1083-5	IN:ACUTE:WARD: NS_PED	Hospital area for care of patients ≤ 18 years old whose primary reason for admission is to have neurosurgery or to be cared for by a neurosurgeon after head or spinal trauma.
Pediatric Orthopedic Ward	1084-3	IN:ACUTE:WARD: ORT_PED	Hospital area where patients ≤ 18 years old with orthopedic injuries or disorders are evaluated and treated.
Pediatric Rehabilitation Ward	1085-0	IN:ACUTE:WARD: REHAB_PED	Hospital area for evaluation and restoration of function to patients ≤ 18 years old who have lost function due to acute or chronic pain, musculoskeletal problems, stroke, or catastrophic events resulting in complete or partial paralysis.
Pediatric Surgical Ward	1086-8	IN:ACUTE:WARD: S_PED	Hospital area for evaluation and treatment of patients ≤ 18 years old that have undergone a surgical procedure.
Step Down Units			
Adult Step Down Unit	1099-1	IN:ACUTE:STEP	Hospital area for adult patients that are hemodynamically stable who can benefit from close supervision and monitoring, such as frequent pulmonary toilet, vital signs, and/or neurological and neurovascular checks.
Pediatric Step Down Unit	1100-7	IN:ACUTE:STEP:PED	Patients ≤ 18 years old that are hemodynamically stable who can benefit from close supervision and monitoring, such as frequent pulmonary toilet, vital signs, and/or neurological and neurovascular checks.



Mixed Acuity Units			
Adult Mixed Acuity Unit	1210-4	IN:ACUTE:MIXED: ALL_ADULT	Hospital area for the evaluation and treatment of adult patients whose conditions are varying levels of acuity (e.g., critical care, ward-level care, step-down type care, etc.). Such a care area may be comprised of patients followed by different hospital services (e.g., coronary, medical, surgical, etc.). This care area may or may not include “acuity adaptable” or “universal” beds (i.e., this model of patient care allows a patient to stay in the same bed during all phases of his care, from critical care through lower levels of care).
Mixed Age mixed Acuity Unit	1212-0	IN:ACUTE:MIXED: ALL	Hospital area for the evaluation and treatment of a mixture of adult and pediatric patients whose conditions are of varying levels of acuity (e.g., critical care, ward-level care, step-down type care, etc.). Such a care area may be comprised of patients followed by different hospital services (e.g., coronary, medical, surgical, etc.). This care area may or may not include “acuity adaptable” or “universal” beds (i.e., this model of patient care allows a patient to stay in the same bed during all phases of his care, from critical care through lower levels of care).
Pediatric Mixed Acuity Unit (if patients are of mixed age, use Mixed Age, mixed Acuity Unit)	1211-2	IN:ACUTE:MIXED: ALL_PEDS	Hospital area for the evaluation and treatment of patients ≤18 years old whose conditions are of varying levels of acuity (e.g., critical care, ward-level care, step-down type care, etc.). Such a care area may be comprised of patients followed by different hospital services (e.g., coronary, medical, surgical, etc.). This care area may or may not include “acuity adaptable” or “universal” beds (i.e., this model of patient care allows a patient to stay in the same bed during all phases of his care, from critical care through lower levels of care).



Operating Rooms			
Cardiac Catheterization Room/Suite	1005-8	IN:ACUTE:OR:CATH	A room or rooms in a hospital equipped for the performance of heart catheterizations for diagnostic or therapeutic purposes. Operating Room requirements for air changes, temperature, humidity and surfaces must be met.
Cesarean Section Room/Suite	1095-9	IN:ACUTE:OR:LD	A room or suite in a hospital equipped for the performance of obstetric and gynecologic surgeries and for the care of the neonate immediately after birth. Operating Room requirements for air changes, temperature, humidity and surfaces must be met.
Interventional Radiology	1203-9	IN:ACUTE:OR:RAD	A room or suite in a hospital where diagnostic or therapeutic radiologic procedures on outpatients and/or inpatients occurs. Operating Room requirements for air changes, temperature, humidity and surfaces must be met.
Inpatient Operating Room/Suite	1096-7	IN:ACUTE:OR	A room or suite in a hospital equipped for the performance of surgical operations. Requirements for air changes, temperature, humidity and surfaces must be met. (For outpatient operating room, use Ambulatory Surgery Center designation or other specialty OR shown in Outpatient Locations section of this chapter).
Post Anesthesia Care Unit/Recovery Room	1097-5	IN:ACUTE:OR_STEP	Hospital area designated for monitoring patients for immediate effects of anesthesia before either going home or on to an in-patient care area.
Long Term Care (Available for use in Acute Care Facilities only)			
Inpatient Hospice	1165-0	IN:NONACUTE:LTC:HSP	Area where palliative care is provided to the dying patient.
Long Term Care Alzheimer's Unit	1103-1	IN:NONACUTE:LTC:ALZ	Area where care is provided to patients diagnosed with Alzheimer's syndrome for extended periods of time.



Long Term Care Behavioral Health/Psych Unit	1104-9	IN:NONACUTE:LTC:BHV	Area where care is provided to individuals with psychiatric or behavioral-disorder diagnoses for extended periods of time.
Long Term Care Rehabilitation Unit	1105-6	IN:NONACUTE:LTC:REHAB	Area where evaluation and restoration of function is provided to patients who have lost function due to acute or chronic pain, musculoskeletal problems, stroke, or catastrophic events resulting in complete or partial paralysis.
Long Term Care Unit	1102-3	IN:NONACUTE:LTC	Area where care provided for patients with chronic disease or disabilities for extended periods of time. Also called chronic care unit.
Ventilator Dependent Unit	1164-3	IN:NONACUTE:LTC:R	Area where care is provided to patients whose respirations depend on the use of a ventilator for extended periods of time.
Long Term Acute Care (Available for use in Long Term Acute Care Hospitals only)			
LTAC ICU	1211-2	IN:ACUTE:CC:LTAC	Licensed critical care area specializing in the evaluation, treatment, and management of patients that require high observation/acuity and/or special care that are suffering medically complex conditions or who have suffered recent catastrophic illness or injury, and require an extended stay in an acute care environment.
LTAC Ward	1212-0	IN:ACUTE:WARD:LTAC	Hospital area for the evaluation and treatment of patients suffering medically complex conditions or who have suffered recent catastrophic illness or injury, and require an extended stay in an acute care environment.
LTAC Pediatric ICU	1213-8	IN:ACUTE:CC:LTAC_PED	Licensed critical care area specializing in the evaluation, treatment, and management of patients <= 18 years old, that require high observation/acuity and/or special care that are suffering medically complex conditions or who have suffered recent catastrophic illness or injury, and require an extended stay in an acute care environment.
LTAC Pediatric Ward	1214-6	IN:ACUTE:WARD:LTAC_PED	Hospital area for the evaluation and treatment of patients <= 18 years old, suffering medically complex conditions or who have suffered recent catastrophic illness or injury, and require



			an extended stay in an acute care environment.
Rehabilitation (Available for use in Rehabilitation Hospitals only)			
Rehabilitation Ward	1217-9	IN:ACUTE:IRF	Hospital area for evaluation, treatment, and restoration of function to patients have lost function due to acute or chronic pain, musculoskeletal problems, stroke, brain or spinal cord dysfunction, or catastrophic events resulting in complete or partial paralysis.
Rehabilitation Pediatric Ward	1218-7	IN:ACUTE:IRF:PED	Hospital area for evaluation, treatment, and restoration of function to patients <=18 years old who have lost function due to acute or chronic pain, musculoskeletal problems, stroke, brain or spinal cord dysfunction, or catastrophic events results in complete or partial paralysis.
Facility-Wide (Available for use in Laboratory Identified Event (LabID) and Antibiotic Use and Resistance (AUR) Module Only)			
Facility-wide Inpatient (FacWideIN)	1250-0	FACWIDEIN	This location represents all inpatient locations for the facility, where appropriate numerator and denominator counts can be collected. All of the facility's inpatient locations with an overnight stay must be represented for full inpatient facility coverage, where denominators can be accurately collected and there is the possibility of the MDRO to present, transmitted, and identified in that specific location. Currently, it is available for use in the MDRO/CDI Module for LabID Event reporting and in the AUR Module.
Facility-wide Outpatient (FacWideOUT)	1251-8	FACWIDEOUT	This location represents all outpatient locations for the facility, where appropriate numerator and accurate denominator counts can be collected. All of the facility's outpatient locations must be represented for full outpatient facility coverage, where denominators can be accurately collected and there is the possibility of the MDRO to be present, transmitted, and



			identified in that specific location. Currently, it is available for use in the MDRO/CDI Module for LabID Event reporting and will be available for use in the AUR Module.
Miscellaneous Areas			
All Inpatient Beds Combined	1021-5	IN	This location represents all beds. It is used for reporting optional facility-wide summary data (e.g., CLABSI rate for facility).
Sleep Studies (for in and out patients)	1020-7	IN:NONACUTE:CLINIC:SLEEP	Area where patients stay overnight and are evaluated for sleep disorders.
Outpatient (ACUTE) Locations			
24-Hour Observation Area	1162-7	OUT:ACUTE:WARD	Area where patients are monitored for suspected or non-life threatening conditions for 24 hours or less.
Ambulatory Surgery Center	1166-8	OUT:ACUTE:OR	Area that is equipped for the performance of surgical operations; may be free-standing or part of a hospital. Operating Room requirements for air changes, temperature, humidity and surfaces must be met. Patients do not stay overnight.
Emergency Department	1108-0	OUT:ACUTE:ED	Area that provides emergency medical services; top priority is given to those with life-threatening illness or injury.
Mobile Emergency Services/EMS	1174-2	OUT:ACUTE:MOBILE:UE	Mobile unit that provides clinical and emergency medical services to patients who require them in the pre-hospital setting.
Outpatient Pediatric Surgery Center	1167-6	OUT:ACUTE:OR:PED	Area that is equipped for the performance of surgical operations for patients ≤ 18 years old may be free-standing or part of a hospital. Operating Room requirements for air changes, temperature, humidity and surfaces must be met.



			Patients do not stay overnight.
Outpatient Plastic Surgery Center	1168-4	OUT:ACUTE:OR:PLS	Area that is equipped for the performance of plastic surgery operations may be free-standing or part of a hospital. Operating Room requirements for air changes, temperature, humidity and surfaces must be met. Patients do not stay overnight.
Outpatient Surgery Recovery Room/Post Anesthesia Care Unit	1169-2	OUT:ACUTE:OR_STEP	Area designated for monitoring patients for the immediate effects of anesthesia before being sent home.
Pediatric Emergency Department	1109-8	OUT:ACUTE:ED:PED	Area that provides emergency medical services to patients ≤ 18 years old; top priority is given to those with life-threatening illness or injury.
Urgent Care Center	1160-1	OUT:ACUTE:CLINIC:UE	Area that provides medical care services for illnesses and injuries that is not life-threatening.
Clinic (Nonacute) Settings			
Allergy Clinic	1110-6	OUT:NONACUTE:CLINIC:ALRG	An outpatient setting for the purpose of providing services to patients with allergies.
Behavioral Health Clinic	1145-2	OUT:NONACUTE:CLINIC:BHV	An outpatient setting for the purpose of providing services to patients with psychiatric or behavior-disorders.
Blood Collection Center	1147-8	OUT:NONACUTE:CLINIC:BLOOD	An outpatient setting where blood is collected from donors. This does not include donation centers that are temporarily set up in non-clinical settings (e.g., schools, churches) or mobile blood collection centers.
Cardiac Rehabilitation Center	1112-2	OUT:NONACUTE:CLINIC:C_REHAB	An outpatient setting where patients with cardiac disease, in partnership with a multidisciplinary team of health professionals, are encouraged and supported to achieve and maintain optimal physical health through exercise, nutritional and psychological counseling.
Cardiology Clinic	1113-0	OUT:NONACUTE:CLINIC:C	An outpatient setting for the evaluation and management of patients with cardiac problems.



Continence Clinic	1148-6	OUT:NONACUTE: CLINIC:CON	An outpatient setting for the evaluation and management of patients with incontinence problems.
Dermatology Clinic	1115-5	OUT:NONACUTE: CLINIC:DERM	An outpatient setting for the evaluation and management of dermatologic conditions by a dermatologist.
Diabetes/Endocrinology Clinic	1116-3	OUT:NONACUTE: CLINIC:DIAB	An outpatient setting for the evaluation, education and management of patients with diabetes.
Ear, Nose, Throat Clinic	1126-2	OUT:NONACUTE: CLINIC:ENT	An outpatient setting for the evaluation and management of conditions related to the ear, nose and/or throat.
Endoscopy Suite	1007-4	OUT:NONACUTE: DIAG: GI	An area where endoscopic procedures (e.g., upper gastrointestinal endoscopies, bronchoscopy) are performed on outpatients and/or inpatients. Patient care and processing of equipment may take place in this location.
Family Medicine Clinic	1117-1	OUT:NONACUTE: CLINIC: FAM	An outpatient setting for patients who are managed by a family practice physician or group of physicians. Does not include private physician practice.
Genetics Clinic	1122-1	OUT:NONACUTE: CLINIC:GEN	An outpatient setting for testing and counseling of individuals may have genetic or hereditary disorders.
Gynecology Clinic	1121-3	OUT:NONACUTE: CLINIC:GYN	An outpatient setting for women for the evaluation and management of female reproductive tract conditions.
Holistic Medicine Center	1161-9	OUT:NONACUTE: CLINIC:HOL	An outpatient setting where alternative healthcare practices are used, focusing on the physical, mental, emotional, social and spiritual aspects of health.
Hyperbaric Oxygen Center	1017-3	OUT:NONACUTE: CLINIC:HBO	An outpatient setting where therapeutic hyperbaric oxygen is administered.
Infusion Center	1018-1	OUT:NONACUTE: CLINIC:FUS	An outpatient setting for the administration of fluids, blood products and medications.
Mobile Blood Collection Center	1176-7	OUT:NONACUTE: MOBILE:BLOOD	A self-contained mobile unit such as a bus or trailer that is specifically designed and equipped for the collection of blood and blood products from public donors. This unit typically moves from location to location.
Mobile MRI/CT	1175-9	OUT:NONACUTE: MOBILE_DIAG:RAD	A self-contained mobile unit such as a bus or trailer that is equipped with MRI or CT radiologic equipment and that may be moved between healthcare locations (e.g., hospitals,



			clinics).
Neurology Clinic	1123-9	OUT:NONACUTE: CLINIC:N	An outpatient setting for the diagnosis, evaluation, and treatment of patients with neurologic disorders.
Occupational Health Clinic	1151-0	OUT:NONACUTE: CLINIC:OCC	An outpatient setting where workplace physicals, workplace injury management and immunological evaluations take place
Occupational Therapy Clinic	1152-8	OUT:NONACUTE: CLINIC:OT_REHAB	An outpatient setting where patients with injury or disability are helped to resume activities of daily living with exercise, massage and other therapies.
Ophthalmology Clinic	1124-7	OUT:NONACUTE: CLINIC:OPH	An outpatient setting for the diagnosis, evaluation and treatment of ophthalmologic disorders.
Orthopedic Clinic	1125-4	OUT:NONACUTE: CLINIC:ORT	An outpatient setting for the diagnosis, evaluation and treatment of orthopedic disorders.
Ostomy Clinic	1149-4	OUT:NONACUTE: CLINIC:OST	An outpatient setting for the management of patients who have had surgical procedure for removing normal bodily wastes through a surgical opening (stoma) on the abdominal wall.
Outpatient Dental Clinic	1150-2	OUT:NONACUTE: CLINIC:DENT	An outpatient setting that provides dental services, including preventive teeth cleaning, emergency treatment, and comprehensive oral care. This may be a private or group practice or a teaching facility for dentists and/or dental hygienists.
Outpatient GI Clinic	1118-9	OUT:NONACUTE: CLINIC:GI	An outpatient setting for the diagnosis, evaluation and management of conditions related to the gastrointestinal tract. Usually includes an endoscopy suite.
Outpatient Hematology/Oncology Clinic	1200-5	OUT:NONACUTE: CLINIC:HONC	An outpatient setting for the diagnosis, evaluation and treatment of persons with hematologic and/or oncologic disorders. This may include chemotherapy or blood/blood products infusion services.
Outpatient HIV Clinic	1154-4	OUT:NONACUTE: CLINIC:HIV	An outpatient setting for the diagnosis, evaluation and treatment of patients who are HIV positive or who have AIDS.
Outpatient Medical Clinic	1120-5	OUT:NONACUTE: CLINIC:M	An outpatient setting for the diagnosis, evaluation and treatment of medical disorders.
Outpatient Rehabilitation Clinic	1151-1	OUT:NONACUTE: CLINIC:REHAB	An outpatient setting where patients with injury or disability are evaluated and treated to resume activities of daily living,



			speech and language skills and maximum physical function. This may include social and psychological evaluation and treatment.
Pain Clinic	1127-0	OUT:NONACUTE: CLINIC:PAIN	An outpatient setting for the evaluation and treatment of patients with chronic or intractable pain.
Pediatric Behavioral Health Clinic	1146-0	OUT:NONACUTE: CLINIC:BHV_PED	An outpatient setting for the evaluation and management of patients ≤ 18 years old with psychiatric or behavior disorders.
Pediatric Cardiology Center	1129-6	OUT:NONACUTE: CLINIC:PED_C	An outpatient setting for the evaluation and management of patients ≤ 18 years old with cardiac disorders.
Pediatric Clinic	1128-8	OUT:NONACUTE: CLINIC:PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old.
Pediatric Dental Clinic	1130-4	OUT:NONACUTE: CLINIC:DENT_PED	An outpatient setting that provides dental services, including preventive teeth cleaning, emergency treatment, and comprehensive oral care to patients ≤ 18 years old. This may be a private or group practice or a teaching facility for dentists and/or dental hygienists.
Pediatric Dermatology Clinic	1131-2	OUT:NONACUTE: CLINIC:DERM_PED	An outpatient setting for the evaluation and management of patients ≤ 18 years old with dermatologic disorders.
Pediatric Diabetes/Endocrinology Clinic	1132-0	OUT:NONACUTE: CLINIC:DIAB_PED	An outpatient setting for the evaluation and management of patients ≤ 18 years old with diabetes or other endocrine disorders.
Pediatric Gastrointestinal Clinic	1119-7	OUT:NONACUTE: CLINIC:GI_PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old with gastrointestinal disorders.
Pediatric Hematology/Oncology Clinic	1136-1	OUT:NONACUTE: CLINIC:HONC_PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old with cancer and/or blood disorders.
Pediatric Nephrology Clinic	1137-9	OUT:NONACUTE: CLINIC:PGU_PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old with disorders of the genitourinary tract.
Pediatric Orthopedic Clinic	1133-8	OUT:NONACUTE: CLINIC:ORT_PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old with fractures or other orthopedic disorders.
Pediatric Rheumatology Clinic	1138-7	OUT:NONACUTE: CLINIC:RHEUM_PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old with rheumatology disorders.



Pediatric Scoliosis Clinic	1134-6	OUT:NONACUTE: CLINIC:SCOL_PED	An outpatient setting for the evaluation and treatment of patients ≤ 18 years old with scoliosis or other growth disorders of the spine.
Physical Therapy Clinic	1202-1	OUT:NONACUTE: CLINIC:PT_REHAB	An outpatient setting where patients with injury or disability are helped to obtain maximum physical function.
Physician's Office	1141-1	OUT:NONACUTE: CLINIC	A physician's office practice.
Podiatry Clinic	1140-3	OUT:NONACUTE: CLINIC:POD	An outpatient setting for the evaluation and treatment of patients with conditions or disorders of the feet.
Prenatal Clinic	1156-9	OUT:NONACUTE: CLINIC:PNATL	An outpatient setting for the evaluation and treatment of pregnant women.
Pulmonary Clinic	1157-7	OUT:NONACUTE: CLINIC:PULM	An outpatient setting for the evaluation and treatment of patients with disorders of the respiratory tract.
Pulmonary Function Testing	1009-0	OUT:NONACUTE: DIAG:PULM	Area where the evaluation of a patient's respiratory status takes place.
Radiology, includes Nuclear Medicine	1008-2	OUT:NONACUTE: DIAG:RAD	Radiology, includes Nuclear Medicine
Rheumatology Clinic	1142-9	OUT:NONACUTE: CLINIC:RHEUM	An outpatient setting for the evaluation and treatment of patients with autoimmune disorders, primarily rheumatoid arthritis.
School or Prison Infirmary	1170-0	OUT:NONACUTE: CLINIC:IFM	Area in a school or correctional facility that provides medical care to students/inmates. This area is not staffed or equipped for overnight stay patients.
Speech Therapy Clinic	1158-5	OUT:NONACUTE: CLINIC:ST_REHAB	An outpatient setting for the evaluation and treatment of patients with brain injury to maximize their speech, swallow and language functions.
Surgical Services Clinic	1143-7	OUT:NONACUTE: CLINIC:S	An outpatient setting for the pre-operative evaluation and the postoperative management of patients undergoing a surgical procedure.
Therapeutic Apheresis Clinic	1207-0	OUT:NONACUTE: CLINIC:THERAPHERES IS	Outpatient setting where blood is collected from patients and therapeutic apheresis procedures are performed.
Well Baby Clinic	1139-5	OUT:NONACUTE:	An outpatient setting for the examination and treatment of



		CLINC:NURS	normal newborns.
Wound Center	1144-5	OUT:NONACUTE: CLINIC:WND	An outpatient setting for the evaluation and treatment of patients with acute or chronic wounds.
Wound Ostomy Continence Clinic	1159-3	OUT:NONACUTE: CLINIC:WND_OST_CO NT	An outpatient area which provides acute and rehabilitative care for patients with selective disorders of the gastrointestinal, genitourinary, and integumentary (skin) systems.
Community Locations			
Home Care	1192-4	COMM:NONACUTE: HOME	A patient's home location where medical services including routine non-invasive and other invasive procedures (e.g., insertion of indwelling urinary catheter, insertion of IV line, etc.) are performed by health care workers and family members under the supervision of a licensed independent practitioner (e.g., MD, CNP,PA).
Home-based Hospice	1194-0	COMM:NONACUTE: HOME:HSP	A patient's home location where end-of-life services are performed by health care workers, family members and volunteers.
Location Outside Facility	1204-7	COMM:NOTFAC	A location outside this facility, including unknown outside location. Used only in "Location of Device Insertion" drop down list of locations.



Key Terms

80% Rule	See CDC Location.
ASA Class	Assessment by the anesthesiologist of the patient's preoperative physical condition using the American Society of Anesthesiologists' (ASA) Classification of Physical Status. ¹ Patient is assigned one of the following which may be used as one element of SSI risk adjustment: <ol style="list-style-type: none">1. Normally healthy patient2. Patient with mild systemic disease3. Patient with severe systemic disease that is not incapacitating4. Patient with an incapacitating systemic disease that is a constant threat to life5. Moribund patient who is not expected to survive for 24 hours with or without the operation. NOTE: If coded as expired or as organ donor, report as ASA = 5.
Aseptically obtained	Obtained in a manner to prevent introduction of organisms from the surrounding tissues into the specimen being collected.
Birthweight	Birthweight is the weight of the infant <u>at the time of birth</u> and should not be changed as the infant gains weight. The birthweight categories are as follows: A = ≤ 750 g; B = 751-1000 g; C = 1001-1500 g; D = 1501-2500 g; E = > 2500 g.
Catheter-associated Urinary Tract Infection (CAUTI)	CAUTI is a healthcare-associated urinary tract infection (UTI) that occurs in a patient who had an indwelling urinary catheter in place within the 48-hour period before the onset of the UTI. NOTE: There is no minimum period of time that the catheter must be in place in order for the UTI to be considered catheter-associated. See also Indwelling urinary catheter, Device-associated infection, and Healthcare-associated infection.
CDC Location	A CDC-defined designation given to a patient care area housing patients who have similar disease conditions or who are receiving care for similar medical or surgical specialties. Each facility location that is monitored is "mapped" to one CDC Location. 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).



Central line	<p>An 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. The following are considered great vessels for the purpose of reporting central line-associated BSIs and counting central line-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, and femoral veins (not femoral arteries). NOTE: In neonates, the umbilical artery/vein is considered a great vessel. NOTE: Neither the insertion site nor the type of device may be used to determine if a line qualifies as a central line. The device must terminate in one of these vessels or in or near the heart to qualify as a central line. NOTE: Pacemaker wires and other nonlumened devices inserted into central blood vessels or the heart are <u>not</u> considered central lines, because fluids are not infused, pushed, nor withdrawn through such devices. NOTE: An introducer is considered an intravascular catheter, and depending on the location of its tip, may be a central line. NOTE: Intraaortic balloon pumps (IABP) are not considered central lines because they are not <u>generally used for infusion or withdrawal of blood, but are used instead for therapeutic purposes. Neither lines used for extracorporeal membrane oxygenation (ECMO).</u></p>
Central Line-associated Bloodstream Infection (CLABSI)	<p>A CLABSI is a healthcare-associated primary bloodstream infection (BSI) in a patient that had a central line within the 48-hour period before the development of the BSI and that is not related to an infection at another site. NOTE: There is <u>no minimum period of time</u> that the central line must be in place in order for the BSI to be considered central line-associated. See also Central line, Device-associated infection and Healthcare-associated infection.</p>
Clean (Wound Class)	See Wound Class.
Clean Contaminated (Wound Class)	See Wound Class.
Contaminated (Wound Class)	See Wound Class.
Date of Event	<p>In the case of an infection event, the date when the first signs or symptoms of infection (clinical evidence) appeared, or the date the specimen used to meet the infection criterion was collected, whichever came first. In the case of a process of care event, the date the process or intervention was done (e.g., day a central line was inserted is the date of CLIP event). See also Transfer rule.</p>



Deep incisional primary (DIP) SSI	A deep incisional SSI that is identified in the primary incision in a patient that has had an operation with <u>one or more</u> incisions (e.g., C-section incision or chest incision for CBGB).
Deep incisional secondary (DIS) SSI	A deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with <u>more than one</u> incision (e.g., donor site [leg] incision for CBGB).
Device-associated infection	A healthcare-associated infection in a patient with a device (e.g., ventilator, central line or indwelling urinary catheter) that was used within the 48-hour period before onset of infection. If the interval is longer than 48 hours, there must be compelling <u>evidence that the infection was associated with device use</u> NOTE: There is no minimum period of time that the device must be in place in order for the infection to be considered device-associated. See also Healthcare-associated infection.
Device days	<p>A daily count of the number of patients with a specific device in the patient care location during a time period. To calculate device days, for each day of the month, <u>at the same time each day</u>, record the number of patients who have the specific device (e.g., central line, ventilator, or indwelling urinary catheter). When denominator data are available from electronic databases (e.g., ventilator days from respiratory therapy), these sources may be used as long as the counts are not substantially different (+/- 5%) from manually collected counts. At the end of the month sum the daily counts and enter into NHSN the total for each type of device.</p> <p>Device-associated denominator data should be collected at the same time each day. When denominator data are available from electronic databases (e.g., ventilator days from respiratory therapy), these sources may be used as long as the counts are not substantially different (+/- 5%) from manually-collected counts, validated for a minimum of 3 months.</p>
Died	<u>The patient died during this facility admission.</u>
Dirty or Infected (Wound Class)	<u>See Wound Class</u>



Duplicate isolate (in AUR protocol)	An isolate of the same species of bacteria, regardless of antimicrobial susceptibility pattern, in the same patient, regardless of specimen site, during a given reporting period (i.e., calendar month).
Duplicate isolate (in MDRO/CDI protocol - LabID Event option)	Any MDRO isolate from the same patient after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source.
Emergency Operative Procedure	An operative procedure on a patient whose condition did not allow time for the standard preoperative preparations normally done prior to a scheduled operation (e.g., stable vital signs, adequate antiseptic skin preparation, colon decontamination in advance of colon surgery, etc.). See also NHSN operative procedure.
Event contributed to death	The event either directly caused death or exacerbated an existing disease condition which then led to death.
Event date	See Date of event.
General anesthesia	General anesthesia is defined as the administration of drugs or gases that enter the general circulation and affect the central nervous system to render the patient pain free, amnesic, unconscious, and often paralyzed with relaxed muscles.
Healthcare-associated infection (HAI)	A localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating at the time of admission to the acute care setting, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection. See also Chapter 17 .
Implant	<u>Implant</u> : A nonhuman-derived object, material, or tissue that is placed in a patient during an operative procedure. Examples include: porcine or synthetic heart valves, mechanical heart, metal rods, mesh, sternal wires, screws, cements, internal staples, hemoclips, and other devices. Non-absorbable sutures are excluded because Infection Preventionists may not easily identify and/or differentiate the soluble nature of suture material used.

For surveillance purposes, this object is considered an implant until it or the



area/structures contiguous with the implant are manipulated for diagnostic or therapeutic purposes. If infection develops after such manipulation, do not attribute it to the operation in which the implant was inserted; instead attribute it to the latter procedure. If the latter procedure is an NHSN operative procedure, subsequent infection can be considered SSI if it meets criteria. If the latter procedure is not an NHSN operative procedure, subsequent infection cannot be considered an SSI but may meet criteria for another HAI and be reported as such.

Indwelling urinary catheter

A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system e.g., not used for irrigation; also called a Foley catheter. Does not include straight in-and-out catheters.

Infant

A patient who is ≤ 1 year of age.

Infection date

See Date of event.

Infusion

The introduction of a solution through a blood vessel via a catheter lumen. This may include continuous infusions such as nutritional fluids or medications, or it may include intermittent infusions such as flushes or IV antimicrobial administration, or blood, in the case of transfusion or hemodialysis.

Inpatient

See NHSN inpatient.

Inpatient location

See Location.

Intensive care unit (ICU)

A nursing care area that provides intensive observation, diagnosis, and therapeutic procedures for adults and/or children who are critically ill. An ICU excludes nursing areas that provide step-down, intermediate care or telemetry only. Specialty care areas are also excluded (see definition).
The type of ICU is determined by the kind of patients cared for in that unit according to the 80% Rule. That is, if 80% of patients are of a certain type (e.g., patients with trauma), then that ICU is designated as that type of unit (in this case, trauma ICU). When an ICU houses roughly equal populations of medical and surgical patients, it is called a medical/surgical ICU.

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 infection events when the Device-associated Module is included on a Monthly



Reporting Plan (except for Dialysis Event surveillance). Operating rooms (including cardiac cath labs, c-section rooms, and interventional radiology) and outpatient locations are not valid locations for these types of surveillance. See also CDC Location.

Location of attribution

The location to which the event is being attributed. See also Date of event and Transfer rule.

Medical school affiliation

Major teaching – Hospital that is an important part of the teaching program of a medical school and the majority of medical students rotate through multiple clinical services.

Graduate – Hospital is used by the medical school for graduate training programs only (i.e., residency and/or fellowships).

Limited – Hospital is used in the medical school’s teaching program to only a limited extent.

Nonteaching – Hospital is not affiliated with a medical school.

Neonatal intensive care unit (NICU)

A hospital unit organized with personnel and equipment to provide continuous life support and comprehensive care for extremely high-risk newborn infants and those with complex and critical illness. There are two types of NICU in NHSN: combined Level II/III NICU and Level III NICU.

NOTE: In NHSN, a Level II nursery is considered a Step Down Neonatal Nursery ward (not an NICU).

NOTE: The categories of Level II, listed below, are classifications from the American Academy of Pediatrics, Definitions of hospital-based newborn services.

Level II neonatal care (specialty)

Special care nursery: level II units are subdivided into 2 categories on the basis of their ability to provide assisted ventilation including continuous positive airway pressure

Level IIA: has the capabilities to

- Resuscitate and stabilize preterm and/or ill infants before transfer to a facility at which newborn intensive care is provided
- Provide care for infants born at > 32 weeks’ gestation and weighing \geq 1500 g (1) who have physiologic immaturity such as apnea of prematurity, inability to maintain body temperature, or inability to take



oral feedings or (2) who are moderately ill with problems that are anticipated to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis

- Provide care for infants who are convalescing after intensive care

Level IIB has the capabilities of a level IIA nursery and the additional capability to provide mechanical ventilation for brief durations (< 24 hours) or continuous positive airway pressure

A NICU can be a combined nursery housing both Level II and III newborns and infants or a nursery housing only Level III newborns and infants.

NOTE: The categories of Level III, listed below, are classifications from the American Academy of Pediatrics, Definitions of hospital-based newborn services². These classifications are all considered Level III NICUs in NHSN.

Level III (subspecialty) NICU: level III NICUs are subdivided into 3 categories

Level IIIA: has the capabilities to

- Provide comprehensive care for infants born at >28 weeks' gestation and weighing >1000 g
- Provide sustained life support limited to conventional mechanical ventilation
- Perform minor surgical procedures such as placement of central venous catheter or inguinal hernia repair

Level IIIB NICU: has the capabilities to provide

- Comprehensive care for extremely low birth weight infants (≤ 1000 g and ≤ 28 weeks' gestation)
- Advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide for as long as required
- Prompt and on-site access to a full range of pediatric medical subspecialists
- Advanced imaging, with interpretation on an urgent basis, including computed tomography, magnetic resonance imaging, and echocardiography
- Pediatric surgical specialists and pediatric anesthesiologists

NICU (Level II/III) and NICU (Level III)



on site or at a closely related institution to perform major surgery such as ligation of patent ductus arteriosus and repair of abdominal wall defects, necrotizing enterocolitis with bowel perforation, tracheoesophageal fistula and/or esophageal atresia, and myelomeningocele

Level IIIC NICU: has the capabilities of a level IIIB NICU and also is located within an institution that has the capability to provide ECMO and surgical repair of complex congenital cardiac malformations that require cardiopulmonary bypass

Neonate

A patient who is ≤ 30 days of age.

NHSN inpatient

A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days. NOTE: A patient who is admitted to an inpatient location as an “observation” patient is identified as an inpatient on the first and subsequent days for the purposes of counting a location’s total patient days and device days.

NHSN operative procedure

A procedure:

- 1) that is performed on a patient who is an NHSN inpatient or an NHSN outpatient; and
- 2) takes place during an operation, which is defined as a single trip to an operating room (OR) where a surgeon makes at least one incision through the skin or mucous membrane, including laparoscopic approach, and closes the incision before the patient leaves the OR; and
- 3) that is included in Table 1, [Chapter 9](#).

NOTE: If the skin incision edges do not meet because of wires or devices or other objects extruding through the incision, the incision is not considered primarily closed and therefore the procedure is not considered an operation. Further, any subsequent infection is not considered a procedure-associated infection (i.e., not an SSI or PPP). See also Operating room.

NHSN outpatient

A patient whose date of admission to the healthcare facility and the date of discharge are the same day.

Operating room (OR)

A patient care area that met the American Institute Architects (AIA) or Facilities Guideline Institute (FGI) criteria for an operating room when it was constructed or renovated.³ This may include an operating room, C-Section



room, interventional radiology room or a cardiac catheterization lab, among other areas.

Operation (Procedure)	A single trip to the operating room (OR) where a surgeon makes at least one incision through the skin or mucous membrane, including laparoscopic approach, and <u>closes the incision</u> before the patient leaves the OR. NOTE: If the skin incision edges do not meet because of wires or devices or other objects extruding through the incision, the incision is not considered primarily closed and therefore the procedure is not considered an operation. Further, any subsequent infection is not considered a procedure-associated infection (i.e., not an SSI or PPP). See also NHSN operative procedure and Operating room..
Outpatient	See NHSN outpatient.
Patient days	A daily count of the number of patients in the patient care location during a time period. To calculate patient days, for each day of the month, <u>at the same time each day</u> , record the number of patients. When patient days are available from electronic databases these sources may be used as long as the counts are not substantially different (+/- 5%) from manually collected counts. At the end of the month, sum the daily counts and enter the total into NHSN.
Permanent central line	A central line that is tunneled, including certain dialysis catheters and implantable catheters (including ports).
Post-procedure pneumonia (PPP)	A pneumonia that meets one of the criteria for pneumonia (PNEU) and occurs after an inpatient operation takes place, but prior to discharge.
Procedure	See Operation.
Secondary bloodstream infection (BSI)	A culture-confirmed BSI associated with a documented HAI at another site (i.e., meets CDC criteria of infection at another site such as UTI). If the primary infection is cultured, the Secondary BSI must yield culture of a same organism as the primary HAI site, regardless of antibiogram. For example, if blood culture is positive in a patient with a healthcare-associated SUTI and at least one organism of both blood and urine specimens is the same, infection is reported as SUTI with secondary BSI, regardless of the antibiograms of the organism. Secondary BSI is not reported separately. Report the shared organism(s) to the genus/species level only once, and if antibiogram data are available, report the results from the most resistant panel. Also, report any additional organisms found in either of the cultures. If, on the other hand, for example, an organ/space SSI is identified by CT scan and no surgical site culture is used to meet the criteria for SSI-IAB, <u>and</u> a blood culture grows



Bacteroides fragilis, then the SSI-IAB is recorded as an SSI with a secondary BSI. The pathogen for the SSI is recorded as *Bacteroides fragilis*. See IAB criteria in [Chapter 17](#) of the NHSN Manual, CDC/NHSN Surveillance Definition of Healthcare-Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting. See also the [Secondary BSI Guide](#) containing the Positive Blood Culture flowchart which is posted under NHSN Guides within the NHSN Resource Library for this most up-to-date information.

Specialty care area (SCA)

Hospital location in which specialized care of the following types is provided:

- Bone marrow transplant
- Solid organ transplant
- Inpatient acute dialysis
- Hematology/Oncology

See also [Chapter 15](#) for descriptions.

SSI risk index

A score used to predict a surgical patient's risk of acquiring a surgical site infection. The risk index score, ranging from 0 to 3, is the number of risk factors present among the following:

- a patient with an American Society of Anesthesiologists' physical status classification score of 3, 4, or 5¹,
- an operation classified as contaminated or dirty/infected⁴, and
- an operation lasting longer than the duration cut point in minutes, where the duration cut point varies by the type of operative procedure performed.

NOTE: As of 2010, NHSN began using standardized infection ratios (SIR) based on operative procedure category-specific multivariate risk models rather than risk index-stratified SSI rates. For duration cut point values and risk index-stratified SSI rates, see NHSN Report: Data summary for 2006 through 2008, issued December 2009 found at <http://www.cdc.gov/nhsn/dataStat.html>. See also ASA score and Wound class.

Superficial incisional primary (SIP) SSI

A superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB). See also [Chapter 9](#) for criteria.

Superficial incisional secondary (SIS) SSI

A superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB). See also [Chapter 9](#) for criteria.



Surveillance cultures	Those cultures reported as part of infection control surveillance such as stool cultures for vancomycin-resistant enterococci (VRE), not for use in patient diagnosis. Also called active surveillance cultures or testing (AST).
Temporary central line	A central line that is not tunneled or implanted.
Transfer rule	If an HAI develops within 48 hours of transfer from one inpatient location to another in the same facility, the infection is attributed to the transferring location. Likewise, if an HAI develops within 48 hours transfer from one inpatient facility to another, the infection is attributed to the transferring facility. Facilities should share information about such HAIs with the transferring facility to enable reporting.
Trauma	Blunt or penetrating injury.
Umbilical catheter	A central line inserted through the umbilical artery or vein in a neonate.
Ventilator	A device to assist or control respiration continuously, inclusive of the weaning period, through a tracheostomy or by endotracheal intubation. NOTE: Lung expansion devices such as intermittent positive pressure breathing (IPPB); nasal positive end-expiratory pressure (PEEP); continuous nasal positive airway pressure (CPAP, hypoCPAP) are not considered ventilators unless delivered via tracheostomy or endotracheal intubation (e.g., ET-CPAP).
Ventilator-associated Pneumonia (VAP)	A VAP is a healthcare-associated pneumonia (PNEU) that occurs in a patient who was intubated and ventilated at the time, of or within 48 hours before, the onset of the PNEU. NOTE: There is <u>no minimum period of time</u> that the ventilator must be in place in order for the PNEU to be considered ventilator-associated. See also Ventilator, Device-associated infection and Healthcare-associated infection.
Wound Class	An assessment of the degree of contamination of a surgical wound at the time of the operation. Wound class should be assigned by a person involved in the surgical procedure, e.g., surgeon, circulating nurse, etc. The wound class system used in NHSN is an adaptation of the American College of Surgeons wound classification schema ⁴ . Wounds are divided into four classes: <u>Clean</u> : An uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered. In addition, clean wounds are primarily closed and, if necessary,



drained with closed drainage. Operative incisional wounds that follow nonpenetrating (blunt) trauma should be included in this category if they meet the criteria.

Clean-Contaminated: Operative wounds in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.

Contaminated: Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered are included in this category.

Dirty or Infected: Includes old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation.

¹Anonymous. New classification of physical status. *Anesthesiology* 1963;24:111.

²American Academy of Pediatrics, Policy Statement: Levels of neonatal care. *Pediatrics*, 2004;114 (5): 1341-1347.

³Facilities Guidelines Institute. *Guidelines for design and construction of health care facilities*. American Society for Healthcare Engineering; Chicago IL; 2010.

⁴Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR, and the Hospital Infection Control Practices Advisory Committee. Guideline for prevention of surgical site infection, 1999. *Infect Control Hosp Epidemiol* 1999;20:247-80.



CDC/NHSN Surveillance Definition of Healthcare-Associated Infection and Criteria for Specific Types of Infections in the Acute Care Setting

This chapter contains the CDC/NHSN surveillance definition of healthcare-associated infection (HAI) and criteria for all specific types of HAI. These criteria include those for the “Big Four” infection types (surgical site infection [SSI], pneumonia [PNEU], bloodstream infection [BSI] and urinary tract infection [UTI]), outlined in earlier chapters of this manual, as well as criteria for other types of HAI. Of particular importance, this chapter provides further required criteria for the specific event types that constitute organ/space SSIs (e.g., mediastinitis [MED] that may follow a coronary artery bypass graft, intra-abdominal abscess [IAB] after colon surgery). Additionally, it is necessary to refer to the criteria in this chapter when determining whether a positive blood culture represents a primary BSI or is secondary to a different type of HAI. A BSI that is identified as secondary to another site of infection must meet one of the criteria of HAI detailed in this chapter. Secondary BSIs are not reported as separate events in NHSN, nor can nor should they be associated with a central line.

NOTE: Some CDC/NHSN definitions and criteria have been updated since the article contained in this chapter was published. In such cases, the updates to any criteria which are no longer valid have been listed and the changes summarized in the table below. For the “big 4” infections, i.e., CLABSI, CAUTI, VAP and SSI, it may be simpler to refer to the specific protocol chapter in the PSC manual, e.g., Chapter 4 for CLABSI surveillance.

Section	Update	Document/Article Page
Added 1/1/2012: In those situations where a patient meets criteria for more than one specific site of infection within a major infection site category (e.g., meets criteria for both SKIN and ST within the SST category), report only the more “serious” specific site of infection (e.g., ST).		
UTI-Urinary Tract Infection: <ul style="list-style-type: none"> • SUTI- Symptomatic urinary tract infection • ASB- Asymptomatic bacteriuria 	Changed as of 1/1/2009. See Appendix, pages 17-27 through 17-30. <ol style="list-style-type: none"> 1) SUTI- criteria dependent on current, recent or no presence of indwelling urinary catheter and age of patient. 2) ASB- removed as specific infection type. 3) Specific infection type - Asymptomatic bacteremic urinary tract infection (ABUTI) created. 1/1/2012: <ol style="list-style-type: none"> 1. SUTI and ABUTI: Further 	310



Section	Update	Document/Article Page
	<p>explanation added under the Comments section:</p> <ul style="list-style-type: none"> • Laboratory cultures reported as “mixed flora” represent at least 2 species of organisms. Therefore an additional organism recovered from the same culture, would represent > 2 species of microorganisms. Such a specimen could not be used to meet the UTI criteria. <p>2. SUTI criteria 2a, 2b and 4: Removal of phrase “a positive urinalysis demonstrated by” in order to recognize that Gram stains may not be performed as part of urinalysis.</p> <p>3. Addition to all SUTI criteria so that they read “...at time of specimen collection or onset of signs or symptoms...” to identify that the presence of catheter is related to both of these signs of infection.</p>	
<p>Table 1. CDC/NHSN major and specific types of healthcare-associated infections</p>	<p>ABUTI- Asymptomatic bacteremic urinary tract infection added as specific infection type.</p> <p>ASB- Asymptomatic bacteriuria removed as specific infection type.</p>	<p>311</p>
<p>OUTI- Other infections of the urinary tract (kidney, ureter, bladder, urethra, or tissue surrounding the retroperitoneal or perinephric space):</p> <ul style="list-style-type: none"> • 3 d & e • 4 d & e • Reporting instruction 	<p>Removed (d) physician diagnosis of specific infections and (e) physician’s institution of appropriate therapy from the criteria for OUTI for any age patient.</p>	<p>312</p>



Section	Update	Document/Article Page
<p>BSI-Bloodstream Infection: LCBI- Laboratory-confirmed bloodstream infection</p> <ul style="list-style-type: none"> • Criterion #2 • Criterion #3 	<p>Criterion 2 and 3: Change terminology “common skin contaminant” to “common commensal”; exclude <i>Corynebacterium diphtheriae</i> from <i>Corynebacterium</i> spp.</p> <p>Removed:</p> <ul style="list-style-type: none"> • “4. There are several issues to consider when determining sameness of organisms” • Table 2. (Examples of how to interpret the sameness of two skin contaminant isolates by comparing antimicrobial susceptibilities) • 4 b. If common skin contaminant organisms from the cultures are speciated but no antibiograms are done or they are done for only 1 of the isolates, it is assumed that the organisms are the same. • 4 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 examples in Table 3). • 4 d. For the purpose of NHSN antibiogram reporting, the category interpretation of intermediate (I) should not be used to distinguish whether 2 organisms are the same. <p>Added: Only genus and species identification should be utilized to determine the sameness of organisms. No additional comparative methods should be used (e.g., morphology or antibiograms) because laboratory testing capabilities and protocols may vary between</p>	<p>314</p>

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Section	Update	Document/Article Page
	<p>facilities. This will reduce reporting variability, solely due to laboratory practice, between facilities reporting LCBIs meeting criterion 2. Report the organism to the genus/species level only once, and if antibiogram data are available, report the results from the most resistant panel.</p> <p>Criterion 3 (for patient \leq 1 year of age). Fever ($>38^{\circ}\text{C}$, core) replaces fever ($>38^{\circ}\text{C}$, rectal). Hypothermia ($<36^{\circ}\text{C}$, core) replaces hypothermia ($<37^{\circ}\text{C}$, rectal).</p> <p>REPORTING INSTRUCTIONS:</p> <ul style="list-style-type: none"> • Report organisms cultured from blood as BSI – LCBI when no other site of infection is evident. • When there is a positive blood culture and clinical signs or symptoms of localized infection at a vascular access site, but no other infection can be found, the infection is considered a primary BSI. • Purulent phlebitis confirmed with a positive semiquantitative culture of a catheter tip, but with either negative or no blood culture is considered a CVS-VASC, neither a BSI nor an SST-SKIN or ST infection. <p>Occasionally a patient with both peripheral and central IV lines develops a primary bloodstream infection (LCBI) that can clearly be attributed to the peripheral line (e.g., pus at the insertion site and matching pathogen from pus and blood). In this situation, enter “Central Line = No” in the NHSN application. You should, however, include the patient’s central line days in the summary denominator count.</p>	

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Section	Update	Document/Article Page
CSEP- Clinical Sepsis-	Removed CSEP as a CDC/NHSN infection type as of 1/1/2010.	316
SST-Skin and Soft Tissue Infection: <ul style="list-style-type: none"> • Reporting instructions 	Added Instruction: Even if there are clinical signs or symptoms of localized infection at a vascular access site, but no other infection can be found, the infection is considered a primary BSI.	324-325
GI-Gastrointestinal System Infection: <ul style="list-style-type: none"> • NEC- Necrotizing Enterocolitis 	<p>As of 1/1/2012: The following definition replaces the printed NEC definition. This definition is for use only in infants (≤ 1 year of age).</p> <p>1) Infant has at least 1 of the clinical <u>and</u> 1 of the radiographic findings from the lists below: <u>At least 1 clinical sign:</u></p> <ul style="list-style-type: none"> a. Bilious aspirate* b. Vomiting c. Abdominal distension d. Occult or gross blood in stools (with no rectal fissure) <p>AND <u>At least 1 radiographic finding:</u></p> <ul style="list-style-type: none"> e. Pneumatosis intestinalis f. Portal venous gas (Hepatobiliary gas) g. Pneumoperitoneum <p>*Bilious aspirate as a result of a transpyloric placement of a nasogastric tube should be excluded</p> <p>2) Surgical NEC: Infant has at least 1 of the following surgical findings:</p> <ul style="list-style-type: none"> a. Surgical evidence of extensive bowel necrosis (>2 cm of bowel affected) 	321



Section	Update	Document/Article Page
	b. Surgical evidence of pneumatosis intestinalis with or without intestinal perforation	
<i>—Please review the identified sections for more details.—</i>		

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CDC/NHSN surveillance definition of health care–associated infection and criteria for specific types of infections in the acute care setting

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BACKGROUND

Since 1988, the Centers for Disease Control and Prevention (CDC) has published 2 articles in which nosocomial infection and criteria for specific types of nosocomial infection for surveillance purposes for use in acute care settings have been defined.^{1,2} This document replaces those articles, which are now considered obsolete, and uses the generic term “health care–associated infection” or “HAI” instead of “nosocomial.” This document reflects the elimination of criterion 1 of clinical sepsis (effective in National Healthcare Safety Network [NHSN] facilities since January 2005) and criteria for laboratory–confirmed bloodstream infection (LCBI). Specifically for LCBI, criterion 2c and 3c, and 2b and 3b, were removed effective in NHSN facilities since January 2005 and January 2008, respectively. The definition of “implant,” which is part of the surgical site infection (SSI) criteria, has been slightly modified. No other infection criteria have been added, removed, or changed. There are also notes throughout this document that reflect changes in the use of surveillance criteria since the implementation of NHSN. For example, the

population for which clinical sepsis is used has been restricted to patients ≤ 1 year old. Another example is that incisional SSI descriptions have been expanded to specify whether an SSI affects the primary or a secondary incision following operative procedures in which more than 1 incision is made. For additional information about how these criteria are used for NHSN surveillance, refer to the *NHSN Manual: Patient Safety Component Protocol* available at the NHSN Web site (www.cdc.gov/ncidod/dhqp/nhsn.html). Whenever revisions occur, they will be published and made available at the NHSN Web site.

CDC/NHSN SURVEILLANCE DEFINITION OF HEALTH CARE–ASSOCIATED INFECTION

For the purposes of NHSN surveillance in the acute care setting, the CDC defines an HAI as a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating at the time of admission to the acute care setting.

HAIs may be caused by infectious agents from endogenous or exogenous sources.

- Endogenous sources are body sites, such as the skin, nose, mouth, gastrointestinal (GI) tract, or vagina that are normally inhabited by microorganisms.
- Exogenous sources are those external to the patient, such as patient care personnel, visitors, patient care equipment, medical devices, or the health care environment.

Other important considerations include the following:

- Clinical evidence may be derived from direct observation of the infection site (eg, a wound) or

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review of information in the patient chart or other clinical records.

- For certain types of infection, a physician or surgeon diagnosis of infection derived from direct observation during a surgical operation, endoscopic examination, or other diagnostic studies or from clinical judgment is an acceptable criterion for an HAI, unless there is compelling evidence to the contrary. For example, one of the criteria for SSI is “surgeon or attending physician diagnosis.” Unless stated explicitly, physician diagnosis alone is not an acceptable criterion for any specific type of HAI.
- Infections occurring in infants that result from passage through the birth canal are considered HAIs.
- The following infections are *not* considered health care associated:
 - Infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection;
 - infections in infants that have been acquired transplacentally (eg, herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) and become evident ≤ 48 hours after birth; and
 - reactivation of a latent infection (eg, herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis).
- The following conditions are *not* infections:
 - Colonization, which means the presence of microorganisms on skin, on mucous membranes, in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms; and
 - inflammation that results from tissue response to injury or stimulation by noninfectious agents, such as chemicals.

CRITERIA FOR SPECIFIC TYPES OF INFECTION

Once an infection is deemed to be health care associated according to the definition shown above, the specific type of infection should be determined based on the criteria detailed below. These have been grouped into 13 major type categories to facilitate data analysis. For example, there are 3 specific types of urinary tract infections (symptomatic urinary tract infection, asymptomatic bacteriuria, and other infections of the urinary tract) that are grouped under the major type of Urinary Tract Infection. The specific and major types of infection used in NHSN and their abbreviated codes are listed in Table 1, and the criteria for each of the specific types of infection follow it.

USE OF THESE CRITERIA FOR PUBLICLY REPORTED HAI DATA

Not all infections or infection criteria may be appropriate for use in public reporting of HAIs. Guidance on what infections and infection criteria are recommended is available from other sources (eg, HICPAC [http://www.cdc.gov/ncidod/dhqp/hicpac_pubs.html]; National Quality Forum [<http://www.qualityforum.org/>]; professional organizations).

UTI-URINARY TRACT INFECTION

SUTI-Symptomatic urinary tract infection

A symptomatic urinary tract infection must meet at least 1 of the following criteria:

1. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, or suprapubic tenderness
and
patient has a positive urine culture, that is, $\geq 10^5$ microorganisms per cc of urine with no more than 2 species of microorganisms.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, or suprapubic tenderness
and
at least 1 of the following
 - a. positive dipstick for leukocyte esterase and/or nitrate
 - b. pyuria (urine specimen with ≥ 10 white blood cell [WBC]/ mm^3 or ≥ 3 WBC/high-power field of unspun urine)
 - c. organisms seen on Gram's stain of unspun urine
 - d. at least 2 urine cultures with repeated isolation of the same uropathogen (gram-negative bacteria or *Staphylococcus saprophyticus*) with $\geq 10^2$ colonies/mL in non-voided specimens
 - e. $\leq 10^5$ colonies/mL of a single uropathogen (gram-negative bacteria or *S saprophyticus*) in a patient being treated with an effective antimicrobial agent for a urinary tract infection
 - f. physician diagnosis of a urinary tract infection
 - g. physician institutes appropriate therapy for a urinary tract infection.
3. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia

Table I. CDC/NHSN major and specific types of health care-associated infections

UTI	Urinary tract infection	
	SUTI	Symptomatic urinary tract infection
	ASB	Asymptomatic bacteriuria
	OUTI	Other infections of the urinary tract
SSI	Surgical site infection	
	SIP	Superficial incisional primary SSI
	SIS	Superficial incisional secondary SSI
	DIP	Deep incisional primary SSI
	DIS	Deep incisional secondary SSI
	Organ/space	Organ/space SSI. Indicate specific type:
		<ul style="list-style-type: none"> • BONE • BRST • CARD • DISC • EAR • EMET • ENDO • EYE • GIT • IAB • IC • JNT • LUNG • MED • MEN • ORAL • OREP • OUTI • SA • SINU • UR • VASC • VCUF
BSI	Bloodstream infection	
	LCBI	Laboratory-confirmed bloodstream infection
	CSEP	Clinical sepsis
PNEU	Pneumonia	
	PNU1	Clinically defined pneumonia
	PNU2	Pneumonia with specific laboratory findings
	PNU3	Pneumonia in immunocompromised patient
BJ	Bone and joint infection	
	BONE	Osteomyelitis
	JNT	Joint or bursa
	DISC	Disc space
CNS	Central nervous system	
	IC	Intracranial infection
	MEN	Meningitis or ventriculitis
	SA	Spinal abscess without meningitis
CVS	Cardiovascular system infection	
	VASC	Arterial or venous infection
	ENDO	Endocarditis
	CARD	Myocarditis or pericarditis
	MED	Mediastinitis

Continued

Table I. Continued

EENT	Eye, ear, nose, throat, or mouth infection	
	CONJ	Conjunctivitis
	EYE	Eye, other than conjunctivitis
	EAR	Ear, mastoid
	ORAL	Oral cavity (mouth, tongue, or gums)
	SINU	Sinusitis
	UR	Upper respiratory tract, pharyngitis, laryngitis, epiglottitis
GI	Gastrointestinal system infection	
	GE	Gastroenteritis
	GIT	Gastrointestinal (GI) tract
	HEP	Hepatitis
	IAB	Intraabdominal, not specified elsewhere
	NEC	Necrotizing enterocolitis
LRI	Lower respiratory tract infection, other than pneumonia	
	BRON	Bronchitis, tracheobronchitis, tracheitis, without evidence of pneumonia
	LUNG	Other infections of the lower respiratory tract
REPR	Reproductive tract infection	
	EMET	Endometritis
	EPIS	Episiotomy
	VCUF	Vaginal cuff
	OREP	Other infections of the male or female reproductive tract
SST	Skin and soft tissue infection	
	SKIN	Skin
	ST	Soft tissue
	DECU	Decubitus ulcer
	BURN	Burn
	BRST	Breast abscess or mastitis
	UMB	Omphalitis
	PUST	Pustulosis
	CIRC	Newborn circumcision
SYS	Systemic Infection	
	DI	Disseminated infection

(<37°C rectal), apnea, bradycardia, dysuria, lethargy, or vomiting
and

patient has a positive urine culture, that is, $\geq 10^5$ microorganisms per cc of urine with no more than two species of microorganisms.

4. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$), hypothermia ($<37^\circ\text{C}$), apnea, bradycardia, dysuria, lethargy, or vomiting

and

at least 1 of the following:

- a. positive dipstick for leukocyte esterase and/or nitrate
- b. pyuria (urine specimen with ≥ 10 WBC/mm⁵ or ≥ 3 WBC/high-power field of unspun urine)
- c. organisms seen on Gram's stain of unspun urine
- d. at least 2 urine cultures with repeated isolation of the same uropathogen (gram-negative bacteria or *S saprophyticus*) with $\geq 10^2$ colonies/mL in nonvoided specimens
- e. $\leq 10^5$ colonies/mL of a single uropathogen (gram-negative bacteria or *S saprophyticus*) in a patient being treated with an effective antimicrobial agent for a urinary tract infection
- f. physician diagnosis of a urinary tract infection
- g. physician institutes appropriate therapy for a urinary tract infection.

ASB-Asymptomatic bacteriuria

An asymptomatic bacteriuria must meet at least 1 of the following criteria:

1. Patient has had an indwelling urinary catheter within 7 days before the culture
and
patient has a positive urine culture, that is, $\geq 10^5$ microorganisms per cc of urine with no more than 2 species of microorganisms
and
patient has no fever ($>38^\circ\text{C}$), urgency, frequency, dysuria, or suprapubic tenderness.
2. Patient has *not* had an indwelling urinary catheter within 7 days before the first positive culture
and
patient has had at least 2 positive urine cultures, that is, $\geq 10^5$ microorganisms per cc of urine with repeated isolation of the same microorganism and no more than 2 species of microorganisms
and
patient has no fever ($>38^\circ\text{C}$), urgency, frequency, dysuria, or suprapubic tenderness.

Comments

- A positive culture of a urinary catheter tip is *not* an acceptable laboratory test to diagnose a urinary tract infection.

- Urine cultures must be obtained using appropriate technique, such as clean catch collection or catheterization.
- In infants, a urine culture should be obtained by bladder catheterization or suprapubic aspiration; a positive urine culture from a bag specimen is unreliable and should be confirmed by a specimen aseptically obtained by catheterization or suprapubic aspiration.

OUTI-Other infections of the urinary tract (kidney, ureter, bladder, urethra, or tissue surrounding the retroperitoneal or perinephric space)

Other infections of the urinary tract must meet at least 1 of the following criteria:

1. Patient has organisms isolated from culture of fluid (other than urine) or tissue from affected site.
2. Patient has an abscess or other evidence of infection seen on direct examination, during a surgical operation, or during a histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$), localized pain, or localized tenderness at the involved site
and

at least 1 of the following:

- a. purulent drainage from affected site
 - b. organisms cultured from blood that are compatible with suspected site of infection
 - c. radiographic evidence of infection (eg, abnormal ultrasound, computerized tomography [CT] scan, magnetic resonance imaging [MRI], or radiolabel scan [gallium, technetium], etc)
 - d. physician diagnosis of infection of the kidney, ureter, bladder, urethra, or tissues surrounding the retroperitoneal or perinephric space
 - e. physician institutes appropriate therapy for an infection of the kidney, ureter, bladder, urethra, or tissues surrounding the retroperitoneal or perinephric space.
4. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$ rectal), hypothermia ($<37^\circ\text{C}$ rectal), apnea, bradycardia, lethargy, or vomiting
and
at least 1 of the following:
 - a. purulent drainage from affected site
 - b. organisms cultured from blood that are compatible with suspected site of infection

- c. radiographic evidence of infection (eg, abnormal ultrasound, CT scan, MRI, or radiolabel scan [gallium, technetium])
- d. physician diagnosis of infection of the kidney, ureter, bladder, urethra, or tissues surrounding the retroperitoneal or perinephric space
- e. physician institutes appropriate therapy for an infection of the kidney, ureter, bladder, urethra, or tissues surrounding the retroperitoneal or perinephric space.

Reporting instruction

- Report infections following circumcision in newborns as CIRC.

SSI-SURGICAL SITE INFECTION

SIP/SIS-Superficial incisional surgical site infection

A superficial incisional SSI (SIP or SIS) must meet the following criterion:

Infection occurs within 30 days after the operative procedure

and

involves only skin and subcutaneous tissue of the incision

and

patient has at least 1 of the following:

- a. purulent drainage from the superficial incision
- b. organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision
- c. at least 1 of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision is deliberately opened by surgeon and is culture positive or not cultured. A culture-negative finding does not meet this criterion.
- d. diagnosis of superficial incisional SSI by the surgeon or attending physician.

There are 2 specific types of superficial incisional SSI:

- *Superficial incisional primary (SIP)*: a superficial incisional SSI that is identified in the primary incision in a patient who has had an operation with 1 or more incisions (eg, C-section incision or chest incision for coronary artery bypass graft with a donor site [CBGB]).
- *Superficial incisional secondary (SIS)*: a superficial incisional SSI that is identified in the secondary incision in a patient who has had an operation with more than 1 incision (eg, donor site [leg] incision for CBGB).

Reporting instructions

- Do not report a stitch abscess (minimal inflammation and discharge confined to the points of suture penetration) as an infection.
- Do not report a localized stab wound infection as SSI, instead report as skin (SKIN), or soft tissue (ST), infection, depending on its depth.
- Report infection of the circumcision site in newborns as CIRC. Circumcision is not an NHSN operative procedure.
- Report infected burn wound as BURN.
- If the incisional site infection involves or extends into the fascial and muscle layers, report as a deep incisional SSI.
- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.

DIP/DIS-Deep incisional surgical site infection

A deep incisional SSI (DIP or DIS) must meet the following criterion:

Infection occurs within 30 days after the operative procedure if no implant¹ is left in place or within 1 year if implant is in place and the infection appears to be related to the operative procedure

and

involves deep soft tissues (eg, fascial and muscle layers) of the incision

and

patient has at least 1 of the following:

- a. purulent drainage from the deep incision but not from the organ/space component of the surgical site
- b. a deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least 1 of the following signs or symptoms: fever (>38°C), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
- c. an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- d. diagnosis of a deep incisional SSI by a surgeon or attending physician.

There are 2 specific types of deep incisional SSI:

- *Deep incisional primary (DIP)*: a deep incisional SSI that is identified in a primary incision in a patient

¹A nonhuman-derived object, material, or tissue (eg, prosthetic heart valve, nonhuman vascular graft, mechanical heart, or hip prosthesis) that is permanently placed in a patient during an operative procedure and is not routinely manipulated for diagnostic or therapeutic purposes.

who has had an operation with one or more incisions (eg, C-section incision or chest incision for CBGB); and

- *Deep incisional secondary (DIS)*: a deep incisional SSI that is identified in the secondary incision in a patient who has had an operation with more than 1 incision (eg, donor site [leg] incision for CBGB).

Reporting instruction

- Classify infection that involves *both* superficial and deep incision sites as deep incisional SSI.

Organ/space-Organ/space surgical site infection

An organ/space SSI involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure. Specific sites are assigned to organ/space SSI to identify further the location of the infection. Listed below in reporting instructions are the specific sites that must be used to differentiate organ/space SSI. An example is appendectomy with subsequent subdiaphragmatic abscess, which would be reported as an organ/space SSI at the intraabdominal specific site (SSI-IAB).

An organ/space SSI must meet the following criterion:

Infection occurs within 30 days after the operative procedure if no implant¹ is left in place or within 1 year if implant is in place and the infection appears to be related to the operative procedure

and
infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure

and
patient has at least 1 of the following:

- purulent drainage from a drain that is placed through a stab wound into the organ/space
- organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- diagnosis of an organ/space SSI by a surgeon or attending physician.

Reporting instructions

- Specific sites of organ/space SSI (see also criteria for these sites)

- | | |
|----------------------------|----------------------------|
| <input type="radio"/> BONE | <input type="radio"/> LUNG |
| <input type="radio"/> BRST | <input type="radio"/> MED |

- | | |
|----------------------------|----------------------------|
| <input type="radio"/> CARD | <input type="radio"/> MEN |
| <input type="radio"/> DISC | <input type="radio"/> ORAL |
| <input type="radio"/> EAR | <input type="radio"/> OREP |
| <input type="radio"/> EMET | <input type="radio"/> OUTI |
| <input type="radio"/> ENDO | <input type="radio"/> SA |
| <input type="radio"/> EYE | <input type="radio"/> SINU |
| <input type="radio"/> GIT | <input type="radio"/> UR |
| <input type="radio"/> IAB | <input type="radio"/> VASC |
| <input type="radio"/> IC | <input type="radio"/> VCUF |
| <input type="radio"/> JNT | |

- Occasionally an organ/space infection drains through the incision. Such infection generally does not involve reoperation and is considered a complication of the incision; therefore, classify it as a deep incisional SSI.

BSI-BLOODSTREAM INFECTION

LCBI-Laboratory-confirmed bloodstream infection

LCBI criteria 1 and 2 may be used for patients of any age, including patients ≤ 1 year of age.

LCBI must meet at least 1 of the following criteria:

- Patient has a recognized pathogen cultured from 1 or more blood cultures
and
organism cultured from blood is *not* related to an infection at another site. (See Notes 1 and 2.)
- Patient has at least 1 of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), chills, or hypotension
and
signs and symptoms and positive laboratory results are *not* related to an infection at another site
and
common skin contaminant (ie, 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 2 or more blood cultures drawn on separate occasions. (See Notes 3 and 4.)
- Patient ≤ 1 year of age has at least 1 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 (ie, 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 2 or more blood

cultures drawn on separate occasions. (See Notes 3 and 4.)

Notes

1. In criterion 1, the phrase “1 or more blood cultures” means that at least 1 bottle from a blood draw is reported by the laboratory as having grown organisms (ie, is a 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 a list of common skin contaminants). A few of the recognized pathogens are *S aureus*, *Enterococcus* spp, *E coli*, *Pseudomonas* spp, *Klebsiella* spp, *Candida* spp, and others.
3. In criteria 2 and 3, the phrase “2 or more blood cultures drawn on separate occasions” means (1) that blood from at least 2 blood draws were collected within 2 days of each other (eg, 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 in time to meet this criterion) and (2) that at least 1 bottle from each blood draw is reported by the laboratory as having grown the same common skin contaminant organism (ie, is a positive blood culture). (See Note 4 for determining sameness of organisms.)
 - a. For example, an adult patient has blood drawn at 8 AM and again at 8:15 AM of the same day. Blood from each blood draw is inoculated into 2 bottles and incubated (4 bottles total). If 1 bottle from each blood draw set is positive for coagulase-negative staphylococci, this part of the criterion is met.
 - b. For example, a neonate has blood drawn for culture on Tuesday and again on Saturday, and both grow the same common skin contaminant. Because the time between these blood cultures exceeds the 2-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 2 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 1 culture,

Table 2. Examples of “sameness” by organism speciation

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>

Table 3. Examples of “sameness” by organism antibiogram

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

S, sensitive; **R**, resistant.

and a companion culture is identified with only a descriptive name (ie, 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 examples in Table 2).

- b. If common skin contaminant organisms from the cultures are speciated but no antibiograms are done or they are done for only 1 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 examples in Table 3).
- d. For the purpose of NHSN antibiogram reporting, the category interpretation of intermediate (I) should *not* be used to distinguish whether 2 organisms are the same.

Specimen collection considerations

Ideally, blood specimens for culture should be obtained from 2 to 4 blood draws from separate venipuncture sites (eg, right and left antecubital veins), not through a vascular catheter. These blood draws should be performed simultaneously or over a short period of time (ie, within a few hours).^{3,4} If your facility does not currently obtain specimens using this technique, you may still report BSIs using the criteria and notes above, but you should work with appropriate personnel to facilitate better specimen collection practices for blood cultures.

Reporting instructions

- Purulent phlebitis confirmed with a positive semi-quantitative culture of a catheter tip, but with either negative or no blood culture is considered a CVS-VASC, not a BSI.
- Report organisms cultured from blood as BSI-LCBI when no other site of infection is evident.

CSEP-CLINICAL SEPSIS

CSEP may be used only to report primary BSI in neonates and infants. It is not used to report BSI in adults and children.

Clinical sepsis must meet the following criterion:

Patient ≤ 1 year of age has at least 1 of the following clinical signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, or bradycardia

and

blood culture *not* done or *no* organisms detected in blood

and

no apparent infection at another site

and

physician institutes treatment for sepsis.

Reporting instruction

- Report culture-positive infections of the bloodstream as BSI-LCBI.

PNEU-PNEUMONIA

See Appendix.

BJ-BONE AND JOINT INFECTION

BONE-Osteomyelitis

Osteomyelitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from bone.
2. Patient has evidence of osteomyelitis on direct examination of the bone during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), localized swelling, tenderness, heat, or drainage at suspected site of bone infection

and

at least 1 of the following:

- a. organisms cultured from blood
- b. positive blood antigen test (eg, *H influenzae*, *S pneumoniae*)

- c. radiographic evidence of infection (eg, abnormal findings on x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc]).

Reporting instruction

- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.

JNT-Joint or bursa

Joint or bursa infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from joint fluid or synovial biopsy.
2. Patient has evidence of joint or bursa infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: joint pain, swelling, tenderness, heat, evidence of effusion or limitation of motion

and

at least 1 of the following:

- a. organisms *and* white blood cells seen on Gram's stain of joint fluid
- b. positive antigen test on blood, urine, or joint fluid
- c. cellular profile and chemistries of joint fluid compatible with infection and *not* explained by an underlying rheumatologic disorder
- d. radiographic evidence of infection (eg, abnormal findings on x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc]).

DISC-Disc space infection

Vertebral disc space infection must meet at least 1 of the following criteria:

1. Patient has organisms cultured from vertebral disc space tissue obtained during a surgical operation or needle aspiration.
 2. Patient has evidence of vertebral disc space infection seen during a surgical operation or histopathologic examination.
 3. Patient has fever ($>38^{\circ}\text{C}$) with no other recognized cause or pain at the involved vertebral disc space
- and
- radiographic evidence of infection, (eg, abnormal findings on x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc]).

4. Patient has fever ($>38^{\circ}\text{C}$) with no other recognized cause and pain at the involved vertebral disc space
and
positive antigen test on blood or urine (eg, *H influenzae*, *S pneumoniae*, *N meningitidis*, or Group B *Streptococcus*).

CNS-CENTRAL NERVOUS SYSTEM INFECTION

IC-Intracranial infection (brain abscess, subdural or epidural infection, encephalitis)

Intracranial infection must meet at least 1 of the following criteria:

1. Patient has organisms cultured from brain tissue or dura.
2. Patient has an abscess or evidence of intracranial infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: headache, dizziness, fever ($>38^{\circ}\text{C}$), localizing neurologic signs, changing level of consciousness, or confusion
and
at least 1 of the following:

- a. organisms seen on microscopic examination of brain or abscess tissue obtained by needle aspiration or by biopsy during a surgical operation or autopsy
- b. positive antigen test on blood or urine
- c. radiographic evidence of infection, (eg, abnormal findings on ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram)
- d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

4. Patient ≤ 1 year of age has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, localizing neurologic signs, or changing level of consciousness
and
at least 1 of the following:

- a. organisms seen on microscopic examination of brain or abscess tissue obtained by needle aspiration or by biopsy during a surgical operation or autopsy

- b. positive antigen test on blood or urine
- c. radiographic evidence of infection, (eg, abnormal findings on ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram)
- d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Reporting instruction

- If meningitis and a brain abscess are present together, report the infection as IC.

MEN-Meningitis or ventriculitis

Meningitis or ventriculitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from cerebrospinal fluid (CSF).
2. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), headache, stiff neck, meningeal signs, cranial nerve signs, or irritability
and
at least 1 of the following:
 - a. increased white cells, elevated protein, and/or decreased glucose in CSF
 - b. organisms seen on Gram's stain of CSF
 - c. organisms cultured from blood
 - d. positive antigen test of CSF, blood, or urine
 - e. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

3. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, stiff neck, meningeal signs, cranial nerve signs, or irritability
and

at least 1 of the following:

- a. positive CSF examination with increased white cells, elevated protein, and/or decreased glucose
- b. positive Gram's stain of CSF
- c. organisms cultured from blood
- d. positive antigen test of CSF, blood, or urine
- e. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Reporting instructions

- Report meningitis in the newborn as health care-associated *unless* there is compelling evidence indicating the meningitis was acquired transplacentally.
- Report CSF shunt infection as SSI-MEN if it occurs ≤ 1 year of placement; if later or after manipulation/access of the shunt, report as CNS-MEN.
- Report meningoencephalitis as MEN.
- Report spinal abscess *with* meningitis as MEN.

SA-Spinal abscess without meningitis

An abscess of the spinal epidural or subdural space, without involvement of the cerebrospinal fluid or adjacent bone structures, must meet at least 1 of the following criteria:

1. Patient has organisms cultured from abscess in the spinal epidural or subdural space.
2. Patient has an abscess in the spinal epidural or subdural space seen during a surgical operation or at autopsy or evidence of an abscess seen during a histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), back pain, focal tenderness, radiculitis, paraparesis, or paraplegia
and
at least 1 of the following:
 - a. organisms cultured from blood
 - b. radiographic evidence of a spinal abscess (eg, abnormal findings on myelography, ultrasound, CT scan, MRI, or other scans [gallium, technetium, etc]).

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Reporting instruction

- Report spinal abscess *with* meningitis as MEN.

CVS-CARDIOVASCULAR SYSTEM INFECTION

VASC-Arterial or venous infection

Arterial or venous infection must meet at least 1 of the following criteria:

1. Patient has organisms cultured from arteries or veins removed during a surgical operation

and

blood culture *not* done or *no* organisms cultured from blood.

2. Patient has evidence of arterial or venous infection seen during a surgical operation or histopathologic examination.

3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain, erythema, or heat at involved vascular site

and

more than 15 colonies cultured from intravascular cannula tip using semiquantitative culture method

and

blood culture *not* done or *no* organisms cultured from blood.

4. Patient has purulent drainage at involved vascular site

and

blood culture *not* done or *no* organisms cultured from blood.

5. Patient ≥ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, lethargy, or pain, erythema, or heat at involved vascular site

and

more than 15 colonies cultured from intravascular cannula tip using semiquantitative culture method

and

blood culture *not* done or *no* organisms cultured from blood.

Reporting instructions

- Report infections of an arteriovenous graft, shunt, or fistula or intravascular cannulation site without organisms cultured from blood as CVS-VASC.
- Report intravascular infections with organisms cultured from the blood as BSI-LCBI.

ENDO-Endocarditis

Endocarditis of a natural or prosthetic heart valve must meet at least 1 of the following criteria:

1. Patient has organisms cultured from valve or vegetation.
2. Patient has 2 or more of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), new or changing murmur, embolic phenomena, skin manifestations (ie, petechiae, splinter hemorrhages, painful subcutaneous nodules),

congestive heart failure, or cardiac conduction abnormality

and

at least 1 of the following:

- a. organisms cultured from 2 or more blood cultures
- b. organisms seen on Gram's stain of valve when culture is negative or *not* done
- c. valvular vegetation seen during a surgical operation or autopsy
- d. positive antigen test on blood or urine (eg, *H influenzae*, *S pneumoniae*, *N meningitidis*, or Group B *Streptococcus*)
- e. evidence of new vegetation seen on echocardiogram

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

3. Patient ≤ 1 year of age has 2 or more of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, new or changing murmur, embolic phenomena, skin manifestations (ie, petechiae, splinter hemorrhages, painful subcutaneous nodules), congestive heart failure, or cardiac conduction abnormality

and

at least 1 of the following:

- a. organisms cultured from 2 or more blood cultures
- b. organisms seen on Gram's stain of valve when culture is negative or *not* done
- c. valvular vegetation seen during a surgical operation or autopsy
- d. positive antigen test on blood or urine (eg, *H influenzae*, *S pneumoniae*, *N meningitidis*, or Group B *Streptococcus*)
- e. evidence of new vegetation seen on echocardiogram

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

CARD-Myocarditis or pericarditis

Myocarditis or pericarditis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from pericardial tissue or fluid obtained by needle aspiration or during a surgical operation.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), chest pain, paradoxical pulse, or increased heart size

and

at least 1 of the following:

- a. abnormal EKG consistent with myocarditis or pericarditis
 - b. positive antigen test on blood (eg, *H influenzae*, *S pneumoniae*)
 - c. evidence of myocarditis or pericarditis on histologic examination of heart tissue
 - d. 4-fold rise in type-specific antibody with or without isolation of virus from pharynx or feces
 - e. pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.
3. Patient ≤ 1 year of age has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, paradoxical pulse, or increased heart size

and

at least 1 of the following:

- a. abnormal EKG consistent with myocarditis or pericarditis
- b. positive antigen test on blood (eg, *H influenzae*, *S pneumoniae*)
- c. histologic examination of heart tissue shows evidence of myocarditis or pericarditis
- d. 4-fold rise in type-specific antibody with or without isolation of virus from pharynx or feces
- e. pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.

Comment

- Most cases of postcardiac surgery or postmyocardial infarction pericarditis are not infectious.

MED-Mediastinitis

Mediastinitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from mediastinal tissue or fluid obtained during a surgical operation or needle aspiration.
2. Patient has evidence of mediastinitis seen during a surgical operation or histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), chest pain, or sternal instability

and

at least 1 of the following:

- a. purulent discharge from mediastinal area
- b. organisms cultured from blood or discharge from mediastinal area

- c. mediastinal widening on x-ray.
4. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, or sternal instability
and
at least 1 of the following:
- purulent discharge from mediastinal area
 - organisms cultured from blood or discharge from mediastinal area
 - mediastinal widening on x-ray.

Reporting instruction

- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.

EENT-EYE, EAR, NOSE, THROAT, OR MOUTH INFECTION

CONJ-Conjunctivitis

Conjunctivitis must meet at least 1 of the following criteria:

- Patient has pathogens cultured from purulent exudate obtained from the conjunctiva or contiguous tissues, such as eyelid, cornea, meibomian glands, or lacrimal glands.
- Patient has pain or redness of conjunctiva or around eye
and
at least 1 of the following:
 - WBCs and organisms seen on Gram's stain of exudate
 - purulent exudate
 - positive antigen test (eg, ELISA or IF for *Chlamydia trachomatis*, herpes simplex virus, adenovirus) on exudate or conjunctival scraping
 - multinucleated giant cells seen on microscopic examination of conjunctival exudate or scrapings
 - positive viral culture
 - diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Reporting instructions

- Report other infections of the eye as EYE.
- Do *not* report chemical conjunctivitis caused by silver nitrate (AgNO_3) as a health care-associated infection.
- Do *not* report conjunctivitis that occurs as a part of a more widely disseminated viral illness (such as measles, chickenpox, or a URI).

EYE-Eye, other than conjunctivitis

An infection of the eye, other than conjunctivitis, must meet at least 1 of the following criteria:

- Patient has organisms cultured from anterior or posterior chamber or vitreous fluid.
- Patient has at least 2 of the following signs or symptoms with no other recognized cause: eye pain, visual disturbance, or hypopyon
and
at least 1 of the following:
 - physician diagnosis of an eye infection
 - positive antigen test on blood (eg, *H influenzae*, *S pneumoniae*)
 - organisms cultured from blood.

EAR-Ear mastoid

Ear and mastoid infections must meet at least 1 of the following criteria:

Otitis externa must meet at least 1 of the following criteria:

- Patient has pathogens cultured from purulent drainage from ear canal.
- Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain, redness, or drainage from ear canal
and
organisms seen on Gram's stain of purulent drainage.

Otitis media must meet at least 1 of the following criteria:

- Patient has organisms cultured from fluid from middle ear obtained by tympanocentesis or at surgical operation.
- Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain in the eardrum, inflammation, retraction or decreased mobility of eardrum, or fluid behind eardrum.

Otitis interna must meet at least 1 of the following criteria:

- Patient has organisms cultured from fluid from inner ear obtained at surgical operation.
- Patient has a physician diagnosis of inner ear infection.

Mastoiditis must meet at least 1 of the following criteria:

- Patient has organisms cultured from purulent drainage from mastoid.

2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain, tenderness, erythema, headache, or facial paralysis

and

at least 1 of the following:

- a. organisms seen on Gram's stain of purulent material from mastoid
- b. positive antigen test on blood.

ORAL-Oral cavity (mouth, tongue, or gums)

Oral cavity infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent material from tissues of oral cavity.
2. Patient has an abscess or other evidence of oral cavity infection seen on direct examination, during a surgical operation, or during a histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: abscess, ulceration, or raised white patches on inflamed mucosa, or plaques on oral mucosa

and

at least 1 of the following:

- a. organisms seen on Gram's stain
- b. positive KOH (potassium hydroxide) stain
- c. multinucleated giant cells seen on microscopic examination of mucosal scrapings
- d. positive antigen test on oral secretions
- e. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen
- f. physician diagnosis of infection and treatment with topical or oral antifungal therapy.

Reporting instruction

- Report health care-associated primary herpes simplex infections of the oral cavity as ORAL; recurrent herpes infections are *not* health care-associated.

SINU-Sinusitis

Sinusitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent material obtained from sinus cavity.
2. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain or tenderness over the involved sinus, headache, purulent exudate, or nasal obstruction

and

at least 1 of the following:

- a. positive transillumination
- b. positive radiographic examination (including CT scan).

UR-Upper respiratory tract, pharyngitis, laryngitis, epiglottitis

Upper respiratory tract infections must meet at least 1 of the following criteria:

1. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), erythema of pharynx, sore throat, cough, hoarseness, or purulent exudate in throat

and

at least 1 of the following:

- a. organisms cultured from the specific site
 - b. organisms cultured from blood
 - c. positive antigen test on blood or respiratory secretions
 - d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen
 - e. physician diagnosis of an upper respiratory infection.
2. Patient has an abscess seen on direct examination, during a surgical operation, or during a histopathologic examination.
 3. Patient ≤ 1 year of age has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnea, bradycardia, nasal discharge, or purulent exudate in throat

and

at least 1 of the following:

- a. organisms cultured from the specific site
- b. organisms cultured from blood
- c. positive antigen test on blood or respiratory secretions
- d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen
- e. physician diagnosis of an upper respiratory infection.

GI-GASTROINTESTINAL SYSTEM INFECTION

GE-Gastroenteritis

Gastroenteritis must meet at least 1 of the following criteria:

1. Patient has an acute onset of diarrhea (liquid stools for more than 12 hours) with or without

vomiting or fever ($>38^{\circ}\text{C}$) and no likely noninfectious cause (eg, diagnostic tests, therapeutic regimen other than antimicrobial agents, acute exacerbation of a chronic condition, or psychologic stress).

2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: nausea, vomiting, abdominal pain, fever ($>38^{\circ}\text{C}$), or headache

and

at least 1 of the following:

- a. an enteric pathogen is cultured from stool or rectal swab
- b. an enteric pathogen is detected by routine or electron microscopy
- c. an enteric pathogen is detected by antigen or antibody assay on blood or feces
- d. evidence of an enteric pathogen is detected by cytopathic changes in tissue culture (toxin assay)
- e. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

GIT-Gastrointestinal tract (esophagus, stomach, small and large bowel, and rectum) excluding gastroenteritis and appendicitis

Gastrointestinal tract infections, excluding gastroenteritis and appendicitis, must meet at least 1 of the following criteria:

1. Patient has an abscess or other evidence of infection seen during a surgical operation or histopathologic examination.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause and compatible with infection of the organ or tissue involved: fever ($>38^{\circ}\text{C}$), nausea, vomiting, abdominal pain, or tenderness

and

at least 1 of the following:

- a. organisms cultured from drainage or tissue obtained during a surgical operation or endoscopy or from a surgically placed drain
- b. organisms seen on Gram's or KOH stain or multinucleated giant cells seen on microscopic examination of drainage or tissue obtained during a surgical operation or endoscopy or from a surgically placed drain
- c. organisms cultured from blood
- d. evidence of pathologic findings on radiographic examination
- e. evidence of pathologic findings on endoscopic examination (eg, *Candida* esophagitis or proctitis).

HEP-Hepatitis

Hepatitis must meet the following criterion:

Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), anorexia, nausea, vomiting, abdominal pain, jaundice, or history of transfusion within the previous 3 months

and

at least 1 of the following:

- a. positive antigen or antibody test for hepatitis A, hepatitis B, hepatitis C, or delta hepatitis
- b. abnormal liver function tests (eg, elevated ALT/AST, bilirubin)
- c. cytomegalovirus (CMV) detected in urine or oropharyngeal secretions.

Reporting instructions

- Do *not* report hepatitis or jaundice of noninfectious origin (alpha-1 antitrypsin deficiency, etc).
- Do *not* report hepatitis or jaundice that results from exposure to hepatotoxins (alcoholic or acetaminophen-induced hepatitis, etc).
- Do *not* report hepatitis or jaundice that results from biliary obstruction (cholecystitis).

IAB-Intraabdominal, not specified elsewhere including gallbladder, bile ducts, liver (excluding viral hepatitis), spleen, pancreas, peritoneum, subphrenic or subdiaphragmatic space, or other intraabdominal tissue or area not specified elsewhere

Intraabdominal infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent material from intraabdominal space obtained during a surgical operation or needle aspiration.
2. Patient has abscess or other evidence of intraabdominal infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), nausea, vomiting, abdominal pain, or jaundice

and

at least 1 of the following:

- a. organisms cultured from drainage from surgically placed drain (eg, closed suction drainage system, open drain, T-tube drain)
- b. organisms seen on Gram's stain of drainage or tissue obtained during surgical operation or needle aspiration

- c. organisms cultured from blood *and* radiographic evidence of infection (eg, abnormal findings on ultrasound, CT scan, MRI, or radiolabel scans [gallium, technetium, etc] or on abdominal x-ray).

Reporting instruction

- Do *not* report pancreatitis (an inflammatory syndrome characterized by abdominal pain, nausea, and vomiting associated with high serum levels of pancreatic enzymes) unless it is determined to be infectious in origin.

NEC-Necrotizing enterocolitis

Necrotizing enterocolitis in infants must meet the following criterion:

Infant has at least 2 of the following signs or symptoms with no other recognized cause: vomiting, abdominal distention, or prefeeding residuals

and

persistent microscopic or gross blood in stools

and

at least 1 of the following abdominal radiographic abnormalities:

- a. pneumoperitoneum
- b. pneumatosis intestinalis
- c. unchanging "rigid" loops of small bowel.

LRI-LOWER RESPIRATORY TRACT INFECTION, OTHER THAN PNEUMONIA

BRON-Bronchitis, tracheobronchitis, bronchiolitis, tracheitis, without evidence of pneumonia

Tracheobronchial infections must meet at least 1 of the following criteria:

1. Patient has *no* clinical or radiographic evidence of pneumonia
and
patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), cough, new or increased sputum production, rhonchi, wheezing
and
at least 1 of the following:
 - a. positive culture obtained by deep tracheal aspirate or bronchoscopy
 - b. positive antigen test on respiratory secretions.
2. Patient ≤ 1 year of age has *no* clinical or radiographic evidence of pneumonia
and
patient has at least 2 of the following signs or symptoms with no other recognized cause: fever

($>38^{\circ}\text{C}$ rectal), cough, new or increased sputum production, rhonchi, wheezing, respiratory distress, apnea, or bradycardia
and

at least 1 of the following:

- a. organisms cultured from material obtained by deep tracheal aspirate or bronchoscopy
- b. positive antigen test on respiratory secretions
- c. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Reporting instruction

- Do *not* report chronic bronchitis in a patient with chronic lung disease as an infection unless there is evidence of an acute secondary infection, manifested by change in organism.

LUNG-Other infections of the lower respiratory tract

Other infections of the lower respiratory tract must meet at least 1 of the following criteria:

1. Patient has organisms seen on smear or cultured from lung tissue or fluid, including pleural fluid.
2. Patient has a lung abscess or empyema seen during a surgical operation or histopathologic examination.
3. Patient has an abscess cavity seen on radiographic examination of lung.

Reporting instructions

- Report concurrent lower respiratory tract infection and pneumonia with the same organism(s) as PNEU.
- Report lung abscess or empyema without pneumonia as LUNG.

REPR-REPRODUCTIVE TRACT INFECTION

EMET-Endometritis

Endometritis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from fluid or tissue from endometrium obtained during surgical operation, by needle aspiration, or by brush biopsy.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever

(>38°C), abdominal pain, uterine tenderness, or purulent drainage from uterus.

Reporting instruction

- Report postpartum endometritis as a health care–associated infection *unless* the amniotic fluid is infected at the time of admission or the patient was admitted 48 hours after rupture of the membrane.

EPIS-Episiotomy

Episiotomy infections must meet at least 1 of the following criteria:

1. Postvaginal delivery patient has purulent drainage from the episiotomy.
2. Postvaginal delivery patient has an episiotomy abscess.

Comment

- Episiotomy is not considered an operative procedure in NHSN.

VCUF-Vaginal cuff

Vaginal cuff infections must meet at least 1 of the following criteria:

1. Posthysterectomy patient has purulent drainage from the vaginal cuff.
2. Posthysterectomy patient has an abscess at the vaginal cuff.
3. Posthysterectomy patient has pathogens cultured from fluid or tissue obtained from the vaginal cuff.

Reporting instruction

- Report vaginal cuff infections as SSI-VCUF.

OREP-Other infections of the male or female reproductive tract (epididymis, testes, prostate, vagina, ovaries, uterus, or other deep pelvic tissues, excluding endometritis or vaginal cuff infections)

Other infections of the male or female reproductive tract must meet at least 1 of the following criteria:

1. Patient has organisms cultured from tissue or fluid from affected site.
2. Patient has an abscess or other evidence of infection of affected site seen during a surgical operation or histopathologic examination.

3. Patient has 2 of the following signs or symptoms with no other recognized cause: fever (>38°C), nausea, vomiting, pain, tenderness, or dysuria *and*

at least 1 of the following:

- a. organisms cultured from blood
- b. physician diagnosis.

Reporting instructions

- Report endometritis as EMET.
- Report vaginal cuff infections as VCUF.

SST-SKIN AND SOFT TISSUE INFECTION

SKIN-Skin

Skin infections must meet at least 1 of the following criteria:

1. Patient has purulent drainage, pustules, vesicles, or boils.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: pain or tenderness, localized swelling, redness, or heat *and*

at least 1 of the following:

- a. organisms cultured from aspirate or drainage from affected site; if organisms are normal skin flora (ie, diphtheroids [*Corynebacterium* spp], *Bacillus* [not *B anthracis*] spp, *Propionibacterium* spp, coagulase-negative staphylococci [including *S epidermidis*], viridans group streptococci, *Aerococcus* spp, *Micrococcus* spp), they must be a pure culture
- b. organisms cultured from blood
- c. positive antigen test performed on infected tissue or blood (eg, herpes simplex, varicella zoster, *H influenzae*, *N meningitidis*)
- d. multinucleated giant cells seen on microscopic examination of affected tissue
- e. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Reporting instructions

- Report omphalitis in infants as UMB.
- Report infections of the circumcision site in newborns as CIRC.
- Report pustules in infants as PUST.
- Report infected decubitus ulcers as DECU.
- Report infected burns as BURN.
- Report breast abscesses or mastitis as BRST.

ST-Soft tissue (necrotizing fasciitis, infectious gangrene, necrotizing cellulitis, infectious myositis, lymphadenitis, or lymphangitis)

Soft tissue infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from tissue or drainage from affected site.
2. Patient has purulent drainage at affected site.
3. Patient has an abscess or other evidence of infection seen during a surgical operation or histopathologic examination.
4. Patient has at least 2 of the following signs or symptoms at the affected site with no other recognized cause: localized pain or tenderness, redness, swelling, or heat

and

at least 1 of the following:

- a. organisms cultured from blood
- b. positive antigen test performed on blood or urine (eg, *H influenzae*, *S pneumoniae*, *N meningitidis*, Group B *Streptococcus*, *Candida* spp)
- c. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Reporting instructions

- Report infected decubitus ulcers as DECU.
- Report infection of deep pelvic tissues as OREP

DECU-Decubitus ulcer, including both superficial and deep infections

Decubitus ulcer infections must meet the following criterion:

Patient has at least 2 of the following signs or symptoms with no other recognized cause: redness, tenderness, or swelling of decubitus wound edges

and

at least 1 of the following:

- a. organisms cultured from properly collected fluid or tissue (see Comments)
- b. organisms cultured from blood.

Comments

- Purulent drainage alone is *not* sufficient evidence of an infection.
- Organisms cultured from the surface of a decubitus ulcer are *not* sufficient evidence that the ulcer is infected. A properly collected specimen from a decubitus ulcer involves needle aspiration of fluid or biopsy of tissue from the ulcer margin.

BURN-Burn

Burn infections must meet at least 1 of the following criteria:

1. Patient has a change in burn wound appearance or character, such as rapid eschar separation, or dark brown, black, or violaceous discoloration of the eschar, or edema at wound margin

and

histologic examination of burn biopsy shows invasion of organisms into adjacent viable tissue.

2. Patient has a change in burn wound appearance or character, such as rapid eschar separation, or dark brown, black, or violaceous discoloration of the eschar, or edema at wound margin

and

at least 1 of the following:

- a. organisms cultured from blood in the absence of other identifiable infection
- b. isolation of herpes simplex virus, histologic identification of inclusions by light or electron microscopy, or visualization of viral particles by electron microscopy in biopsies or lesion scrapings.

3. Patient with a burn has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$) or hypothermia ($<36^{\circ}\text{C}$), hypotension, oliguria (<20 cc/hr), hyperglycemia at previously tolerated level of dietary carbohydrate, or mental confusion

and

at least 1 of the following:

- a. histologic examination of burn biopsy shows invasion of organisms into adjacent viable tissue
- b. organisms cultured from blood
- c. isolation of herpes simplex virus, histologic identification of inclusions by light or electron microscopy, or visualization of viral particles by electron microscopy in biopsies or lesion scrapings.

Comments

- Purulence alone at the burn wound site is *not* adequate for the diagnosis of burn infection; such purulence may reflect incomplete wound care.
- Fever alone in a burn patient is *not* adequate for the diagnosis of a burn infection because fever may be the result of tissue trauma or the patient may have an infection at another site.
- Surgeons in Regional Burn Centers who take care of burn patients exclusively may require Criterion 1 for diagnosis of burn infection.

- Hospitals with Regional Burn Centers may further divide burn infections into the following: burn wound site, burn graft site, burn donor site, burn donor site-cadaver; NHSN, however, will code all of these as BURN.

BRST-Breast abscess or mastitis

A breast abscess or mastitis must meet at least 1 of the following criteria:

1. Patient has a positive culture of affected breast tissue or fluid obtained by incision and drainage or needle aspiration.
2. Patient has a breast abscess or other evidence of infection seen during a surgical operation or histopathologic examination.
3. Patient has fever ($>38^{\circ}\text{C}$) and local inflammation of the breast
and
physician diagnosis of breast abscess.

Comment

- Breast abscesses occur most frequently after childbirth. Those that occur within 7 days after childbirth should be considered health care associated.

UMB-Oomphalitis

Omphalitis in a newborn (≤ 30 days old) must meet at least 1 of the following criteria:

1. Patient has erythema and/or serous drainage from umbilicus
and
at least 1 of the following:
 - a. organisms cultured from drainage or needle aspirate
 - b. organisms cultured from blood.
2. Patient has both erythema and purulence at the umbilicus.

Reporting instructions

- Report infection of the umbilical artery or vein related to umbilical catheterization as VASC if there is no accompanying blood culture or a blood culture is negative.
- Report as health care associated if infection occurs in a newborn within 7 days of hospital discharge.

PUST-Infant pustulosis

Pustulosis in an infant (≤ 1 year old) must meet at least 1 of the following criteria:

1. Infant has 1 or more pustules
and
physician diagnosis of skin infection.

2. Infant has 1 or more pustules
and
physician institutes appropriate antimicrobial therapy.

Reporting instructions

- Do *not* report erythema toxicum and noninfectious causes of pustulosis.
- Report as health care associated if pustulosis occurs in an infant within 7 days of hospital discharge.

CIRC-Newborn circumcision

Circumcision infection in a newborn (≤ 30 days old) must meet at least 1 of the following criteria:

1. Newborn has purulent drainage from circumcision site.
2. Newborn has at least 1 of the following signs or symptoms with no other recognized cause at circumcision site: erythema, swelling, or tenderness
and
pathogen cultured from circumcision site.
3. Newborn has at least 1 of the following signs or symptoms with no other recognized cause at circumcision site: erythema, swelling, or tenderness
and
skin contaminant (ie, 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 circumcision site
and
physician diagnosis of infection or physician institutes appropriate therapy.

SYS-SYSTEMIC INFECTION

DI-Disseminated infection

Disseminated infection is infection involving multiple organs or systems, without an apparent single site of infection, usually of viral origin, and with signs or symptoms with no other recognized cause and compatible with infectious involvement of multiple organs or systems.

Reporting instructions

- Use this code for viral infections involving multiple organ systems (eg, measles, mumps, rubella, varicella, erythema infectiosum). These infections often can be identified by clinical criteria alone. Do *not* use this code for health care-associated

infections with multiple metastatic sites, such as with bacterial endocarditis; only the primary site of these infections should be reported.

- Do not report fever of unknown origin (FUO) as DI.
- Report neonatal "sepsis" as CSEP.
- Report viral exanthems or rash illness as DI.

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APPENDIX. PNEU-PNEUMONIA

There are 3 specific types of pneumonia: clinically defined pneumonia (PNU1), pneumonia with specific laboratory findings (PNU2), and pneumonia in immunocompromised patients (PNU3). Listed below are general comments applicable to all specific types of pneumonia, along with abbreviations used in the algorithms (Tables 4-7) and reporting instructions. Table 8 shows threshold values for cultured specimens used in the surveillance diagnosis of pneumonia. Figures 1 and 2 are flow diagrams for the pneumonia algorithms that may be used as data collection tools.

General comments

1. Physician diagnosis of pneumonia alone is not an acceptable criterion for health care-associated pneumonia.
2. Although specific criteria are included for infants and children, pediatric patients may meet any of the other pneumonia specific site criteria.
3. Ventilator-associated pneumonia (ie, pneumonia in persons who had a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation within the 48-hour period before the onset of infection, inclusive of the weaning period) should be so designated when reporting data.
4. When assessing a patient for presence of pneumonia, it is important to distinguish between changes in clinical status due to other conditions such as myocardial infarction, pulmonary embolism, respiratory distress syndrome, atelectasis, malignancy, chronic obstructive pulmonary

disease, hyaline membrane disease, bronchopulmonary dysplasia, etc. Also, care must be taken when assessing intubated patients to distinguish between tracheal colonization, upper respiratory tract infections (eg, tracheobronchitis), and early onset pneumonia. Finally, it should be recognized that it may be difficult to determine health care-associated pneumonia in the elderly, infants, and immunocompromised patients because such conditions may mask typical signs or symptoms associated with pneumonia. Alternate specific criteria for the elderly, infants and immunocompromised patients have been included in this definition of health care-associated pneumonia.

5. Health care-associated pneumonia can be characterized by its onset: early or late. Early onset pneumonia occurs during the first 4 days of hospitalization and is often caused by *Moraxella catarrhalis*, *H influenzae*, and *S pneumoniae*. Causative agents of late onset pneumonia are frequently gram negative bacilli or *S aureus*, including methicillin-resistant *S aureus*. Viruses (eg, influenza A and B or respiratory syncytial virus) can cause early and late onset nosocomial pneumonia, whereas yeasts, fungi, legionellae, and *Pneumocystis carinii* are usually pathogens of late onset pneumonia.
6. Pneumonia due to gross aspiration (for example, in the setting of intubation in the emergency room or operating room) is considered health care associated if it meets any specific criteria and was not clearly present or incubating at the time of admission to the hospital.
7. Multiple episodes of health care-associated pneumonia may occur in critically ill patients with lengthy hospital stays. When determining whether to report multiple episodes of health care-associated pneumonia in a single patient, look for evidence of resolution of the initial infection. The addition of or change in pathogen alone is not indicative of a new episode of pneumonia. The combination of new signs and symptoms and radiographic evidence or other diagnostic testing is required.
8. Positive Gram stain for bacteria and positive KOH (potassium hydroxide) mount for elastin fibers and/or fungal hyphae from appropriately collected sputum specimens are important clues that point toward the etiology of the infection. However, sputum samples are frequently contaminated with airway colonizers and therefore must be interpreted cautiously. In particular, *Candida* is commonly seen on stain, but infrequently causes healthcare-associated pneumonia.

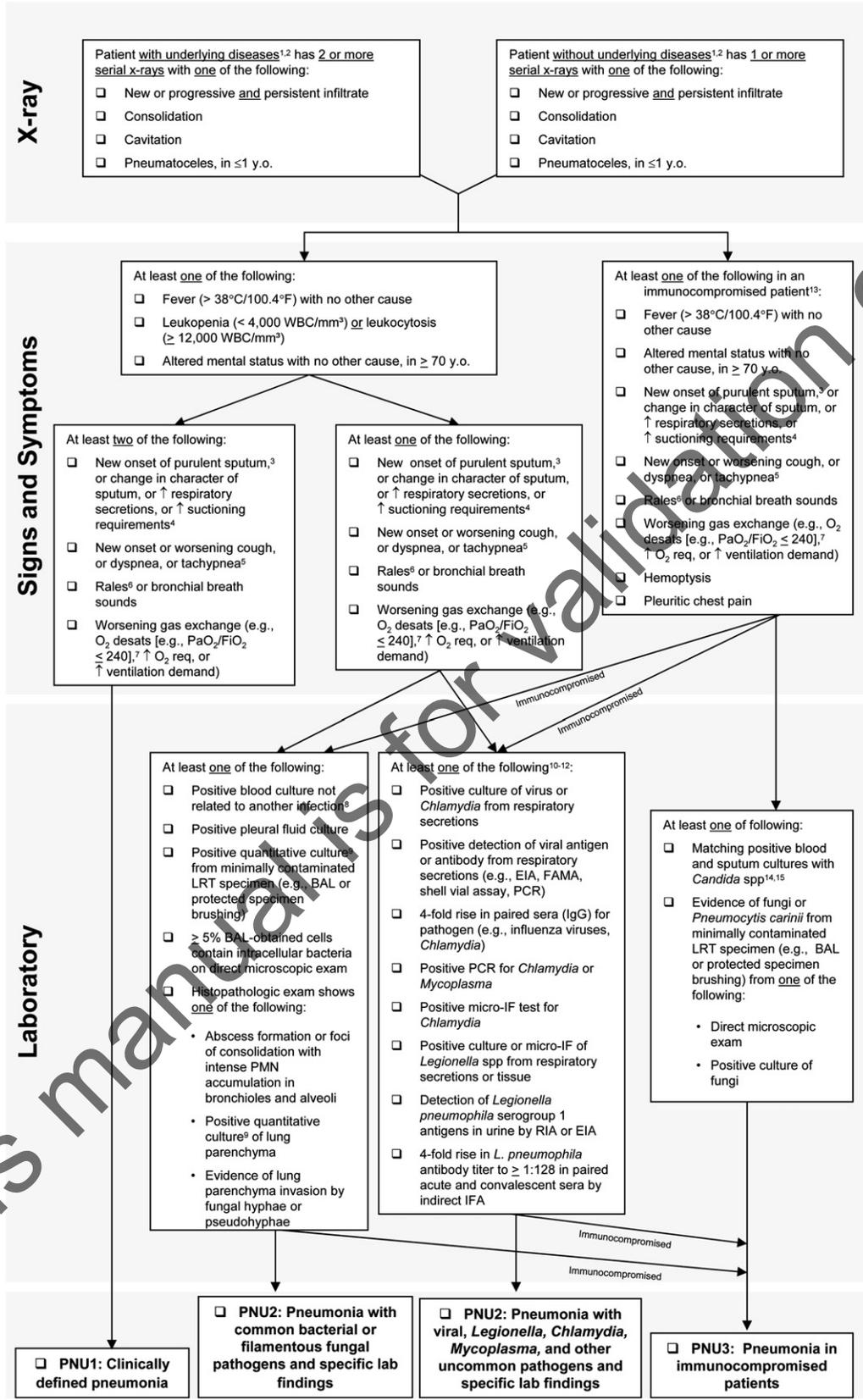


Fig 1. Pneumonia flow diagram.

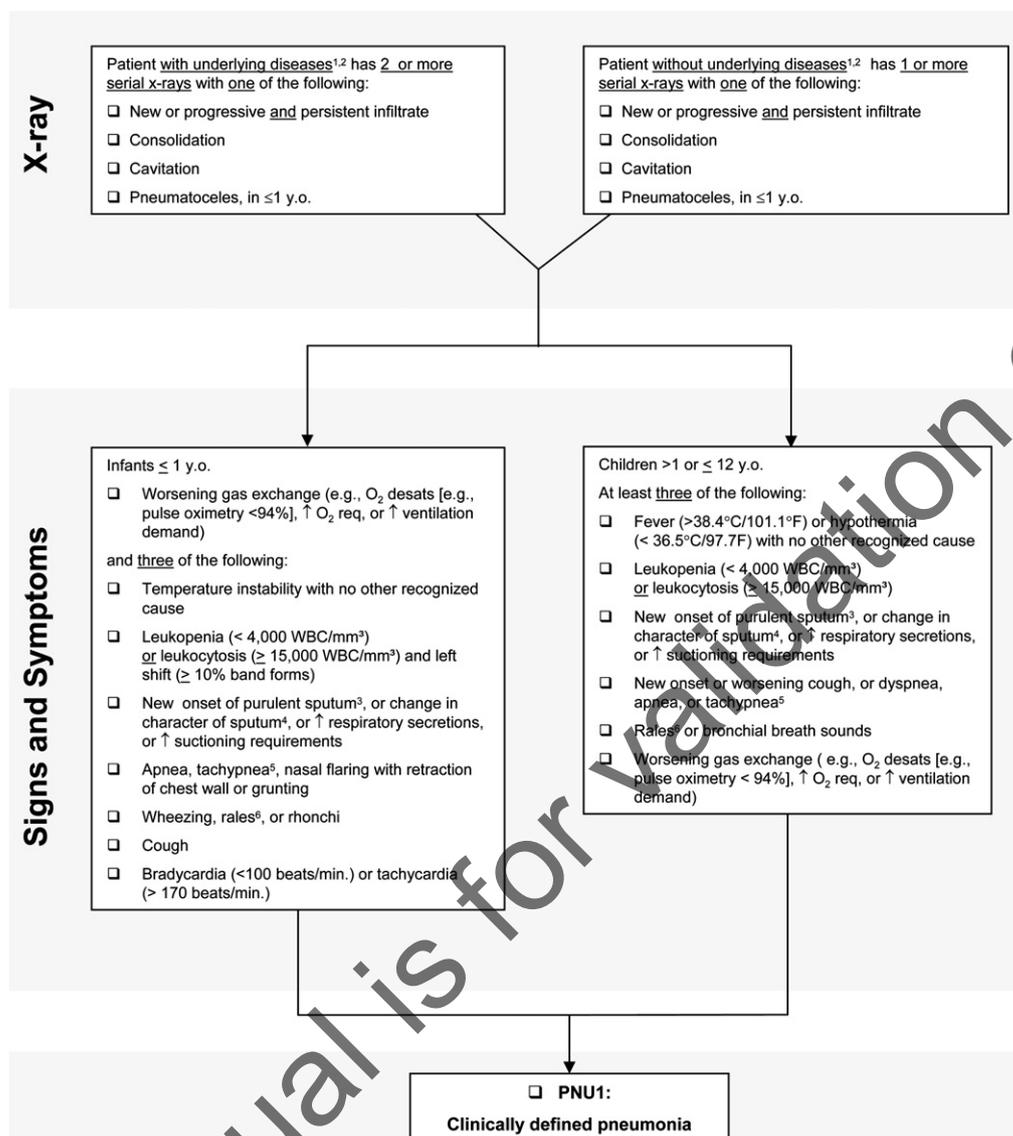


Fig 2. Pneumonia flow diagram alternate criteria for infants and children.

Abbreviations

- BAL—bronchoalveolar lavage
- EIA—enzyme immunoassay
- FAMA—fluorescent-antibody staining of membrane antigen
- IFA—immunofluorescent antibody
- LRT—lower respiratory tract
- PCR—polymerase chain reaction
- PMN—polymorphonuclear leukocyte
- RIA—radioimmunoassay

Reporting instructions

- There is a hierarchy of specific categories within the major type pneumonia (PNEU). Even if a

patient meets criteria for more than 1 specific site, report only 1:

- If a patient meets criteria for both PNU1 and PNU2, report PNU2.
- If a patient meets criteria for both PNU2 and PNU3, report PNU3.
- If a patient meets criteria for both PNU1 and PNU3, report PNU3.
- Report concurrent lower respiratory tract infection (eg, abscess or empyema) and pneumonia with the same organism(s) as pneumonia.
- Lung abscess or empyema *without* pneumonia are classified as LUNG.
- Bronchitis, tracheitis, tracheobronchitis, or bronchiolitis *without* pneumonia are classified as BRON.

Table 4. Algorithms for clinically defined pneumonia (PNUI)

Radiology	Signs/Symptoms
<p>Two or more serial chest radiographs with at least 1 of the following^{1,2}:</p> <ul style="list-style-type: none"> • New or progressive and persistent infiltrate • Consolidation • Cavitation • Pneumatocoles, in infants ≤ 1 year old <p>NOTE: In patients without underlying pulmonary or cardiac disease (eg, respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), 1 definitive chest radiograph is acceptable.¹</p>	<p>FOR ANY PATIENT, at least 1 of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$) with no other recognized cause • Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 12,000$ WBC/mm^3) • For adults ≥ 70 years old, altered mental status with no other recognized cause <p>and</p> <p>at least 2 of the following:</p> <ul style="list-style-type: none"> • New onset of purulent sputum³ or change in character of sputum⁴ or increased respiratory secretions or increased suctioning requirements • New onset or worsening cough, or dyspnea, or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (eg, O_2 desaturations [eg, $\text{PaO}_2/\text{FiO}_2 \leq 240$],⁷ increased oxygen requirements, or increased ventilator demand) <p>ALTERNATE CRITERIA, for infants ≤ 1 year old:</p> <p>Worsening gas exchange (eg, O_2 desaturations, increased oxygen requirements, or increased ventilator demand)</p> <p>and</p> <p>at least 3 of the following:</p> <ul style="list-style-type: none"> • Temperature instability with no other recognized cause • Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 15,000$ WBC/mm^3) and left shift ($\geq 10\%$ band forms) • New onset of purulent sputum³ or change in character of sputum⁴ or increased respiratory secretions or increased suctioning requirements • Apnea, tachypnea,⁵ nasal flaring with retraction of chest wall or grunting • Wheezing, rales,⁶ or rhonchi • Cough • Bradycardia (<100 beats/min) or tachycardia (>170 beats/min) <p>ALTERNATE CRITERIA, for child >1 year old or ≤ 12 years old, at least 3 of the following:</p> <ul style="list-style-type: none"> • Fever ($>38.4^{\circ}\text{C}$ or $>101.1^{\circ}\text{F}$) or hypothermia ($<36.5^{\circ}\text{C}$ or $<97.7^{\circ}\text{F}$) with no other recognized cause • Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 15,000$ WBC/mm^3) • New onset of purulent sputum³ or change in character of sputum⁴ or increased respiratory secretions or increased suctioning requirements • New onset or worsening cough or dyspnea, apnea, or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (eg, O_2 desaturations [eg, pulse oximetry $<94\%$], increased oxygen requirements, or increased ventilator demand)

Footnotes to Algorithms:

1. Occasionally, in nonventilated patients, the diagnosis of health care-associated pneumonia may be quite clear on the basis of symptoms, signs, and a single definitive chest radiograph. However, in patients with pulmonary or cardiac disease (for example, interstitial lung disease or congestive heart failure), the diagnosis of pneumonia may be particularly difficult. Other noninfectious conditions (for example, pulmonary edema from decompensated congestive heart failure) may simulate the presentation of pneumonia. In these more difficult cases, serial chest radiographs must be examined to help separate infectious from noninfectious pulmonary processes. To help confirm difficult cases, it may be useful to review radiographs on the day of diagnosis, 3 days prior to the diagnosis and on days 2 and 7 after the diagnosis. Pneumonia may have rapid onset and progression, but does not resolve quickly. Radiographic changes of pneumonia persist for several weeks. As a result, rapid radiographic resolution suggests that the patient does not have pneumonia but rather a noninfectious process such as atelectasis or congestive heart failure.
2. Note that there are many ways of describing the radiographic appearance of pneumonia. Examples include, but are not limited to, "air-space disease," "focal opacification," "patchy areas of increased density." Although perhaps not specifically delineated as pneumonia by the radiologist, in the appropriate clinical setting these alternative descriptive wordings should be seriously considered as potentially positive findings.
3. Purulent sputum is defined as secretions from the lungs, bronchi, or trachea that contain ≥ 25 neutrophils and ≤ 10 squamous epithelial cells per low power field ($\times 100$). If your laboratory reports these data qualitatively (eg, "many WBCs" or "few squames"), be sure their descriptors match this definition of purulent sputum. This laboratory confirmation is required because written clinical descriptions of purulence are highly variable.
4. A single notation of either purulent sputum or change in character of the sputum is not meaningful; repeated notations over a 24-hour period would be more indicative of the onset of an infectious process. Change in character of sputum refers to the color, consistency, odor, and quantity.

Table 5. Algorithms for pneumonia with common bacterial or filamentous fungal pathogens and specific laboratory findings (PNU2)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least 1 of the following^{1,2}:</p> <ul style="list-style-type: none"> • New or progressive <i>and</i> persistent infiltrate • Consolidation • Cavitation • Pneumatoceles, in infants ≤ 1 year old <p>NOTE: In patients without underlying pulmonary or cardiac disease (eg, respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), 1 <i>definitive</i> chest radiograph is acceptable.¹</p>	<p>At least 1 of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$) with no other recognized cause • Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 12,000$ WBC/mm^3) • For adults ≥ 70 years old, altered mental status with no other recognized cause <p><i>and</i></p> <p>at least 1 of the following:</p> <ul style="list-style-type: none"> • New onset of purulent sputum³ or change in character of sputum⁴ or increased respiratory secretions or increased suctioning requirements • New onset or worsening cough or dyspnea or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (eg, O_2 desaturations [eg, $\text{PaO}_2/\text{FiO}_2 \leq 240$]⁷, increased oxygen requirements, or increased ventilator demand) 	<p>At least 1 of the following:</p> <ul style="list-style-type: none"> • Positive growth in blood culture⁸ not related to another source of infection • Positive growth in culture of pleural fluid • Positive quantitative culture⁹ from minimally contaminated LRT specimen (eg, BAL or protected specimen brushing) • $\geq 5\%$ BAL-obtained cells contain intracellular bacteria on direct microscopic exam (eg, Gram stain) • Histopathologic exam shows at least 1 of the following evidences of pneumonia: • Abscess formation or foci of consolidation with intense PMN accumulation in bronchioles and alveoli • Positive quantitative culture⁹ of lung parenchyma • Evidence of lung parenchyma invasion by fungal hyphae or pseudohyphae

Table 6. Algorithms for pneumonia with viral, *Legionella*, *Chlamydia*, *Mycoplasma*, and other uncommon pathogens and specific laboratory findings (PNU2)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least 1 of the following^{1,2}:</p> <ul style="list-style-type: none"> • New or progressive <i>and</i> persistent infiltrate • Consolidation • Cavitation • Pneumatoceles, in infants ≤ 1 year old <p>NOTE: In patients without underlying pulmonary or cardiac disease (eg, respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), 1 <i>definitive</i> chest radiograph is acceptable.¹</p>	<p>At least 1 of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$) with no other recognized cause • Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 12,000$ WBC/mm^3) • For adults ≥ 70 years old, altered mental status with no other recognized cause <p><i>and</i></p> <p>at least 1 of the following:</p> <ul style="list-style-type: none"> • New onset of purulent sputum³ or change in character of sputum⁴ or increased respiratory secretions or increased suctioning requirements • New onset or worsening cough or dyspnea or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (eg, O_2 desaturations [eg, $\text{PaO}_2/\text{FiO}_2 \leq 240$]⁷, increased oxygen requirements, or increased ventilator demand) 	<p>At least 1 of the following¹⁰⁻¹²:</p> <ul style="list-style-type: none"> • Positive culture of virus or <i>Chlamydia</i> from respiratory secretions • Positive detection of viral antigen or antibody from respiratory secretions (eg, EIA, FAMA, shell vial assay, PCR) • Four-fold rise in paired sera (IgG) for pathogen (eg, influenza viruses, <i>Chlamydia</i>) • Positive PCR for <i>Chlamydia</i> or <i>Mycoplasma</i> • Positive micro-IF test for <i>Chlamydia</i> • Positive culture or visualization by micro-IF of <i>Legionella</i> spp. from respiratory secretions or tissue • Detection of <i>Legionella pneumophila</i> serogroup 1 antigens in urine by RIA or EIA • Four-fold rise in <i>L pneumophila</i> serogroup 1 antibody titer to $\geq 1:128$ in paired acute and convalescent sera by indirect IFA

5. In adults, tachypnea is defined as respiration rate >25 breaths per minute. Tachypnea is defined as >75 breaths per minute in premature infants born at <37 weeks gestation and until the 40th week; >60 breaths per minute in infants <2 months old; >50 breaths per minute in infants 2 to 12 months old; and >30 breaths per minute in children >1 year old.

6. Rales may be described as "crackles."

7. This measure of arterial oxygenation is defined as the ratio of the arterial tension (PaO_2) to the inspiratory fraction of oxygen (FiO_2).

8. Care must be taken to determine the etiology of pneumonia in a patient with positive blood cultures and radiographic evidence of pneumonia, especially if the patient has invasive devices in place such as intravascular lines or an indwelling urinary catheter. In general, in an immunocompetent patient, blood cultures positive for coagulase-negative staphylococci, common skin contaminants, and yeasts will not be the etiologic agent of the pneumonia.

9. Refer to threshold values for cultured specimens (Table 8). An endotracheal aspirate is not a minimally contaminated specimen. Therefore, an endotracheal aspirate does not meet the laboratory criteria.

10. Once laboratory-confirmed due to pneumonia because of respiratory syncytial virus (RSV), adenovirus, or influenza virus have been identified in a hospital, clinician's presumptive diagnosis of these pathogens in subsequent cases with similar clinical signs and symptoms is an acceptable criterion for presence of health care-associated infection.

Table 7. Algorithms for pneumonia in immunocompromised patients (PNU3)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least 1 of the following^{1,2}:</p> <ul style="list-style-type: none"> • New or progressive <i>and</i> persistent infiltrate • Consolidation • Cavitation • Pneumatoceles, in infants ≤ 1 year old <p>NOTE: In patients without underlying pulmonary or cardiac disease (eg, respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), 1 <i>definitive</i> chest radiograph is acceptable.¹</p>	<p>Patient who is immunocompromised¹³ has at least 1 of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$) with no other recognized cause • For adults ≥ 70 years old, altered mental status with no other recognized cause • New onset of purulent sputum³ or change in character of sputum⁴ or increased respiratory secretions or increased suctioning requirements • New onset or worsening cough or dyspnea or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (eg, O_2 desaturations [eg, $\text{PaO}_2/\text{FiO}_2 \leq 240$],⁷ increased oxygen requirements, or increased ventilator demand) • Hemoptysis • Pleuritic chest pain 	<p>At least 1 of the following:</p> <ul style="list-style-type: none"> • Matching positive blood and sputum cultures with <i>Candida</i> spp^{14,15} • Evidence of fungi or <i>Pneumocystis carinii</i> from minimally contaminated LRT specimen (eg, BAL or protected specimen brushing) from 1 of the following: <ul style="list-style-type: none"> ○ Direct microscopic exam ○ Positive culture of fungi • Any of the laboratory criteria defined under PNU2

1. Scant or watery sputum is commonly seen in adults with pneumonia due to viruses and *Mycoplasma* although sometimes the sputum may be mucopurulent. In infants, pneumonia due to RSV or influenza yields copious sputum. Patients, except premature infants, with viral or *Mycoplasma* pneumonia may exhibit few signs or symptoms, even when significant infiltrates are present on radiographic exam.
2. Few bacteria may be seen on stains of respiratory secretions from patients with pneumonia due to *Legionella* spp, mycoplasma, or viruses.
3. Immunocompromised patients include those with neutropenia (absolute neutrophil count $<500/\text{mm}^3$), leukemia, lymphoma, HIV with CD4 count <200 , or splenectomy; those who are early posttransplantation, are on cytotoxic chemotherapy, or are on high-dose steroids (eg, $>40\text{mg}$ of prednisone or its equivalent [$>160\text{mg}$ hydrocortisone, $>32\text{mg}$ methylprednisolone, $>6\text{mg}$ dexamethasone, $>200\text{mg}$ cortisone] daily for >2 weeks).
4. Blood and sputum specimens must be collected within 48 hours of each other.
5. Semiquantitative or nonquantitative cultures of sputum obtained by deep cough, induction, aspiration, or lavage are acceptable. If quantitative culture results are available, refer to algorithms that include such specific laboratory findings.

Table 8. Threshold values for cultured specimens used in the diagnosis of pneumonia

Specimen collection/technique	Values
Lung parenchyma*	$\geq 10^4$ cfu/g tissue
Bronchoscopically obtained specimens	
Bronchoalveolar lavage	$\geq 10^4$ cfu/mL
Protected BAL	$\geq 10^4$ cfu/mL
Protected specimen brushing	$\geq 10^4$ cfu/mL
Nonbronchoscopically obtained (blind) specimens	
Bronchoalveolar lavage	$\geq 10^4$ cfu/mL
Protected BAL	$\geq 10^4$ cfu/mL

cfu, colony-forming units

*Open-lung biopsy specimens and immediate post-mortem specimens obtained by transthoracic or transbronchial biopsy.

Appendix: Urinary Tract Infection (UTI)

Criterion	Urinary Tract Infection (UTI)
	<p>Symptomatic Urinary Tract Infection (SUTI) Must meet at least 1 of the following criteria</p>
1a	<p>Patient had an indwelling urinary catheter in place at the time of specimen collection <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms.</p> <p>-----OR-----</p> <p>Patient had indwelling urinary catheter <u>removed within the 48 hours prior to specimen collection</u> <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms.</p>
1b	<p>Patient did <u>not</u> have an indwelling urinary catheter in place at the time of specimen collection nor within 48 hours prior to specimen collection <i>and</i> has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C) in a patient that is ≤ 65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.</p>
2a	<p>Patient had an indwelling urinary catheter in place at the time of specimen collection <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urinalysis demonstrated by at least 1 of the following findings: a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine <i>and</i> a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms.</p> <p>-----OR-----</p> <p>Patient had indwelling urinary catheter <u>removed within the 48 hours prior to specimen collection</u> <i>and</i> at least 1 of the following signs or symptoms with no other recognized cause:</p>

Criterion	Urinary Tract Infection (UTI)
	fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urinalysis demonstrated by at least 1 of the following findings: <ol style="list-style-type: none"> a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥ 10 white blood cells [WBC]/mm³ of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine <i>and</i> a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms.
2b	Patient did <u>not</u> have an indwelling urinary catheter in place at the time of specimen collection nor within 48 hours prior to specimen collection <i>and</i> has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C) in a patient that is ≤ 65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness <i>and</i> a positive urinalysis demonstrated by at least 1 of the following findings: <ol style="list-style-type: none"> a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥ 10 WBC/mm³ of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram stain of unspun urine <i>and</i> a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms.
3	Patient ≤ 1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting <i>and</i> a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.
4	Patient ≤ 1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting <i>and</i> a positive urinalysis demonstrated by at least one of the following findings: <ol style="list-style-type: none"> a. positive dipstick for leukocyte esterase and/or nitrite b. pyuria (urine specimen with ≥ 10 WBC/mm³ of unspun urine or ≥ 3 WBC/high power field of spun urine) c. microorganisms seen on Gram's stain of unspun urine <i>and</i> a positive urine culture of between $\geq 10^3$ and $< 10^5$ CFU/ml with no more than two species of microorganisms.
Criterion	Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)
	Patient with or without an indwelling urinary catheter has <u>no</u> signs or symptoms (i.e., for any age patient, <u>no</u> fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, <u>OR</u> for a patient ≤ 1 year of age, <u>no</u> fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, dysuria, lethargy, or vomiting) <i>and</i>

Criterion	Urinary Tract Infection (UTI)
	<p>a positive urine culture of $>10^5$ CFU/ml with no more than 2 species of uropathogen microorganisms*</p> <p><i>and</i></p> <p>a positive blood culture with at least 1 matching uropathogen microorganism to the urine culture, or at least 2 matching blood cultures drawn on separate occasions if the matching pathogen is a common commensal.</p> <p>* For ABUTI, report only isolate(s) in both blood and urine specimens. * Uropathogen microorganisms are: Gram-negative bacilli, <i>Staphylococcus</i> spp., yeasts, beta-hemolytic <i>Streptococcus</i> spp., <i>Enterococcus</i> spp., <i>G. vaginalis</i>, <i>Aerococcus urinae</i>, and <i>Corynebacterium</i> (urease positive).</p>
Comments	<ul style="list-style-type: none"> • Urinary catheter tips should not be cultured and are not acceptable for the diagnosis of a urinary tract infection. • Urine cultures must be obtained using appropriate technique, such as clean catch collection or catheterization. Specimens from indwelling catheters should be aspirated through the disinfected sampling ports. • In infants, urine cultures should be obtained by bladder catheterization or suprapubic aspiration; positive urine cultures from bag specimens are unreliable and should be confirmed by specimens aseptically obtained by catheterization or suprapubic aspiration. • Urine specimens for culture should be processed as soon as possible, preferably within 1 to 2 hours. If urine specimens cannot be processed within 30 minutes of collection, they should be refrigerated, or inoculated into primary isolation medium before transport, or transported in an appropriate urine preservative. Refrigerated specimens should be cultured within 24 hours. • Urine specimen labels should indicate whether or not the patient is symptomatic. • Report secondary bloodstream infection = "Yes" for all cases of Asymptomatic Bacteremic Urinary Tract Infection (ABUTI). • Report only pathogens in both blood and urine specimens for ABUTI. • Report <i>Corynebacterium</i> (urease positive) as either <i>Corynebacterium</i> species unspecified (COS) or, as <i>C. urealyticum</i> (CORUR) if so speciated.
Criterion	Other Urinary Tract Infection (OUTI) (kidney, ureter, bladder, urethra, or tissue surrounding the retroperineal or perinephric space)
	Other infections of the urinary tract must meet at least 1 of the following criteria:
1	Patient has microorganisms isolated from culture of fluid (other than urine) or tissue from affected site.
2	Patient has an abscess or other evidence of infection seen on direct examination, during a surgical operation, or during a histopathologic examination.
3	<p>Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), localized pain, or localized tenderness at the involved site</p> <p><i>and</i></p> <p>at least 1 of the following:</p> <ol style="list-style-type: none"> purulent drainage from affected site microorganisms cultured from blood that are compatible with suspected site of infection radiographic evidence of infection (e.g., abnormal ultrasound, CT scan, magnetic resonance imaging [MRI], or radiolabel scan [gallium, technetium]).
4	Patient \leq 1 year of age has at least 1 of the following signs or symptoms with no other recognized

Criterion	Urinary Tract Infection (UTI)
	<p>cause: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia, lethargy, or vomiting <i>and</i></p> <p>at least 1 of the following:</p> <ul style="list-style-type: none"> a. purulent drainage from affected site b. microorganisms cultured from blood that are compatible with suspected site of infection c. radiographic evidence of infection, (e.g., abnormal ultrasound, CT scan, magnetic resonance imaging [MRI], or radiolabel scan [gallium, technetium]).
Comment	<ul style="list-style-type: none"> • Report infections following circumcision in newborns as SST-CIRC.

This manual is for validation only