2013 NHSN Data Quality Guidance and Toolkit for Reporting Facilities

Internal Validation of NHSN Patient Safety Component Data

Centers for Disease Control
and Prevention
National Center for Emerging
and Zoonotic Infection Diseases

Centers for Disease Control and Prevention

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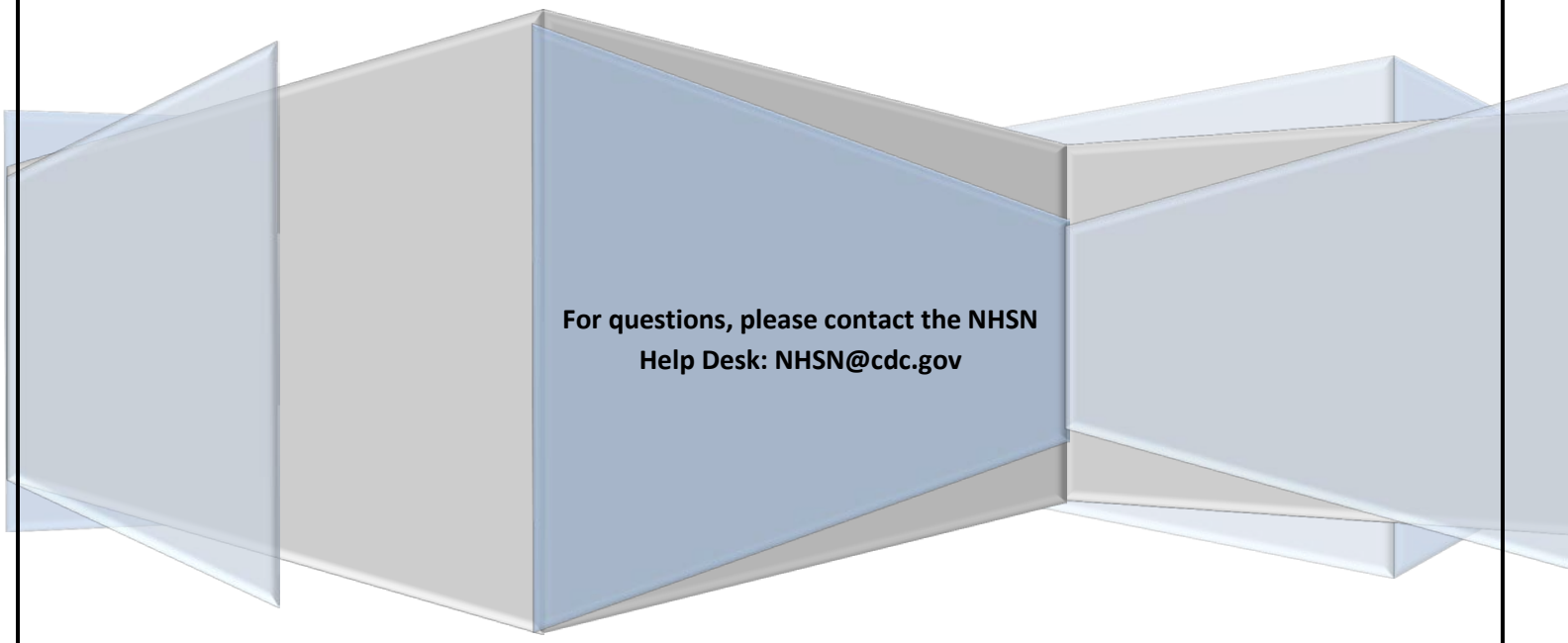

For questions, please contact the NHSN Help Desk: NHSN@cdc.gov

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Abbreviations, Terms, and Acronyms Used in this Document

ABUTI*	(NHSN) Asymptomatic bacteremic urinary tract infection. This type of UTI may or may not be catheter-associated (CAUTI).
ADT	Admissions/discharges/transfers (A core facility data system)
AUDIT	On-site medical record review to evaluate concordance of reported data with findings using NHSN methods
BABY LOCATIONS*	(NHSN) Patient care locations housing a high proportion of infants aged <1 year, i.e. newborn nurseries, neonatal ICUs, and LDRP locations
BSI	Bloodstream infection
CAUTI*	(NHSN) Catheter-associated urinary tract infection. New for 2013, a primary UTI where an indwelling urinary catheter was in place for >2 calendar days when all elements of the UTI criteria were first present together AND indwelling urinary catheter was in place on the date of event or the day before
CDC	Centers for Disease Control and Prevention
CDI	*Clostridium difficile* Infection
CL	Central line
CLABSI*	(NHSN) Central line-associated bloodstream infection. New for 2013, a primary laboratory-confirmed bloodstream infection (LCBI) where a central line was in place for >2 calendar days when all elements of the LCBI criteria were first present together AND central line was in place on the date of event or the day before
CMS	Centers for Medicare & Medicaid Services
DI SSI*	(NHSN) Deep incisional surgical site infection
ED	Emergency department
EMR	Electronic medical record
EXTERNAL VALIDATION	Survey and audit process by external agency to assure quality of NHSN surveillance and reporting
FacWideIN*	(NHSN) Facility-Wide Inpatient, a type of surveillance used for LabID Event reporting
Foley catheter	See indwelling urethral catheter
GI*	(NHSN) Gastrointestinal system healthcare-associated infection
HAI*	(NHSN) Healthcare-associated infection. New for 2013, infections are considered HAIs only if all elements of the CDC/NHSN site-specific infection definition were first present together on or after the 3rd facility day (day of admission is day 1). An element of the infection criteria may be present during the first 2 hospital days as long as it is also present on or after day 3, and all elements needed to meet definition criteria cannot occur before day 3 or with a gap exceeding 1 calendar day between any two elements (see also POA).
IAB*	(NHSN) Intra-abdominal healthcare-associated infection; a subset of GI*
ICU	Intensive care unit
INDWELLING URINARY CATHETER*	(NHSN) Drainage tube inserted through the urethra to the urinary bladder, left in place, and connected to a drainage bag. Also called Foley catheter. May be used for drainage and/or irrigation. Excludes condom catheters, straight in-and-out catheters, nephrostomy tubes, or suprapubic catheters.
INPATIENT*	(NHSN) Patient with date of admission that is different from date of discharge
INTERNAL VALIDATION	Active efforts by a reporting facility to assure completeness and accuracy of NHSN data

IP	Infection preventionist
IT	Information technology
LabID Event*	(NHSN) A proxy measure developed for infection surveillance using laboratory results data and without the requirement for extensive clinical documentation
LCBI 1,2,3*	(NHSN) laboratory-confirmed bloodstream infection criteria
LDRP	Labor, Delivery, Recovery, and Post-partum, a type of NHSN location in an acute care facility
LOS	Length of stay (days)
MEDICAL RECORD	A record systematically documenting a single patient's medical history and care across time within a healthcare provider's jurisdiction
MRN	Medical record number
MRSA, MSSA	Methicillin-resistant *Staphylococcus aureus*, Methicillin-susceptible *Staphylococcus aureus*
NICU	Neonatal intensive care unit
NP	Nasopharyngeal
NHSN	National Healthcare Safety Network
OBSERVATION LOCATION	A bedded patient care location designated for patients under observation, a form of outpatient status. The purpose of observation is to allow the physician time to make a decision about whether the patient should be admitted, and then rapidly move the patient to the most appropriate setting, i.e., admit to inpatient status or to send home.
OrgID*	(NHSN) NSHN facility identifier
O/S SSI*	(NHSN) Organ/space surgical site infection
OUTI*	(NHSN) Other UTI
PATIENT DAYS*	(NHSN) The number of patients (inpatients and observation patients) housed in a facility inpatient location at the same designated counting time each day, and summed for a monthly denominator report for device-associated infections (CLABSI, CAUTI, VAE), and LabID Event
POA*	(NHSN July 2013) Present on admission. An infection is POA if all elements of the site-specific infection criterion are present during the two calendar days before the day of admission, the day of admission, and /or the day after admission, and documented in the medical record by a healthcare provider. POA is not used for SSI, VAE, or LabID Events. POA infections should not be reported as HAIs.
PRIMARY*	(NHSN) Originating source of infection (See SECONDARY)
SECONDARY* INFECTION	(NHSN) Site affected by infection by dissemination from an alternative originating source (see PRIMARY)
SIR*	(NHSN) Standardized infection ratio
SI SSI*	(NHSN) Superficial incisional surgical site infection
SSI*	(NHSN) Surgical site infection
SUTI*	(NHSN) Symptomatic UTI
URINARY CATHETER*	(NHSN) see indwelling urinary catheter
UTI	Urinary tract infection
VAE*	(NHSN) Ventilator-associated event. New for 2013: an objective surveillance algorithm that can identify a broad range of conditions and complications (including but not limited to pneumonia) occurring in mechanically-ventilated adult patients, detailed in NHSN Manual Chapter 10
VALIDATION	Assurance that reported NHSN surveillance data meet their pre-determined specifications and quality attributes as intended

*(NHSN) indicates a term used and defined by NHSN

Internal Validation of NHSN Patient Safety Component Data by Reporting Facilities: Assuring NHSN Data Quality

Intended audience: Reporting facilities, including acute care facilities, inpatient rehabilitation facilities, and long-term acute care facilities, reporting selected data to NHSN

Included metrics: Central line-associated bloodstream infection (CLABSI), catheter-associated urinary tract infection (CAUTI), surgical site infection (SSI), Clostridium difficile infection laboratory-identified event (CDI LabID Event), and methicillin-resistant Staphylococcus aureus bacteremia laboratory-identified event (MRSA blood labID Event)

INTERNAL VALIDATION	**Active efforts by a reporting facility to assure completeness and accuracy of data reported to NHSN**

Background

Facilities report to the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) for several purposes: to monitor healthcare-associated infections (HAIs) and the impact of their own prevention efforts, to benchmark facility performance against risk-adjusted national data, to fulfill state-mandated reporting requirements, and/or to comply with Centers for Medicare and Medicaid (CMS) Quality Reporting Program requirements. Regardless of the reasons for participation, facilities that report to NHSN are required to follow NHSN methods and to use NHSN definitions and criteria. The principal source of information on NHSN methods, definitions, and criteria for reporters is the NHSN Manual. This Guidance and Toolkit describes implementation practices by reporting facilities that support good quality surveillance data when reporting to NHSN.

NHSN Reporter Training and Assessment

Those persons responsible for NHSN reporting must remain up-to-date as the system evolves to meet new purposes and expanded capabilities. Given complex and changing definitions, annual training updates are obligatory for NHSN reporters. CDC provides multiple training resources on the NHSN website (http://www.cdc.gov/nhsn/Training/patient-safety-component/index.html). These include annually updated self-paced interactive multimedia instruction, training webinars, and case studies. The multimedia trainings include imbedded assessments and can generate evidence of successful completion for each component.

Printing out certificates demonstrating successful completion of current NHSN online multimedia trainings provides evidence of up-to-date knowledge of NHSN methods and definitions, and may be useful to NHSN reporters when undergoing external validation audits.

Other opportunities for training include CDC-sponsored training events, NHSN blast emails (delivering updates every January), the quarterly NHSN newsletter, and the NHSN Manual, updated each January with current methods, definitions, and criteria.

Assuring Data Quality

Central Line-associated Bloodstream Infection (CLABSI) and Catheter-associated Urinary Tract Infection (CAUTI)

Business Rules and Edit Checks Providing Intrinsic CLABSI and CAUTI Data Quality

Business rules and edit checks built into NHSN's web interface are designed to reduce keystroke errors and provide a mechanism to assure logical integrity upon data entry. Examples of business rules and edit checks for CLABSI and CAUTI data entries are listed in Table1.

Table 1: Selected NHSN Data Entry Checks for CLABSI and CAUTI (2013)

Topic	Data Entry Check
Dates	Date of birth must be ≥ 01/01/1890 and ≤ current date Date of birth must be ≤ event date Date of birth must be ≤ admission date Event date must be ≥ 3 days after admission date (admission date = day 1); *note: this was new logic for 2013 CLABSI and CAUTI definitions*
Dropdown menus	Location of attribution for CLABSI or CAUTI event Pathogen identity
Events	Logic to populate common commensal vs. recognized pathogen (CLABSI) Logic to populate uropathogen and common commensal lists (CAUTI) Required fields given monthly reporting plan Limit maximum number of feasible events per patient, per date (e.g., only one BSI or UTI can be reported per patient per date)
Summary Denominators	Format of denominator screen is driven by mapped locations Patient days must be ≥ device days for a given location

Internal Validation of CLABSI and CAUTI Data Quality by Reporting Facilities

Although business rules and edit checks that support data quality are built into NHSN, CLABSI and CAUTI data are subject to error in:

- assignment as healthcare-associated infections (HAIs)
- case-ascertainment of bloodstream infection (BSI) or urinary tract infection (UTI)
- case-classification (primary vs. secondary BSI, or type of UTI, e.g. asymptomatic bacteremic urinary tract infection (ABUTI), or types of symptomatic urinary tract infection (SUTI1a, SUTI2a, SUTI3, SUTI4 or other UTIs)
- location of attribution
- denominator reporting
- risk-adjustment variables

High quality CLABSI and CAUTI surveillance requires accurate collection of denominator data (patient days, central line days, urinary catheter days), risk-adjustment variables (patient care location mapping, teaching hospital affiliation), and screening of all potential CLABSI and CAUTI events in surveillance locations, with documentation of decisions regarding case-status and case-classification.

Be aware that important changes in NHSN definitions for healthcare-associated infection, date of event, and required duration of device use were introduced in 2013. These definitions can affect CLABSI and CAUTI case-ascertainment and classification. Reporters need to be familiar with these methods to correctly report NHSN cases.

Recommended facility CLABSI and CAUTI surveillance program competencies

The infection prevention program should assure the following facility-level competencies for NHSN CLABSI and CAUTI surveillance and validation activities:

- Overall:
  - Documentation of up-to-date training in CLABSI and CAUTI surveillance
- Risk-Adjustment:
  - Assurance of appropriate risk-adjustment elements (bed size, mapping, and teaching hospital affiliation)
- Denominators: Ability to generate correct denominator data (CLABSI: central line days and patient days, CAUTI: indwelling urinary catheter days and patient days)
  - Assurance that persons counting patient days, central line days, and/or indwelling urinary catheter days have good knowledge of NHSN methods and definitions pertaining to denominators
  - For manual denominator counting, oversight and maintenance of daily records for inspection during external validation audits
  - Before reporting electronically-counted denominator data, documented validation of accuracy (within 5% of manual counts for at least 3 months)
- Numerators (CLABSI): Ability to correctly and completely identify CLABSI events in real time
  - Awareness and investigation of all positive blood cultures among patients with central lines
  - Capacity to reproduce a complete list of positive blood cultures collected from patients assigned to facility surveillance location(s) to facilitate internal or external audits
  - Documentation of candidate CLABSI events and relevant decisions leading to reporting outcomes
  - Ability to correctly apply CLABSI case-definitions, including ability to differentiate between primary and secondary bloodstream infections in accordance with NHSN protocols. Of note, NHSN definitions for alternative primary infection sites must be met to assign bloodstream infections as secondary. Up-to-date alternative primary site definitions are available in the NHSN Manual Chapter 17 (available at http://www.cdc.gov/nhsn/PDFs/pscManual/17pscNosInfDef_current.pdf). Dated versions of the NHSN Chapter 17 HAI definitions have been transposed into checklist format by the Tennessee (TN) Department of Health, and are available at (http://health.state.tn.us/ceds/hai/). Current rules for assigning a bloodstream isolate to an alternative primary site are detailed in the NHSN Manual, Chapter 4 (CLABSI), Appendix 1 (http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf).
- Numerators (CAUTI): Ability to correctly and completely identify CAUTI events in real time
  - Awareness and investigation of all positive urine cultures[1] among patients with indwelling urinary catheters
  - Capacity to reproduce a complete list of positive urine cultures[1] collected from patients assigned to facility surveillance location(s), to facilitate internal or external audits
  - Documentation of candidate CAUTI events and relevant decisions leading to reporting outcomes
  - Ability to correctly apply CAUTI case-definitions following NHSN protocols.

[1] growth of at least 10^3 organisms and no more than two different species from urine culture

Suggestions for internal validation of NHSN CLABSI and CAUTI data quality

Validation planning

Consider how you will assure/validate data quality as you plan for NHSN surveillance. Ideally, CLABSI and CAUTI validation will have elements that are conducted annually (such as surveillance staff training updates and review of patient care location mapping and bed size), monthly (such as quality of uploaded denominator data), and daily to weekly (such as review of positive blood and urine cultures and spot checks of denominator counting) as you conduct daily surveillance for events. Changes in facility systems (new patient care locations, new or modified electronic medical records systems) should trigger proactive investigation of effects on data quality.

Risk-adjustment: location mapping, bed size, and teaching hospital type in the NHSN annual survey

- Mapping is important because it can affect risk-adjustment, benchmarking, and reporting to CMS. Review location mapping annually and whenever demographic changes in patient populations are anticipated. It is important to map correctly before reporting data, because data linked to mis-mapped locations cannot easily be corrected. Up-to-date information about mapping is available at http://www.cdc.gov/nhsn/PDFs/pscManual/15LocationsDescriptions_current.pdf. For questions, contact NHSN support: NHSN@cdc.gov. Instructions for reporting facility bed size by location type are available at http://www.cdc.gov/nhsn/forms/instr/57_103-TOI.pdf . Updated bed size information is required in the NHSN annual survey.
- Review NHSN definitions for teaching hospital types (under Key Terms, http://www.cdc.gov/nhsn/PDFs/pscManual/16pscKeyTerms_current.pdf), and assure that facility teaching hospital status is accurate in the NHSN annual survey.

Assuring CLABSI and CAUTI denominator data quality

- For manual denominator data collection and reporting:
    - Surveillance supervisors should assure that those responsible for denominator data collection know required methods and definitions, such as the NHSN definition of a central line, methods for enumerating central line days, definition of an indwelling urinary catheter (Foley catheter), and methods for enumerating indwelling urinary catheter days (http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf, http://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf). A survey to assess proficiency of denominator counting is provided in Appendix 2.3.
    - Supervisors should know when (what time) the daily counts routinely take place and conduct periodic spot checks of manual denominator counting accuracy, providing feedback to denominator counters.
    - Before reporting monthly counts to NHSN, supervisors should review daily counting logs to determine frequency of omissions. NHSN guidance is provided for dealing with missing denominator data at http://www.cdc.gov/nhsn/PDFs/NHSNMissingDenomData_Sep2013.pdf.
- For electronic denominator collection and reporting:
    - Before transitioning from manual to electronic denominator data reporting, facilities are required to document that electronic data counts are within 5% of manual data counts for 3 months. Focused efforts with support from IT, changes to nursing documentation, and staff training may be required to adjust electronic counting methods to achieve this standard.
    - Facilities reporting electronic denominator counts should provide documentation that adequate validation was performed or re-validate denominator data by concurrent manual and electronic counting for three months.

Assuring numerator quality (CLABSI)

- Investigate all positive blood cultures for possible CLABSI up to a point where CLABSI is ruled-in or out. Document decisions about CLABSI status for positive blood cultures in surveillance locations and why the blood culture did or did not meet the CLABSI case-definition.
- When attribution of positive blood cultures to an alternative primary infection source is being considered, use of NHSN Chapter 17 definitions is required. Tennessee Audit Checklists, based on Chapter 17 definitions (and available for download at http://health.state.tn.us/ceds/hai/) are useful tools to assure accurate case-classification. These checklists are available in dated versions that follow changes in NHSN definitions; use of the correctly-dated version is necessary. In addition, rules for assigning a bloodstream infection to an alternative primary site are detailed in the NHSN Manual, Chapter 4 (CLABSI) Appendix 1, (http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf).
- To assure complete CLABSI surveillance, request a summary line listing of positive blood cultures for surveillance locations to compare with the list of previously investigated blood cultures. If positive blood cultures are identified by the line listing that were not investigated in real time, reasons for the oversight should be explored and corrected.

Assuring numerator quality (CAUTI)

- Investigate all positive urine cultures[2] for possible CAUTI up to a point where CAUTI is ruled-in or out. Document reasons why positive urine cultures in surveillance locations did or did not meet the CAUTI case-definition.
- To assure complete CAUTI surveillance, request a summary line listing of positive urine cultures for surveillance locations at least annually to compare against the list of previously investigated urine cultures. If positive urine cultures are identified by the line listing but were not investigated in real time, reasons for the oversight should be explored and corrected.

Investigating reported CLABSI and CAUTI data through NHSN analysis

- Explore NHSN CLABSI and CAUTI data by location and pathogen. Begin by running pre-programmed NHSN data quality output programs in NHSN Analysis. These programs are modifiable so that facilities can evaluate data in different ways. Updated guidance for using NHSN analysis programs is available on the NHSN website (http://www.cdc.gov/nhsn/PS-Analysis-resources/index.html), including analysis quick reference guides (http://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html) for how to modify many aspects of analysis. These include methods to generate line listings, frequency tables, rate tables, SIR tables, bar charts, pie charts, longitudinal run charts, and statistical calculations.
- Explore location-specific CLABSI and CAUTI rates, SIRs, and central line / indwelling urinary catheter utilization ratios, using the NHSN Rate Table option. Use this information to plan for prevention activities.
- For any discrete time period, bed days (the number of available beds multiplied by the number of days) should be ≥ patient days, and patient days should be ≥ central line days.
- Review longitudinal reports of central line days, indwelling urinary catheter days, and patient days, longitudinal trends in numerators, denominators and Standardized Infection Ratios (SIRs), and investigate inconsistencies.

Tools for assurance of CLABSI and CAUTI data quality

1. Appendix 1 Appendix 1: Facility Self-validation Guidance
2. Appendices 2.1, 2.2, 2.3 Surveillance Methods Surveys (includes denominator counting surveys for CLABSI and CAUTI)

[2] growth of at least 10^3 organisms and no more than two different species from urine culture

3. Current NHSN Manual, Chapter 4 (CLABSI), with attention to Appendix 1 for attribution of positive blood cultures to alternative infection sources, http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf
4. Tennessee Checklists (downloadable from http://health.state.tn.us/ceds/hai/) for NHSN Manual Chapter 17 criteria (http://www.cdc.gov/nhsn/PDFs/pscManual/17pscNosInfDef_current.pdf)
5. Current NHSN Manual Chapter 7 (CAUTI), http://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf

Surgical Site Infection (SSI)

Business rules and edit checks providing intrinsic SSI data quality

Businesses rules and edit checks built into NHSN's web interface are designed to reduce keystroke errors and provide a mechanism to assure logical integrity upon data entry. Examples of business rules and edit checks for SSI data entries are listed in Table 2.

Table 2: Selected NHSN Data Entry Checks for SSI (2013)

Topic	Data Entry Check
Procedure	Patient ID, procedure date, procedure code, inpatient/outpatient are verified for consistency between the SSI event and surgical procedure record already present in NHSN Procedure-specific variables Outpatient/Inpatient logic based on procedure
Drop-down menu	Specific events available for selection are procedure-specific Pathogen identity
Events	Criteria selected correctly meet the specific event definition Wound class selection limited by procedure Required fields given monthly reporting plan
Dates	Logic to verify when event was detected Date of birth must be ≥ 01/01/1890 and ≤ current date Date of birth must be ≤ event date Date of birth must be ≤ admission date Event date must be ≥ admission date

Internal validation of SSI data quality by reporting facilities

Although business rules and edit checks are built into NHSN, SSI data remain subject to error in completeness and accuracy of procedure denominator reporting, quality of risk-adjustment variables, and particularly in completeness of case-ascertainment (due to challenges and variation in post-discharge surveillance) and correct case-classification. High quality SSI surveillance requires that facilities assure accurate collection of denominator data (NHSN procedures and associated risk-adjustment variables such as American Society of Anesthesiologists (ASA) score, procedure duration, and use of general anesthesia), facility risk-adjustment variables (e.g., teaching hospital affiliation, bed size), and recognize and correctly classify potential SSI events following procedures using re-admission and post-discharge surveillance.

Notification of SSIs originating from surgical procedures performed at another facility to the originating surgical facility is an important inter-facility communication that facilitates accurate post-discharge surveillance. This is appropriate and permissible under HIPAA (See Appendix 3).

Be aware of important changes to definitions and methods for SSI surveillance introduced in 2013. These include definitions for "NHSN procedures" and "primary closure," as well as changes to the duration of required surveillance following different procedure types. These changes can impact procedure number (denominator) and case-ascertainment (numerator). Reporters need to be familiar with these changes to correctly report to NHSN for 2013.

Recommended facility SSI surveillance program competencies

The infection prevention program should assure the following facility-level competencies for NHSN SSI surveillance and validation activities:

- Overall: Documentation of up-to-date training in SSI surveillance

- Risk-Adjustment: Ability to correctly report SSI risk-adjustment variables for all surgical procedures entered in NHSN SSI procedure denominator
- Denominators: Ability to generate and report monthly procedure denominators completely and correctly for procedures under surveillance
- Numerators: Evaluation of all potential admission and readmission infections in real time during the prescribed surveillance window (30- or 90-days, based on the procedure); post-discharge surveillance tracking outpatient SSI events and reports of re-admissions to other facilities during the SSI surveillance window
    - Ability to identify all readmissions among patients undergoing surveillance procedures during the SSI surveillance window (30- or 90- days, based on the procedure; for COLO and HYST the window is 30 days)
    - Ability to correctly classify SSI cases using NHSN definitions as either Superficial Incisional, Deep Incisional, or Organ/Space infections
    - Ability to correctly use the NHSN Principal Operative Procedure Category Selection List when attributing Organ/Space Infections in the context of multiple concurrent NHSN procedures

Note that NHSN requires reporting of all SSIs, including superficial incisional infections, whereas only deep incisional and organ/space infections are shared by NHSN with CMS per CMS Quality Reporting Program (QRP) requirements. Facilities that participate in NHSN for compliance with CMS QRPs are required to follow NHSN methods, including superficial SSI reporting.

Suggestions for internal validation of NHSN SSI data quality

Validation planning

Consider how you will assure/validate surgical procedures and SSI event data quality as you plan for NHSN surveillance. Ideally, SSI validation will have elements that are conducted annually (such as surveillance staff training updates, review of bed size, optimal source(s) of procedures and re-operations), monthly (such as quality of uploaded or entered denominator data and completeness of risk-adjustment variables), and daily to weekly (such as surveillance for events). Changes to facility systems (e.g., modifications to operating room or electronic medical records systems) should trigger proactive investigation of effects on data quality.

Risk-adjustment variables, including bed size and teaching hospital status

Risk index models using data elements collected along with other surgical procedure denominator data have been developed for NHSN surgical procedures and are detailed in a report referenced below.[3] Accurate risk-adjustment requires complete and accurate collection of these variables at the individual procedure level.

- For procedures under surveillance, know which variables are required for risk-adjustment. Assure completeness (using NHSN analysis) and accuracy (by spot-checking quality) of these variables at the time they are reported or uploaded to NHSN. Failure to assure completeness and accuracy of these variables will prevent appropriate benchmarking, and may cause difficulties during external audits.
    - For COLO, 2013 risk-adjustment variables include anesthesia, endoscope, gender, ASA score, wound class, bed size, age, and duration.
    - For HYST, 2013 risk-adjustment variables include anesthesia, endoscope, ASA score, wound class, and duration.
- Review your facility annual survey to assure correct reporting of bed size and teaching hospital category. Up to date instructions for reporting facility bed size by location type is available at http://www.cdc.gov/nhsn/forms/instr/57_103-TOI.pdf.

[3] Mu Y, Edwards JR, Horan TC, et al. Improving risk-adjusted measures of surgical site infection for the National Healthcare Safety Network. *Infect Control Hosp Epidemiol* 2011; 32(10):970-986.

Review NHSN definitions for teaching hospital types (under Key Terms, http://www.cdc.gov/nhsn/PDFs/pscManual/16pscKeyTerms_current.pdf), and assure that facility teaching hospital status is accurate in the NHSN annual survey.

Denominators (surgical procedures)

- Completeness of inpatient surgical procedure reporting is determined by consideration of all surgical procedures under surveillance and performed on an inpatient (admission date is different from discharge date) in a single trip to a hospital inpatient operating room (OR), (this may include cesarean section room, interventional radiology room, or cardiac catheterization lab), where a surgeon (as defined by NHSN) makes ≥ 1 incision through skin/mucous membrane, and closes the incision primarily* before the patient leaves the OR. Procedures designated by the facility as under NHSN surveillance are identified based on assignment of an appropriate ICD-9-CM procedure code (See NHSN Manual Chapter 9). Note that the available NHSN crosswalk to Current Procedural Terminology (CPT) codes applies only to procedures in ambulatory surgical centers, and that CPT codes are not fully interchangeable with ICD-9-CM codes.

Procedures are to be removed from the 2013 NHSN surgical procedure denominator if they fail to meet the 2013 NHSN definition of primary closure*. Procedures are NOT to be removed from the denominator based on pre-existing infection or fecal spillage at the time of surgery.

- Assure optimal source(s) of information to identify all in-plan surgical procedures. This may come directly from operating room records, from coding data, from a vendor system using these sources, or perhaps ideally from a combination of these and other sources to assure completeness and accuracy. Note changes to the definition of an NHSN operative procedure for 2013, particularly the 2013 definition of primary closure*:

*Note: 2013 definition of **Primary Closure**: "Closure of all tissue levels during the original surgery, regardless of the presence of wires, wicks, drains, or other devices or objects extruding through the incision. This category includes surgeries where the skin is closed by some means; including incisions that are described as being "loosely closed" at the skin level. Thus, if any portion of the incision is closed at the skin level, by any manner, a designation of primary closure should be assigned to the surgery."

Non-primary closure: Closure that is other than primary (non-primary closure) includes surgeries in which the superficial layers are left completely open during the original surgery and therefore cannot be classified as having primary closure. For surgeries with non-primary closure, the deep tissue layers may be closed by some means (with the superficial layers left open), or the deep and superficial layers may both be left completely open. An example of a surgery with non-primary closure would be a laparotomy in which the incision was closed to the level of the deep tissue layers, sometimes called "fascial layers" or "deep fascia," but the superficial layers are left open. Another example would be an "open abdomen" case in which the abdomen is left completely open after the surgery. Wounds that are "closed secondarily" at some later date, or described as "healing by secondary intention" should also be classified as having non-primary closure. Wounds with non-primary closure may or may not be described as "packed" with gauze or other material, and may or may not be covered with plastic, "wound vacs," or other synthetic devices or materials.

NOTE: Assign the surgical wound closure that applies when the patient leaves the OR from the principal operative procedure. This instruction should be followed in scenarios where a patient leaves the OR with non-primary closure, but returns to the OR for a subsequent procedure that results in primary closure of the procedure.

- If procedure data are electronically uploaded to NHSN, assure completeness, accuracy, and quality of uploaded procedures and risk-adjustment variables. Work with OR and IT staff to improve data quality, accuracy, and completeness as needed.

Numerators (SSIs)

- Be aware of and investigate all suspected SSIs following surveillance procedures. Several approaches will typically be necessary. Although wound culture surveillance is often helpful, most SSIs are not identified by wound culture. Frequent rounding on surgical floors, reviewing charts, reviewing discharge summaries for surgical patients, and relationships with surgical staff members can improve case finding.
- Although NHSN does not recommend specific methods, documentation of post-discharge surveillance methods and findings may be useful when undergoing external audit and review. Records should be kept regarding reports of SSIs made to other facilities and receipt of reports from other facilities.
- Correct case-classification of COLO and HYST SSIs may be facilitated by use of relevant TN Checklists (http://health.state.tn.us/ceds/hai/) which may be useful to document site-specific organ/space infection criteria. These checklists, which derive from NHSN manual definitions, provide a format that some reviewers may prefer.

> - **Note:** Facilities reporting SSIs into NHSN are required to report Superficial Incisional Infections and secondary infections, as well as Deep Incisional Primary and Organ Space Primary infections for in-plan procedures, despite the more limited CMS requirements.
> - CMS will receive only in-plan Deep Incisional Primary and Organ/Space Primary infection data within 30 days of the procedure for adult inpatients following COLO or HYST procedures, and only these events will be correlated by CMS between reporters and CMS validators.

Investigating reported SSI data through NHSN analysis

- Explore NHSN SSI data by procedure, surgeon, and pathogen. As a start, run pre-programmed NHSN data quality output programs in NHSN Analysis. These programs are modifiable so that facilities can evaluate data in different ways. Updated guidance for using NHSN analysis programs is available on the NHSN website (http://www.cdc.gov/nhsn/PS-Analysis-resources/index.html), including analysis quick reference guides (http://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html) for how to modify many aspects of analysis. These include methods to generate line listings, frequency tables, rate tables, SIR tables, bar charts, pie charts, longitudinal run charts, and statistical calculations. A Webinar delivered in October 2012 ("Advanced Analysis: Focus on SSI", available at http://www.cdc.gov/nhsn/Training/analysis/index.html), contains advice for troubleshooting issues with NHSN data reporting to CMS.

> - **Note:** Results of your analyses of facility data may differ from other analyses. For example, when reporting facilities conduct NHSN analysis for CMS data, aggregate CMS results will differ from overall facility-level results because the NHSN data shared with CMS are a subset of what is required of facilities by NHSN.
> - Certain procedures may also be excluded from calculations generating the standardized infection ratio (SIR), as detailed in the NHSN Newsletter, October 2010, Special Edition, Appendix C.

Tools for assurance of SSI data quality

1. Appendix 1 Facility Self-validation Guide for CLABSI, CAUTI, and SSI Surveillance
2. Appendix 2.4 Surveillance Methods Surveys
3. Tennessee Checklists (downloadable from http://health.state.tn.us/ceds/hai/)
4. Appendix 3: Facility/Provider to Facility/Provider Communications under HIPAA: Questions and Answers
5. Current NHSN Manual, Chapter 9 (SSI)

LabID Event

Business rules and edit checks providing intrinsic LabID Event data quality

Business rules and edit checks built into NHSN's web interface are designed to reduce keystroke errors and provide a mechanism to assure logical integrity upon data entry. Examples of business rules and edit checks for LabID Event data entries are listed in Table 3.

Table 3: Selected NHSN data entry checks for LabID Event (2013)

Topic	Data Entry Check
Dates	-Date of birth must be ≥ 01/01/1890 and ≤ current date -Date of birth must be ≤ specimen collection date -Date of birth must be ≤ admission date -Specimen collection date and location admission date must be ≥ facility admission date -Specimen collection date must be ≥ and location admission date
Dropdown menus	-Specimen source limited by body site -Specimen source and body site choices limited by organism -Location of attribution driven by mapped locations
Events	-Previous event verified -Required fields given monthly reporting plan
Summary Denominators	-Facility-wide patient days ≥ any single location-specific patient days -*C.difficile* patient days ≤ total facility-wide patient days

Internal validation of facility-wide inpatient (FacWideIN) LabID Event data quality by reporting facilities

Although business rules and edit checks that support data quality are built into NHSN, LabID Event data are subject to several types of error. First, if a positive specimen collected in the emergency department or a hospital outpatient clinic on the day of admission is overlooked, initial assignment as hospital-onset (HO) can be incorrect. Initial assignment as community-onset (CO) may be incorrect when formal facility admission is preceded by overnight stays on an inpatient location as an observation patient (these patients count toward admissions and days toward patient days). Second, unassisted determination of duplicate vs. reportable test results are subject to error, and use of the online calculator (http://www.cdc.gov/nhsn/labid-calculator/index.html) is highly recommended to improve accuracy. Third, denominator data are subject to error if observation patients located in inpatient locations are incorrectly excluded from denominator counts. Finally, because events are linked through patient location and time, one error in classification can cause a series of downstream errors in case-classification.

Recommended LabID Event surveillance program competencies

The infection prevention program should assure the following facility-level competencies for facility-wide inpatient (FacWideIN) LabID Event surveillance and validation activities:

- Overall: Documentation of up-to-date training in LabID Event surveillance
- Risk-adjustment: Assurance of accurate risk-adjustment elements
- Denominators: Internally validated ability to generate correct monthly summary denominator data (FacWideIN patient days, admissions to inpatient locations)
- Numerators: Ability to comprehensively identify and correctly assign positive laboratory tests as reportable vs. duplicate
    - Understanding of and ability to correctly apply LabID Event following NHSN protocols
    - Awareness of MRSA-positive blood cultures and toxin-positive CDI test results among inpatients

- Ability to identify MRSA-positive blood cultures and toxin-positive CDI test results obtained in the hospital ED or facility-affiliated outpatient clinics or observation area on the day of admission
- Tracking relevant decisions for positive laboratory tests leading to reporting outcomes
- Capacity to produce a complete list of MRSA-positive blood cultures and/or toxin-positive CDI test results from stool specimens by location for all NHSN inpatients to facilitate internal (or external) audits

Suggestions for internal validation of NHSN LabID Event data quality

Validation planning

Consider how you will assure LabID Event data quality as you plan for NHSN surveillance. Ideally, LabID Event validation will have elements that are conducted annually (such as surveillance staff training updates, and review of patient care location mapping with patient demographics and location bed size during the NHSN annual survey), monthly (such as quality of uploaded denominator data; patient days and admissions), and daily to weekly (such as review of laboratory reports and data entry decisions for LabID Events). Changes to facility systems (new or removed patient care locations, new or modified electronic medical records systems) should trigger proactive investigation of effects on data quality.

Risk-adjustment: location mapping, bed size, and teaching hospital status

- For MRSA Bacteremia LabID Event, risk-adjustment variables are teaching hospital affiliation, facility bed size, and CO MRSA bacteremia prevalence rate (automatically generated by NHSN); for CDI LabID Event, risk-adjustment variables are teaching hospital affiliation, facility bed size, CDI test type, and CO CDI prevalence rate (automatically generated by NHSN; see http://www.cdc.gov/nhsn/PDFs/mrsa-cdi/RiskAdjustment-MRSA-CDI.pdf).
- Expanded mapping information was included in the NHSN Manual for 2013 (Chapter 15). Review and update your facility inpatient care location demographics and bed size with regard to current NHSN location descriptions (see http://www.cdc.gov/nhsn/PDFs/pscManual/15LocationsDescriptions_current.pdf). Use this information to validate location-mapping information in NHSN. Mapping is important because it can affect benchmarks, risk-adjustment, and reporting to CMS. It is important to map correctly before reporting data, because data linked to mis-mapped locations cannot easily be corrected. If you have questions, contact NHSN support: NHSN@cdc.gov.
- Once mapping is assured, review facility bed size (stratified by location type) as documented on the NHSN annual survey
- Review current NHSN definitions for teaching hospital types (under Key Terms, http://www.cdc.gov/nhsn/PDFs/pscManual/16pscKeyTerms_current.pdf, and assure that facility teaching hospital status is accurate in the NHSN annual survey.

Assuring LabID Event denominator quality

- "FacWideIN" includes all patient days counted at the same time each day for all inpatient locations, including any patients housed in inpatient locations, whether or not the facility considers them admitted patients or observation patients but excluding any patients housed for the day in outpatient observation locations. This information is typically collected electronically.

> Note: Observation unit locations are considered outpatient locations by NHSN, but observation patients (a billing distinction) may be located in inpatient locations (where they are counted in the FacWideIN denominator) or in outpatient locations (where they are not to be counted).

Because the task of validating "FacWideIN" patient days and admissions facility-wide is daunting, accurate denominator counting can be internally validated using manual counting of patient days and admissions in a sample of three specified location types for one month each: one ICU, one Labor/Delivery/Recovery/Post-Partum (LDRP) location (if available), and one or more inpatient wards where observation patients are frequently located. Validated counts should be within 5% of the referent (usual) electronic counts, or an evaluation of why they differ

should be conducted. One consideration is the facility's ability to capture observation patients electronically. Note that counts will likely differ for MRSA Bacteremia LabID Event denominators and for CDI LabID Event denominators because CDI excludes counts from neonatal units when counting. A tool for internally validating "FacWideIN" LabID Event denominators is found in Appendix 2.6.

- Inpatient days and admissions may be derived from a number of hospital systems such as admission/discharge/transfer (ADT) data, the billing system, or from vendor systems using hospital data. Feedback to NHSN indicates that ADT data are often the most accurate. **If using billing data, it is important to ensure that observation patients housed in inpatient locations are included in counts, because these patients are often billed separately from inpatients.**
    - The monthly facility-wide inpatient days denominator required for MRSA bacteremia LabID Event includes all inpatient days, on all inpatient locations, counted at a consistent time concurrently in all locations, and including observation patients who are located in inpatient locations.
    - The monthly facility-wide inpatient days denominator required for CDI LabID Event includes the factors above but excludes counts from baby locations and excludes infants located in labor/delivery/recovery/post-partum (LDRP) locations.
    - The monthly facility-wide inpatient admissions denominator required for MRSA bacteremia LabID Event includes all inpatient admissions to the first inpatient location as well as observation patients who are located in inpatient locations.
    - The monthly facility-wide inpatient admissions denominator required for CDI LabID Event includes all inpatient admissions to the first inpatient location as above, excluding baby locations and infants in LDRP locations.
    - Note: facilities using the billing system to determine facility admissions or patient days may have difficulty in accurately reporting inpatient days and inpatient admissions for this module, which requires the inclusion of observation patients housed in inpatient locations for these counts. Other data sources (admission/discharge/transfer [ADT] data or vendor software systems using ADT data) may be more accurate than use of billing data.
    - The denominator for many facilities will differ when reporting MRSA Bacteremia LabID Event, which counts denominator data for all inpatient locations, and reporting CDI LabID Event, which counts denominator data for all non-neonatal inpatient locations (excluding counts from locations where the population is expected to be at least 80% infants, such as NICU, special care nursery, and well-baby nurseries, and excluding babies in LDRP locations).

Assuring LabID Event numerator quality

- A survey tool assessing knowledge of 2013 LabID Event reporting is provided in Appendix 2.5.
- For LabID Event, inpatient status includes all patients present at the time of the daily count (not requiring an overnight stay), and includes observation patients located in inpatient locations even if not formally admitted. In addition, laboratory specimens collected from facility-related outpatient locations such as the emergency department (ED) on the date of admission should be included. During surveillance, IPs should be aware of and investigate ALL MRSA-positive blood cultures and/or toxin-positive CDI tests from stool specimens for inpatients and patients being admitted the same day. Particular attention should be paid to additional laboratory testing done on the day of admission in related outpatient settings. This initial data can change the status of subsequent positive laboratory tests. To assure that LabID Events are not overlooked, IPs should periodically request a summary line listing of MRSA-positive blood cultures and/or toxin-positive CDI tests for inpatients and for outpatients on the day of admission.

Investigating reported LabID Event data through NHSN analysis

- Explore NHSN LabID Event data by location and pathogen. As a start, run pre-programmed NHSN data quality output programs in NHSN Analysis. These programs are modifiable so that you can look at data in different ways. Updated guidance for using NHSN analysis programs is available on the NHSN website (http://www.cdc.gov/nhsn/PS-Analysis-resources/index.html), including analysis quick reference guides (http://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html) for how to modify many aspects of analysis. These include methods to generate line listings, frequency tables, rate tables, SIR tables, bar charts, pie charts, longitudinal run charts, and statistical calculations.
- Explore location-specific LabID Event rates and SIRs, using the NHSN Rate Table option. Use this information to plan for prevention activities.
- Review longitudinal denominator data by location and HO LabID Events by location, and investigate inconsistencies.

Tools for assurance of LabID Event data quality

- Appendices 2.5, 2.6 Surveillance Methods Surveys
- Current NHSN Manual Chapter 12 (MDRO/CDI Module), Option 1: LabID Event Reporting (http://www.cdc.gov/nhsn/PDFs/pscManual/12pscMDRO_CDADcurrent.pdf)

Appendix 1: Facility Self-validation Guidance

By following these simple steps, facilities can help assure the accuracy, reliability and quality of data reported to NHSN.

Validation component	Items to review	Suggested method
Annual surveillance and validation plan	• Patient care locations where CLABSI and CAUTI surveillance is planned • Types of surgical procedures followed for SSI surveillance • Sources of information for surgical procedures, surgical readmissions, and post-discharge surveillance • Source of inpatient admissions and patient days as defined for LabID Event • Laboratory capacity to produce specified line listings by location or house-wide • Ability to link laboratory and admissions/discharges/transfer (ADT) data • IT support, especially if electronic reporting will be introduced • Training needs: o Staff training for denominator counting: CLABSI, CAUTI o Staff training for NHSN surgical procedure reporting o NHSN training updates and case-studies for NHSN reporters	1. On an annual basis consider plans for internal validation/quality assurance as you plan surveillance activities including: a. Staffing and training needed for quality data collection b. Plan for staff training and assessment c. Consider whether burden of manual data collection justifies establishing and validating electronic denominator reporting for any HAIs d. Assess adequacy of facility infrastructure, EMR or vendor systems, and practices for documenting device use, placement, and removal e. Evaluate access to IT and other support services for planned data checks; line listings from laboratory information system, linkage to ADT data for surgical readmissions, and counting of inpatient days and admissions f. Determine which facility information systems include patient days and admissions with and without observation patients, to assure that LabID Event denominators are being counted correctly

Validation component	Items to review	Suggested method
Facility and location information reported to NHSN	Facility level information reported to NHSN • Teaching hospital status • Number of facility beds	1. The NHSN Patient Safety Component includes separate annual surveys for hospitals (Patient Safety Component – Annual Hospital Survey, 57.103), Long-term Acute Care Facilities (Patient Safety Component – Annual Facility Survey for LTAC, 57.150), and Inpatient Rehabilitation Facilities (Patient Safety component_ Annual Facility Survey for IRF, 57.151). a. On an annual basis, review and confirm that teaching status and number of beds (ICU vs. all other inpatient location beds) is accurate (see below).
	Patient location level mapping information reported to NHSN • Facility location label and CDC location description • The number of beds reported for ICU and non-ICU location types	On an annual basis, review data for each patient care location entered into NHSN using up-to-date information on patient demographics by location (objective data may be available from bed-control or a chief nursing officer) to confirm the following; 1. The CDC location label assigned meets the CDC 80% rule for the assigned CDC location description (See NHSN Manual, Chapter 15, http://www.cdc.gov/nhsn/PDFs/pscManual/15LocationsDescriptions_current.pdf). Note: for 2013, NHSN mapping guidance was updated, and detailed instructions were created to assist with facility-wide mapping, in recognition of CMS Inpatient Quality Reporting requirements for LabID Event surveillance. 2. The combined number of ICU beds and non-ICU beds is correct.
CLABSI and CAUTI denominator data	Patient days, central line days, and indwelling (Foley) catheter days.	**1. Regardless of type of denominator data collection (manual or electronic);** a. For CLABSI and CAUTI denominator data assure that each month is correctly listed as in-plan b. For each in-plan month assure that denominator data (patient days, central line days, and catheter days) have been entered into NHSN **2. If manual denominator data collection is used;** a. Assure that staff members collecting denominator data know correct NHSN procedures and definitions for this task and are following the NHSN protocol http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf. Appendix 2.3 of this document contains a survey that may be adapted for evaluation of denominator collection practices for CLABSI and CAUTI denominators. b. Conduct internal validation of manual denominator data periodically (e.g. for one week annually in each surveillance location and for newly trained denominator counting personnel) by either concurrent dual assessment of denominator data and/or by concurrent independent patient-level data collection (e.g. room number, room occupied, patient name/MRN, central line present or absent). The IP should review the

Validation component	Items to review	Suggested method
		corresponding data to determine if standard data collection is correct and compliant with NHSN protocols for the patient location (e.g., NICUs, specialty care areas, other). Results should be shared with staff for recognition of good work or to modify practices for collecting data if necessary. If problems are found manual validation should be repeated. State Health Department validators may ask to see results of internal validation, or may assess staff knowledge and practices. c. Periodically assess completeness and reliability of denominator data collected/reported to NHSN. Using denominator logs calculate % of days per year that: i. patient days were not collected ii. central line days were not collected iii. Be prepared to share your data logs and analysis with reviewers during external validation **3. If electronic data capture is used;** a. The NHSN CLABSI protocol states "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." (http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf). This guideline is important because unexamined electronic counts may be seriously flawed and can be difficult to align with NHSN reporting definitions**.** For each location where electronic databases are used to obtain counts of patients days and/or device days, determine if initial data validation was performed according to this guidance. If electronic counts were not validated or not within 5% of manual counts resume manual counting and continue working with IT staff to improve design of electronic denominator data extraction (while reporting manual counts) until concurrent counts are within 5% for 3 months. b. Because electronic systems are subject to change and can result in disrupted or inaccurate data streams, best practices for use of electronic data capture also require: i. Vigilance for aberrant data that could result from changes to electronic medical records or related systems ii. Periodic spot checks of electronic data to assure continued good performance c. A report of successful alignment of electronic denominator counting at two related facilities has recently been published (Tejedor SC, et al. Infect Control Hosp Epidemiol

Validation component	Items to review	Suggested method
		2013; 34:900-907).
CLABSI and CAUTI numerator data	Complete ascertainment of candidate CLABSIs and candidate CAUTIs in surveillance locations	1. Assure that the microbiology laboratory tracks and reports patient care location at the time of specimen collection and not at the time of final report for surveillance purposes. 2. Consider documentation of surveillance decisions, e.g.: a. Keep a record/line-listing of positive blood cultures and decisions with regard to CLABSI particularly in surveillance locations. Patients without a recent central line can quickly be eliminated from consideration for CLABSI. For any positive blood cultures that meet the definition of laboratory-confirmed bloodstream infection (LCBI types 1, 2, or 3) in a surveillance location, document the LCBI, presence or absence of a central-line, why you consider the blood culture to be either healthcare-associated (HA) or non-HA, primary or secondary, and whether or not the event was reported as a CLABSI to NHSN. b. Keep a record/line-listing of positive urine cultures and decision making with regard to CAUTI, particularly in surveillance locations. Patients without a recent or current indwelling urinary (Foley) catheter can quickly be eliminated from consideration for CAUTI. For any positive urine cultures that meet the definition of asymptomatic bacteremic urinary tract infection (ABUTI) or specific symptomatic urinary tract infection types (SUTI1a, SUTI2a, SUTI3 or SUTI4), document the urinary tract infection (UTI), presence or absence of an indwelling urinary catheter, why you consider the culture HA or non-HA, and whether or not the event was reported as CAUTI to NHSN. 3. Periodically assure that all positive blood and urine cultures have been reviewed by requesting surveillance location line list for comparison to the record.
SSI denominator data	Surgical procedures under NHSN surveillance for SSI	1. Regardless of type of denominator data collection (manual or electronic); a. As part of annual surveillance and validation planning determine which surgical procedures will be reported to NHSN, whether inpatient or outpatient or both, and note the assigned surveillance period (30 or 90 days) for each procedure. b. Identify all primary sources of information about procedures for which you will conduct surveillance. For many facilities this will be the OR records system. It may be useful to identify one or more secondary data sources (e.g. ICD-9-CM hospital discharge procedure codes) that can be used to cross-link to or validate the magnitude of data deriving from the OR system data stream. c. It is prudent to scrutinize the list of ICD-9-CM procedure codes (and/or CPT codes) used by the OR system to identify procedures of interest for completeness. Failure to include

Validation component	Items to review	Suggested method
		one or more specified codes for designated procedures in the denominator can lead to the appearance of falsely higher SSI rates. d. Assure that all persons screening surgical procedures prior to data entry are familiar with the 2013 definition for primary closure (http://www.cdc.gov/nhsn/pdf/pscmanual/errata2013.pdf). 2. If either manual or electronic denominator data entry is used; a. Manual data entry is subject to keystroke errors, omissions, and duplications during data entry , and thus data validation may include double checking of multiple data elements by two persons (one reading the OR record, and one reading the NHSN record) b. Both manual and electronic denominator data quality are subject to error at the source of information and to systematic error. In either case, data quality may be monitored by one of several internal validation methods i. Double checking of procedure record completeness by two persons (e.g., one reading the OR record list and one reading the NHSN record list) ii. Monthly NHSN analysis prior to data transmission to check for duplicate procedure entry, consistency and logical quality of entered data, (e.g., unusual ASA scores or duration of procedures), with investigation and resolution of outliers iii. Cross checking a second data source to identify discordant records that may have been missed or reported in error and to identify errors leading to large errors (such as omitting a required ICD-9-CM procedure code) iv. Periodic (at least annual) download from the OR system to confirm that procedure data for individual days or weeks were not missed during the interval
SSI Event numerator data	Sources of information for surgical infection events and surgical readmissions	1. Identify information sources to identify infections among post-operative surgical inpatients, e.g. pharmacy, laboratory, and/or microbiology data 2. Assure identification of surgical readmissions during the post-operative surveillance window and screen for infection as a cause of re-admission 3. Optimize post-discharge surveillance methods Cooperate with other facilities to notify one another of SSIs following procedures at another facility
	Complete ascertainment of candidate SSIs post-op, whether in hospital or	1. Assure a mechanism to routinely identify surgical readmissions and complete post-discharge surveillance during the 30-day SSI surveillance window following COLO and HYST procedures.

Validation component	Items to review	Suggested method
	after discharge	2. Investigate options for optimal post-discharge SSI surveillance, including cross-facility communications and reporting of SSIs identified by other facilities. Multiple networked surveillance modalities (e.g., readmissions, surgical nursing contacts, surgical rounds, surgeon inquiry, chart review, patient survey) typically provide more complete information. Consult with other hospital IPs to consider best practices for inter-facility communication of SSIs (reports that you provide to other facilities that performed a procedure and for SSIs that are reported by other facilities to your facility). For example, the referring IP may be asked to complete the NHSN SSI report form and provide it to the facility responsible for filing the report in NHSN.
LabID Event denominator data	NHSN inpatient admissions and patient days must include observation patients who are located in inpatient locations	1. LabID Event denominators: facility-wide admissions and inpatient days (as defined by NHSN to include observation patients located in inpatient locations) normally are derived electronically. Determine how to assure inclusion of observation patients that are located in inpatient locations in denominator data counts. 2. Some systems (typically vendor and ADT systems) can be adjusted to count observation patients in inpatient locations but facilities relying on billing data must be careful to include observation patients from inpatient locations, who may be billed separately. 3. Denominator validation can be accomplished using manual counting of patient days and admissions in three specified location types for one month each: one ICU, one Labor/Delivery/Recovery/Post-Partum (LDRP) location (if available), and one or more wards where observation patients are frequently located. Validated counts should be within 5% of the referent (usual) electronic counts or an evaluation of why they differ should be conducted. This internal validation process may be requested or required by state health departments.
LabID Event numerator data	Assure that any reporter(s) overseeing LabID Event reporting understand rules for duplicate reporting and include laboratory reports from affiliated outpatient locations on admission date.	1. Assure that the microbiology laboratory tracks and reports patient care location at the time of specimen collection and not at the time of final report to infection control. a. NOTE: For LabID Event, laboratory tests taken on the day of admission in facility-associated outpatient locations (e.g., ED) should be included for accurate tracking of CO LabID Events. 2. Consider periodic internal auditing e.g. duplicate auditor abstraction of candidate events

Appendix 2.1: CLABSI/CAUTI Surveillance Coordinator Checklist

Date: _____

☐ Have surveillance personnel been trained to use 2013 NHSN surveillance methods and definitions?
☐ Are surveillance personnel permitted to report to NHSN without undue pressure or interference from administrators or other authorities?
Manual denominator counting:
☐ Is training assured for CLABSI and CAUTI Denominator counters?
☐ Are there periodic spot-checks or other forms of validation for CLABSI and CAUTI denominator counts?
Electronic denominator counting:
☐ Have electronic denominator counts been validated for three months as required by NHSN?

Appendix 2.2: Documentation of Electronic CLABSI/CAUTI Denominator Validation

Date: _____

Instructions: NHSN requires that the monthly electronic denominator count fall within a 5% tolerance interval of the monthly manual denominator counts for 3 months before reporting electronic denominator counts for CLABSI/CAUTI. *If there is no electronic denominator counting at this facility, skip this survey.*
If electronic device denominator counting is used for reporting at this facility, document the NHSN-required validation results below:

Initial electronic denominator validation (when electronic denominator reporting began):

Location name: Month/year:		Manual Count	*Calculated 5% tolerance interval	Electronic Count
	Patient days			
	Central line days			
	Indwelling urinary catheter days			
Location name: Month/year:				
	Patient days			
	Central line days			
	Indwelling urinary catheter days			
Location name: Month/year:				
	Patient days			
	Central line days			
	Indwelling urinary catheter days			

If available, please document additional information for any more recent electronic denominator validation:

Location name: Month/year:		Manual Count	*Calculated 5% tolerance interval	Electronic Count
	Patient days			
	Central line days			
	Indwelling urinary catheter days			
Location name: Month/year:				
	Patient days			
	Central line days			
	Indwelling urinary catheter days			
Location name: Month/year:				
	Patient days			
	Central line days			
	Indwelling urinary catheter days			

*Equation for 5% tolerance interval is Manual Count $\pm$ (Manual Count * 0.05).
Example calculations where Manual Count = 164 and Electronic Count = 178:
Eligible 5% tolerance interval = [164$\pm$(164*0.05)]=155.8 to 172.2
Electronic Count 178 falls outside the tolerance interval.

Appendix 2.3: CLABSI and CAUTI Denominator Counting Survey with Key

Instructions: Administer to individuals responsible for denominator counting. This form is color-coded so that it can be divided into a CLABSI denominator collection form and a CAUTI denominator collection form in facilities where these tasks are performed by different persons. Orange indicates both CLABSI and CAUTI questions; pink indicates CLABSI questions, and yellow indicates CAUTI questions.

Facility OrgID:	Name/ID of individual interviewed:	Position: ☐ IP ☐ Clerical ☐ Nursing ☐ Oother (explain)	Interviewer Initials:	Date of Survey:
(*circle*): CLABSI, CAUTI, BOTH	NHSN Location(s) covered:			

PATIENT DAYS *(for both CLABSI and CAUTI denominator counters)*			*Key:*
1. How are patient days usually collected? *(choose one)*			
	Electronically (*document the software system utilized and skip to Q8*):		
	Manually		
	Some units electronic and some units manual		
	Comment:		
2. Is there a specified time when the denominator count is taken?		☐ Yes ☐ No	*The answer should be Yes*
3. When is it done?			*Counts should be done at a specific time daily, preferably at nearly the same time throughout the facility to avoid errors when patients transfer*
4. Describe the method used to count **patient days**:			*(from NHSN) "To calculate patient days, for each day of the month at the same time each day, record the number of patients. At the end of the month sum the daily counts and enter the total into NHSN."*
	Count the number of patients assigned to a unit bed at the time counts are conducted		
	Other *(specify)*		

5. When reporting monthly patient day total, what is done if there are missing **patient day** data? *(choose one)*		*NHSN issued specific guidance on imputing values for missing data in September 2013 (http://www.cdc.gov/nhsn/PDFs/NHSNMissingDenomData_Sep2013.pdf)*
	Report sum of available daily counts with no adjustment for missing data	
	Estimate or re-create missing data from existing information using our own methods	
	Impute missing values using recent CDC/NHSN guidance	
	Other (explain)	

6. Which best describes your training for denominator (patient days and central line or catheter days) counting? *(select all that apply)*		
	No specific training was provided	*Formal training by NHSN or NHSN-trained IP is recommended due to technical aspects of definitions (e.g., central line, permanent line, temporary line), and methods (e.g., when to count lines, how many to count)).*
	Peer training (person who previously counted explained their approach to new staff)	
	Formal training by IP	
	Formal training by NHSN (e.g. online training)	
	Annual training updates	
	Other (describe):	

7. Which staff member counts patient days and central line or catheter days when the "regular" data collector(s) is/are not working?	☐ IP ☐ Another trained Counter ☐ Nobody ☐ Other (specify)

8. Does your facility have a mechanism in place for quality control of denominator data? *(Select one):*		
	(Electronic data) Yes, data submitted electronically is periodically checked using manual methods	
	(Manual data) Yes, manually collected data are periodically counted by more than one staff member	
	Yes, other *(explain)*	
	No formal quality control process	

9. Which staff member(s) is/are responsible for entering ICU patient days and central line or catheter day data into NHSN?	☐ IP ☐ Counter ☐ Clerical ☐ Other (specify)

CENTRAL LINE DAYS (*for CLABSI denominator counters only*)

10. How are **central line days** collected for the unit(s) you oversee? (*choose one*)		
	Electronically. *(If Yes, please document software system utilized and skip to Q13*):	
	Manually	
	Some units electronic and some units manual	
	Comment:	
11. Identify the method used to count **central line days**: (*choose one*)		*A daily count of the number of patients with a central line in the patient care location during a time period, which is summed for the monthly total*
	Count the number of patients with at least one central line at the time surveillance rounds are conducted	
	Count the number of central lines that are in place at the time surveillance rounds are conducted	
	Count the number of central lines that are in use at the time surveillance rounds are conducted	
	Other (specify):	
12. When reporting monthly patient day total, what is done if there are missing **central line day** data? *(choose one)*		*NHSN issued specific guidance on imputing values for missing data in September 2013 (http://www.cdc.gov/nhsn/PDFs/NHSNMissingDenomData_Sep2013.pdf)*
	Report sum of available daily counts with no adjustment for missing data	
	Estimate or re-create missing data using existing information (e.g.: medical records), then sum	
	Impute missing values using recent CDC/NHSN guidance for missing denominator data	
13. A patient has a radial arterial line and a peripheral IV. How many central line days are counted for this patient on this day?		*Zero. The radial arterial line and peripheral IV are not central lines.*
14. A patient has a temporary central line and a permanent central line that are both in use. How many central line days are counted for this patient on this day?		*One. Although the patient has two central lines a device day is defined as the number of patients who have the device, not the number of devices.*
15. The patient above with the temporary central line and the permanent central line is on an oncology ward. Should you report one temporary line day, one permanent line day, or both a temporary and a permanent line day?		*When a patient in an oncology location has both temporary and permanent lines the line day is reported as a temporary line day (http://www.cdc.gov/nhsn/forms/instr/57_117.pdf).*
16. A patient has a long-term port-a-cath that has not been accessed during this hospital stay, and a peripheral IV that is in use. How many central line days are counted for this patient on this day?		*Zero. The port-a-cath was not inserted during this visit and thus is not counted until accessed. The peripheral IV is not a central line. If the port-a-cath was inserted during this admission it would be counted each day thereafter whether in use or not.*
17. A port-a-cath was inserted during this admission for planned chemotherapy. It is not in use. How many central line days are counted for this patient on this day?		*One. If a central line was inserted during this admission it would be counted each day that it remains in place whether in use or not.*
18. A patient has a long-term central line that was accessed for a blood draw in the ICU yesterday but is not currently in use, and a peripheral IV that is in use. How many central line days are counted for this patient on this day?		*One. The port-a-cath was accessed during this stay and subsequently the line will be counted for each daily count until discharge unless removed.*
19. A patient has a long-term central line that was accessed once for a blood draw in the ED during		*Zero. Brief access in an outpatient location does not count toward line-*

evaluation leading to admission, but the line is not currently in use. How many central line days are counted for this patient on this day?		*days during an admission. If the line had been accessed after admission or remained in use after admission following first access in the ED it would be considered accessed for the purpose of counting line-days.*
20. If a central line is removed at 2PM and replaced at 8PM. The central line day count is done at 5PM, should the line be counted?	☐ Yes ☐ No ☐ Unk	*No. Central line must be in place at time of count*
NICU-Specific Central Line Questions (*Optional: Check here and skip section if NICU questions do not apply to your job*) ☐)		
21. When reporting central line (CL) days, in neonates, which neonatal weight is used for reporting? *(select one)*	☐ Birth weight ☐ Current weight	*Birth weight*
22. Neonates with both a CL and an umbilical catheter (UC) are included in the daily count as: *(select one)*	☐ UC only ☐ CL only ☐ 2 separate lines	*CL only. New for 2013; no separate reporting of UCs; UCs are considered to be CLs and reporting is for one or more CL stratified by birth weight.*

Indwelling Urinary Catheter DAYS *(for urinary catheter counters only)*		
23. How are **indwelling urinary catheter-days** collected for the units you oversee? (choose one)		
	Electronically. *(If Yes, please document software system utilized and skip to Q26)*:	
	Manually	
	Some units electronic and some units manual	
	Comment:	
24. Identify the method used to count indwelling urinary catheter **days**: (*choose one*)		*Indwelling urinary catheter (AKA Foley catheter): A drainage tube that is inserted into the urinary bladder through the urethra, left in place, and connected to a drainage bag, including urethral catheters that are used for intermittent or continuous irrigation, but excluding suprapubic, condom, or straight in-and-out catheters.*
	Count the number of patients on the unit with a urine collection bag	
	Count the number of patients on the unit with a Foley catheter or condom catheter	
	Count the number of patients on the unit with a Foley catheter, condom catheter, or suprapubic catheter	
	Count the number of patients on the unit with a Foley catheter or indwelling urinary three-way (infusion) catheter used for bladder washes	
	Other (specify):	
25. When reporting monthly patient day total, what is done if there are missing **catheter day** data? *(choose one)*		*NHSN issued specific guidance on imputing values for missing data in September 2013 (http://www.cdc.gov/nhsn/PDFs/NHSNMissingDenomData_Sep2013.pdf)*
	Report the sum of available daily counts with no adjustment for missing data	
	Estimate or re-create missing data using patient information (e.g.: medical record), then sum	
	Impute missing values using recent CDC/NHSN guidance for missing denominator data	
26. A patient has a draining ureteral stent and a Foley catheter; each one connected to a collection bag. How many urinary catheter days are counted for this patient on this day?		*One. Ureteral stents are not counted because they are not urethral catheters.*
27. A patient has a three-way urethral catheter used for irrigation after surgery to prevent blood in the bladder from clotting, and to provide for urinary drainage. How many urinary catheter days are counted for this patient on this day?		*One. Catheters to be counted include indwelling urethral catheters used for intermittent or continuous irrigation, as well as those used for drainage.*
28. A patient on the unit has a supra-pubic urinary catheter. How many urinary catheter days are counted for this patient on this day?		*Zero. Supra-pubic catheters are not urethral catheters because they enter the bladder through the abdominal wall.*
29. A patient's urethral catheter is removed at noon and replaced at 5PM. Daily urethral catheter counts take place at 2PM. How many urinary catheter days are reported for this patient on this day?		*None. There was no urethral catheter at the time of the daily denominator count. NOTE: If this patient develops a bloodstream infection attributable to a urinary tract infection, this day will count as one of two required catheter days to establish CLABSI criteria because the catheter need only be in place for part of the two days to meet this criterion.*

Appendix 2.4: Surgical Procedure and SSI Surveillance Methods Survey with Key

Name of Hospital_____

Instructions: ***Administer this survey to the person who oversees NSHN SSI surveillance and reporting of denominator (surgical procedure) data.***

Facility org ID:	Name / ID of individual interviewed:	Position: ☐IP ☐Other (explain):	Interviewer initials:	Date of Survey:

Procedure (Denominator) Data

1) Does your facility normally upload surgical procedure data electronically to NHSN, or is procedure data entered manually? *(choose one):*	☐ Electronic (skip to Q3) ☐ Manual ☐ Other (Comment):_____	
2) If manual, who has primary responsibility for surgical procedure data entry to NHSN? *(choose one):*	☐ IP ☐ Clerical/support staff ☐ Clerical/support staff with IP oversight ☐ Other _____	*If IP is responsible for entering denominator data and unable to fully meet other responsibilities please recommend clerical support for this task.*
3) What source(s) of information does your facility NORMALLY use to identify COLO and/or HYST procedures? *(choose all that apply):*	☐ The complete OR records/reports system ☐ Selected flagged/filtered OR records/reports ☐ CPT codes assigned by surgeons ☐ ICD-9-CM procedure codes assigned by coders after discharge ☐ Vendor system using OR records (specify) _____ ☐ Vendor system using ICD-9-CM procedure codes assigned after discharge (specify) _____ ☐ Vendor system using both OR records and ICD-9-CM procedure codes assigned after discharge (specify) _____ ☐ Other _____	*Discussion for Q 3 and 4: Medical records coder opinion is regarded as technical gold standard for identifying NHSN procedures but may be questioned if other sources are inconsistent and is often not as timely as OR systems. Presence of designated ICD-9-CM procedure code is considered a requirement of NHSN procedure.* *Planned OR schedules are often inaccurate due to inability to predict procedures. OR records systems may be imprecise (e.g., may record XLAP rather than specifying that XLAP led to COLO, APPY, or SB). OR notes may be coded inaccurately, e.g., surgeon may call procedure VHYS based on route of extraction whereas coder may classify as HYST based on route of detachment.*
4) How do you assure COLO and/or HYST procedure reporting is complete?	☐ No systematic way ☐ Extra scrutiny to XLAPs ☐ Cross-reference data sources (explain):_____ ☐ Other _____	*Cross-referencing of sources (e.g.: OR records plus ICD-9-CM procedure codes assigned after discharge) is probably the best way to assure complete denominator.* *In general, XLAPs should be scrutinized by IPs conducting surveillance for COLO and HYST.*

5) Under what circumstances do you remove COLO and/or HYST procedures from NHSN? *(choose all that apply):*	□ COLO or HYST ICD-9-CM procedure code was not assigned for the procedure □ COLO or HYST ICD-9-CM procedure code was assigned but IP believes coder assigned COLO or HYST code in error □ Incision not primarily closed in OR □ Patient did not stay overnight □ Infection was present at the time of surgery (wound class = CO or D) □ ASA score was high □ Other _____	*Although questioning of ICD-9-CM procedure codes is acceptable removal of procedures with designated ICD-9-CM procedure code is only acceptable if procedure does not meet other aspects of NHSN procedure definition. Therefore it would be appropriate to remove procedure if there is 1) no appropriate ICD-9-CM procedure code, 2) no primary closure (note: new definition of primary closure for 2013), 3) not an inpatient (no overnight stay), 4) no incision/scope. (Correct answers 1,3,4)*
6) If the OR record does not match the listed ICD-9-CM procedure codes what should you do?	_____	*For validation purposes NHSN recommends that IPs should bring coding mismatches to coders for review and should not over-ride coders' decisions.*
7) Which of the following are consistent with the definition of primary closure for 2013 (clarified as of April 1)? *(check ALL that apply*)	☐ Complete closure of skin with suture ☐ Partial closure of skin with staples ☐ Closure of skin except for wick/drain through incision ☐ Closed fascia with incision loosely closed at the skin level ☐ Closed fascia, with skin layer left open	*All but the last option are considered primary closure in 2013.*
8) Does your facility conduct NHSN analysis to look at longitudinal trends for COLO or HYST SSIs and procedures?		*This is recommended practice for facility use of NHSN data.*
9) What would you do if your procedure denominator this month was dramatically higher from one month to the next?		*Recommend: Investigate this aggregate data by exploring the data at a patient/procedure level to identify the reason.*

Numerator Data Collection Questions			
Instructions: Interview individual(s) directly responsible for identifying and reporting SSI data.		Date of Survey:	
Name/ID of individual interviewed:	Position	(*circle one*): COLO HYST Both COLO and HYST	
Numerator (Event) Data:			
10) If a patient with an SSI is admitted to your facility but the surgical procedure was performed in another hospital ("hospital A") what do you do? *(choose all that apply)*		☐ Report the SSI to NHSN ☐ Report the SSI to "hospital A" ☐ Report the SSI to the health department ☐ No external reporting Comment: _____	*Best practice is to report to "hospital A" and (if required by the state) to health department. Hospital A should report to NHSN.*
11) If you do not report the SSI to "hospital A", why not? *(choose all that apply)*		☐ HIPAA concerns ☐ Not a priority for IP program ☐ Logistically difficult (which hospital, who to contact) ☐ Not required Comments: _____	*If facility cites HIPAA concerns, consider sharing* Appendix 3, *which contains information from the Office of Civil Rights regarding permissibility of sharing SSI information with the originating facility.*
12) If you are contacted by the IP from another hospital regarding a patient with an SSI who underwent a procedure in your facility, what do you do? (*choose all that apply*)		☐ Ask the IP for help completing the NHSN report ☐ Document in your tracking records ☐ Make a note in the patient medical record ☐ Report the SSI to NHSN ☐ Ask the IP to report the SSI to NHSN ☐ No internal reporting or formal documentation Comment: _____	*The other IP can best document the depth of infection, but cannot report the event to NHSN because it has to be linked. Suggest asking the other IP to help complete the NHSN report form, include a note or a copy in the patient record, and report to NHSN.*

13) What methods are routinely and systematically used to identify possible SSI? (*Check all that apply)*	Reports/Rounds: ☐ Emergency department line lists with diagnoses ☐ Admissions line lists with diagnoses ☐ Surgical ward rounds ☐ Positive laboratory cultures from inpatients ☐ Positive laboratory cultures from ED ☐ Pharmacy reports (antibiotic starts or continuations) ☐ Other _____ Surgical service information: ☐ Inpatient returns to surgery ☐ Surgical service readmissions ADT/Medical Records Data Mining: ☐ Readmissions within one month of discharge ☐ Extended LOS ☐ Discharge diagnostic coding ☐ Other _____	
14) How does your facility conduct post-discharge surveillance for SSIs? *(check all that apply*)	□ IP does not have a formal post-discharge surveillance plan □ IP conducts patient survey by mail □ IP conducts patient survey by telephone □ IP provides line list of patients to surgeon for response □ Surgeon indicates SSIs identified at surgical follow-up □ Surgeon surveys patient by mail □ Surgeon surveys patient by telephone □ IP reviews surgical clinic / wound clinic information □ IP reviews surgical patient records 30-60 days after procedures Other/ Comment: _____	
15) During one trip to the operating room both a COLO procedure and a HYST procedure are done. A deep-incisional SSI develops. To which procedure should you attribute the SSI?	☐ COLO ☐ HYST ☐ Both ☐ Whichever is higher on the procedure hierarchy ☐ Neither	*Two answers are correct (a and d): The procedure which is higher on the 2013 procedure hierarchy (this would be COLO), because you cannot determine which procedure led to the SSI*

16) During one trip to the operating room both a COLO procedure and a HYST procedure are done. The patient later meets criteria for a GI-IAB with peritonitis (an organ-space SSI). To which procedure should you attribute the SSI?	☐ COLO ☐ HYST ☐ Both ☐ Whichever is higher on the procedure hierarchy ☐ Neither	*Two answers are correct(a and d): The procedure which is higher on the 2013 procedure hierarchy (this would be COLO) because you cannot determine which procedure led to the SSI*
17) During one trip to the operating room both a COLO procedure and a HYST procedure are done. An abscess of the vaginal cuff (organ-space SSI) develops. To which procedure should you attribute the SSI?	☐ COLO ☐ HYST ☐ Both ☐ Whichever is higher on the procedure hierarchy ☐ Neither	*The vaginal cuff is the operative site of the HYST and the hierarchy is not needed; this SSI is attributable to the HYST (answer b).*
18) During one trip to the operating room both a SB procedure and a HYST procedure are done. An abscess of the small-bowel anastomosis site (organ-space SSI) develops. To which procedure should you attribute the SSI?	☐ SB ☐ HYST ☐ Both ☐ Whichever is higher on the procedure hierarchy ☐ Neither	*The SSI is localized to the operative site of the SB and the hierarchy is not needed; this SSI is attributable to the SB (answer a). SB is higher on the hierarchy but the hierarchy is only used when attribution cannot be determined by localized infection.*

Appendix 2.5: LabID Event Surveillance Methods Survey with Key

OrgID / Name of Hospital _____ Date of Survey: _____

LabID Event Surveillance Methods Survey

Instructions: Administer this survey to the person who oversees NHSN LabID Event Reporting.

Denominator Data Collection Questions

Name of individual interviewed:	Position:	☐ FacWideIN MRSA bacteremia ☐ FacWideIN CDI	Interviewer Initials:	Date of Survey:

1) For FacWideIN reporting, denominator data are entered into NHSN once a month at the facility-wide level	☐ True ☐ False	*T*
2) For CDI reporting the denominator should include all completed CDI toxin tests	☐ True ☐ False	*F (denominator = admissions and patient days)*
3) Patient days include only admitted patients on inpatient wards; "observation" patients housed on inpatient wards are excluded	☐ True ☐ False	*F (all patients housed in inpatient locations)*
4) For CDI reporting pediatric locations should be excluded from FacWideIN reporting	☐ True ☐ False	*F (NICU and well-baby locations and babies on LDRP are excluded for CDI)*
5) For MRSA bacteremia reporting "baby locations" (NICU, newborn nursery, etc) should be excluded from the denominator	☐ True ☐ False	*F (no location exclusions for MRSA)*

Numerator Data Collection Questions

Name of individual interviewed:	Position:	☐ FacWideIN MRSA bacteremia ☐ FacWideIN CDI	Interviewer Initials:	Date of Survey:

6) For FacWideIN reporting, one monthly numerator for Events is reported at the facility-wide level	☐ True ☐ False	*F (events are reported by location)*
7) For CDI reporting the numerator should include toxin-positive CDI results conducted on formed stool specimens	☐ True ☐ False	*F (laboratories should only process and report results for unformed stools)*
8) A second event is always reported if >14 days have passed from the most recent positive MRSA bacteremia or toxin-positive CDI test result	☐ True ☐ False	*T*
9) A second event is only reported if >14 days have passed from the most recently reported labID event	☐ True ☐ False	*F (If the patient changes location, a second event is reported even within 14 days of prior event)*
10) A second event is only reported if the patient changes location OR >14 days have passed since the most recent positive MRSA bacteremia or toxin-positive CDI test in the same location	☐ True ☐ False	*T*
11) Only reportable CDI LabID Events should be entered into NHSN	☐ True ☐ False	*T*

Policy Question

12) Does your facility laboratory limit CDI testing and reporting to unformed stool specimens only or does the laboratory process all stool specimens for CDI if ordered?	☐ Unformed stool specimens only ☐ All stool specimens	*Recommended policy is to only process unformed stool specimens for CDI*

Appendix 2.6: LabID Event Facility-Wide Inpatient (FacWideIN) Denominator Validation Template

"FacWideIN" includes all patient days counted at the same time each day for all inpatient locations, including any patients located for the day in inpatient locations, whether or not the facility considers them admitted patients or observation patients, but excluding any patients located for the day in outpatient observation locations. This information is typically collected electronically. Because the task of validating electronic patient days and admissions facility-wide is daunting, denominator validation can be accomplished using manual counting of patient days and admissions in three specified location types for three months each: one ICU, one Labor/Delivery/Recovery/Post-Partum (LDRP) location (if available), and one or more inpatient wards where observation patients are frequently located. Electronic counts should be within 5% of manual counts or an evaluation of why they differ should be conducted.

MRSA Bacteremia LabID Event Denominators: Internal Validation							
Location of Validation*	Month of Validation *(specify)*	Admissions			Patient Days		
		Usual Count	5% Tolerance interval**	Manual Count	Usual Count	5% Tolerance interval**	Manual Count
	1						
	2						
	3						
	1						
	2						
	3						
	1						
	2						
	3						

*Select one ICU, one Labor/Delivery/Recovery/Post-Partum (LDRP) location if available, and one or more inpatient ward location where observation patients are frequently located and conduct manual (patient level) validation of admissions and patients days for three months, according to NHSN definitions (http://www.cdc.gov/nhsn/PDFs/pscManual/12pscMDRO_CDADcurrent.pdf, and http://www.cdc.gov/nhsn/forms/instr/57_127.pdf).
Remember that for MRSA bacteremia surveillance **both mothers and babies** are counted in LDRP locations.

**Equation for 5% tolerance interval is: Usual Count $\pm$ (Usual Count * 0.05).
Example calculations where Usual Count = 164 and Manual Count = 178:
Eligible 5% tolerance interval = [164$\pm$(164*0.05)]=155.8 to 172.2
Manual Count 178 falls outside the tolerance interval, suggesting that Usual Count is inaccurate and should be investigated.

CDI LabID Event Denominators: Internal Validation							
Location of Validation*	Month of Validation *(specify)*	Admissions			Patient Days		
		Usual Count	5% Tolerance interval**	Manual Count	Usual Count	5% Tolerance interval**	Manual Count
	1						
	2						
	3						
	1						
	2						
	3						
	1						
	2						
	3						

*Select one ICU, one Labor/Delivery/Recovery/Post-Partum (LDRP) location if available, and one or more inpatient ward location where observation patients are frequently located and conduct manual (patient level) validation of admissions and patients days for three months, according to NHSN definitions (http://www.cdc.gov/nhsn/PDFs/pscManual/12pscMDRO_CDADcurrent.pdf, and http://www.cdc.gov/nhsn/forms/instr/57_127.pdf).
Remember that for CDI surveillance**, only mothers (and not babies)** are counted in LDRP locations.

**Equation for 5% tolerance interval is: Usual Count ± (Usual Count * 0.05).
Example calculations where Usual Count = 164 and Manual Count = 178:
Eligible 5% tolerance interval = [164±(164*0.05)]=155.8 to 172.2
Manual Count 178 falls outside the tolerance interval, suggesting that Usual Count is inaccurate and should be investigated.

Appendix 3: Facility/Provider to Facility/Provider Communications under HIPAA: Questions and Answers

Note: The following document was developed by CDC scientists and lawyers in collaboration with HHS Office of Civil Rights (OCR) program and legal staff, who oversee administration of the Health Insurance Portability and Accountability Act of 1996 (HIPAA). This information may not be modified without express permission of OCR.

Facility/Provider to Facility/Provider Communications under HIPAA: Questions and Answers

Health care providers [i.e., individual clinicians and facilities (including hospitals and other health care facilities such as nursing homes and rehabilitation facilities)] are increasingly active in addressing concerns about patient safety and minimizing patients' risks of adverse healthcare events. In an era when the public, policymakers, and many health care providers seek greater transparency and accountability in healthcare, these efforts include but are not limited to new or renewed emphasis on information sharing among providers themselves about adverse events that are a consequence of a care process, care process omission, or some other risk exposure during a health care episode, such as exposure to an infectious agent.

Health care providers have raised questions as to whether the HIPAA Privacy Rule permits information sharing between individual providers and/or facilities for patient safety-related purposes. This guidance assumes that the provider seeking to share such patient information is a HIPAA covered entity. While any health care provider may be faced with these questions, they tend to arise more frequently at the facility level. The term "patient" is also used here to encompass persons residing in nursing homes or other facilities, where they are often referred to as "residents." "Source facility" or "source provider" refers to the health care facility or individual provider that first cared for the patient. Protected health information ("PHI") is individually identifiable health information, such as information that identifies (or can be used to identify) a patient.

Question One

Does HIPAA permit a health care facility to share PHI with the source facility where a patient was previously treated or where a patient previously resided, without the patient's authorization, for purposes of providing notification of an infection with potential infection control implications at the source facility?

In these scenarios a resident of a nursing home is admitted into a hospital, certain medical conditions are diagnosed, and the hospital wants to disclose this health information back to the nursing home.

- A practitioner at the hospital diagnoses a patient's tuberculosis and wants to inform the nursing home so that the staff there can quarantine the coughing roommate of the index case.
- The patient is admitted with sepsis and later dies in the hospital. Blood cultures drawn at admission grow group A streptococcus. The hospital seeks to disclose that this patient was diagnosed with invasive group A streptococcal infection (which causes serious outbreaks in nursing homes) to the nursing home for infection control purposes, even though the patient will not be returning.

- The hospital diagnoses the patient with influenza early in the flu season and wants to disclose this diagnosis to the nursing home for infection control purposes.

In each scenario the hospital will want to disclose the name of the patient so the nursing home can verify that this patient had been a resident in their home and the date and location of service.

Answer One

The HIPAA Privacy Rule permits a covered health care provider to *use or disclose* PHI for treatment purposes without the authorization of the patient. (Generally, disclosures of psychotherapy notes require written patient authorization, but these notes do not appear relevant here.) 45 CFR 164.506(c) and 164.508(a)(2). "Treatment" is defined to include the provision, coordination, or management of "health care" and related services. 45 CFR 164.501. "Health care" is defined to include preventive care. 45 CFR 160.103. Treatment refers to activities undertaken on behalf of individual patients. While in most cases, the information regarding an individual is needed for the treatment of that individual, the HIPAA Privacy Rule also allows the information regarding one individual (e.g., a patient) to be used or disclosed for the treatment or preventive care (e.g., vaccinations or quarantine) of other persons (e.g., patients at risk).

In these scenarios, the patient (and former nursing home resident) has or had a medical condition while at the nursing home that may directly impact the health of certain or all residents at that facility. In some cases, the nursing home did not know of this condition, or the condition had not manifested itself at the time the patient was at the nursing home. The hospital may disclose PHI of the patient (and former nursing home resident) to the nursing home for treatment purposes involving other residents.

A distinction is made between *use* and *disclosure* of PHI for treatment purposes with regard to the "minimum necessary" requirement. The "minimum necessary" requirement does not apply to *disclosures* of PHI for treatment purposes, and the disclosures discussed above are treatment disclosures that are permitted under the HIPAA Privacy Rule.

After PHI is disclosed to the nursing home, the information may be *used* for the provision of treatment to the nursing home residents. For example, preventive measures, such as cohorting, isolation, or prophylaxis of specific patients who may be at risk at the nursing home, are considered treatment under the Privacy Rule. The *uses* of PHI by the nursing home for treatment purposes in the above scenarios *are* subject to the Privacy Rule's "minimum necessary" requirement, and the nursing home's minimum necessary policies. A nursing home, as a covered entity, must identify those persons or classes of persons in its workforce who need access to PHI, and for each such person or classes of person, the category or categories of PHI to which access is needed, and any conditions appropriate to such access. 45 CFR 164.514(d)(2). For more information on the "minimum necessary" requirement, see: http://www.hhs.gov/ocr/privacy/hipaa/faq/minimum_necessary/207.html.

Question Two

Under HIPAA, is a health care facility permitted to share PHI with another health care facility that previously treated or housed a patient, without that patient's authorization, for purposes of notifying

this source facility of a potential complication of care related to the health care provided at the source facility so as to monitor and improve care and prevent future complications?

- A hospital identifies a surgical site infection (SSI) that is probably attributable to an ambulatory surgical care facility and/or surgeon that performed the surgery within the past 12 months. The hospital seeks to notify the ambulatory surgical care facility about the SSI, or in a given situation, notify the surgeon directly.
- A patient is admitted to Hospital B with a surgical site infection (SSI) after an operation at another hospital (Hospital A), where the patient had been operated on and then discharged without signs or symptoms of infection. Because of federal requirements (e.g., the Centers for Medicare and Medicaid Services' Inpatient Quality Reporting program requirements) or state law or policy, both hospitals are committed to reporting all SSIs following the type of operation performed on the patient. Hospital B seeks to report the SSI to Hospital A, where the SSI is presumed to have originated, so that Hospital A can fully account for SSIs attributable to its care.

Answer Two

The HIPAA Privacy Rule permits a covered entity to use or disclose PHI for certain "health care operations" purposes without the authorization of the patient. 45 CFR 164.506(c). This includes a covered entity disclosing PHI to another covered entity for certain purposes if each entity either has or had a relationship with the individual who is the subject of the information, and the PHI being disclosed pertains to the relationship. 45 CFR 164.506(c)(4). Of relevance here, disclosures are permitted for the purpose of the covered entity receiving the information "conducting quality assessment and improvement activities; . . . population-based activities relating to improving health [and] protocol development." 45 CFR 164.501 (definition of "health care operations"). Only the minimum amount of PHI necessary for the particular health care operations purpose may be disclosed.

The disclosures discussed above are health care operations disclosures that are permitted under the HIPAA Privacy Rule. In these scenarios we assume that the hospitals sharing the PHI, the ambulatory surgical care facility, and the surgeon are all HIPAA covered entities. The hospitals disclosing the PHI would be sharing information regarding a patient who the surgical facilities (either the ambulatory care facility or the hospital) and/or surgeon had treated, and the communication is in regard to the treatment that had been provided. The disclosures are so that the surgical facilities and/or surgeon can monitor and improve the quality of care provided. This falls under "conducting quality assessment and improvement activities," and perhaps "population-based activities relating to improving health," and/or "protocol development." In these scenarios, information regarding the patient with an SSI can be shared with the surgical facilities and/or surgeon. While only the minimum amount of information regarding the patient may be disclosed, in these scenarios the identity of the patient may be shared because it is needed to investigate the cause of the infections (e.g., the dates and locations of care, and the staff involved.) There is likely to be no need to share health information regarding these patients that is unrelated to investigating the SSI.

For additional information regarding disclosures for treatment and healthcare operations purposes, see:
http://www.hhs.gov/ocr/privacy/hipaa/understanding/coveredentities/usesanddisclosuresfortpo.html