Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events

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Introduction

Catheter-associated urinary tract infections (CAUTIs) remain a significant concern in acute care hospitals and continue to represent a major source of preventable harm. In 2023, acute care hospitals reported more than 17,000 CAUTI events occurring over 23 million urinary catheter device-days[1]. Virtually all healthcare-associated UTIs are caused by instrumentation of the urinary tract.

Approximately 12%-16% of adult hospital inpatients will have an indwelling urinary catheter (IUC) at some time during their hospitalization, and each day the indwelling urinary catheter remains, a patient has a 3%-7% increased risk of acquiring a catheter-associated urinary tract infection (CAUTI).[2-3]

CAUTIs can lead to such complications as prostatitis, epididymitis, and orchitis, cystitis, pyelonephritis, gram-negative bacteremia, endocarditis, vertebral osteomyelitis, septic arthritis, endophthalmitis, and meningitis in patients. Complications associated with CAUTIs cause discomfort to the patient, prolonged hospital stays, and increased costs and mortality.[4] It has been estimated that each year, more than 13,000 deaths are associated with UTIs.[5]

Prevention of CAUTIs is discussed in the CDC/HICPAC document, *Guideline for Prevention of Catheter-associated Urinary Tract Infection*.[6]

Settings: CAUTI surveillance may occur in any inpatient location(s) where denominator data can be collected, such as critical intensive care units (ICU), specialty care areas (SCA), step-down units, wards, inpatient rehabilitation locations, and long-term acute care locations. Neonatal ICUs may participate, but only off plan (not as a part of their monthly reporting plan). A complete listing of inpatient locations and instructions for mapping are located in the CDC Locations and Descriptions chapter.

- **Note:** Post-discharge surveillance for CAUTI is not required. However, if a post-discharge CAUTI is discovered, any CAUTI with a date of event (DOE) on the day of discharge or the next day is attributable to the discharging location and should be included in any CAUTI reported to NHSN for that location (see Transfer Rule Chapter 2). No additional indwelling urinary catheter (IUC) days are reported.

Refer to the NHSN Patient Safety Manual, Chapter *2 Identifying Healthcare Associated Infections in NHSN* and Chapter 16 *NHSN Key Terms* for definitions of the following universal concepts for conducting HAI surveillance.

I. Date of event (DOE)
II. Healthcare associated infection (HAI)
III. Infection window period (IWP)
IV. Present on admission (POA)
V. Repeat infection timeframe (RIT)
VI. Secondary BSI attribution period (SBAP)
VII. Location of Attribution (LOA)
VIII. Transfer rule

Definitions

Urinary Tract Infections (UTIs): For NHSN reporting, UTIs are defined by Symptomatic Urinary Tract Infection (SUTI) and Asymptomatic Bacteremic UTI (ABUTI) criteria (see Table 1).

- **Note**: UTI is a primary site of infection; it is **never** considered secondary to another site of infection.

Indwelling Urinary Catheter (IUC): A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a drainage bag (including leg bags). IUCs are often called Foley catheters. IUCs used for intermittent or continuous irrigation are also included in CAUTI surveillance. Urinary devices not meeting the IUC definition may include but are not limited to condom, straight in-and-out catheters, nephrostomy tubes, ileoconduits, or suprapubic catheters. If these devices are present in addition to an IUC, the patient remains eligible for a CAUTI.

Catheter-associated UTI (CAUTI): A UTI where an indwelling urinary catheter (IUC) was in place for more than two consecutive days in an inpatient location on the date of event or the day before, with day of device placement being Day 1*. If an IUC was in place for more than two consecutive days in an inpatient location and then removed, the date of event for the UTI must be the day of device discontinuation or the next day for the UTI to be catheter-associated.

> *If the IUC was in place prior to inpatient admission, the catheter day count that determines catheter-association begins with the admission date to the first inpatient location allowing for consistency with device denominator count collection (see Table 2 Denominator Data Collection Methods).

Spinal Cord Injury-associated Neurogenic Bladder (SCI-NB): For NHSN reporting, neurogenic bladder is a condition in which there is dysfunction or damage to the nerves that control the bladder as a result of a spinal cord injury. To answer "Yes" to the 'Neurogenic bladder' field within the NHSN application you must enter:

- One ICD-10-CM diagnosis code that indicates a diagnosis of spinal cord injury (SCI)
  AND
- One ICD-10-CM diagnosis code that indicates a diagnosis of neurogenic bladder (NB)

In tandem, these diagnostic codes define SCI-NB for NHSN surveillance purposes. For a complete list of eligible ICD-10-CM codes please visit the Urinary Tract Infection (UTI) Events section of the NHSN website under "Supporting Materials".

Identifying a CAUTI

NHSN surveillance is aimed at identifying risk to the patient that is the result of indwelling urinary catheter use. IUC device days are counted by calendar day, not to be mistaken as 24-hours. If an IUC is present for any part of a calendar day, it will count as a device day even if it was removed and a new one was inserted. The device day count is only interrupted and starts anew if a full calendar day passes with no IUC present.

Example

Two patients, A and B, are in an inpatient unit and had indwelling urinary catheters (IUCs) inserted on the same day. Later, on Hospital Day 4, both patients had their IUCs removed. The device utilization for Patients A and B varied for the remainder of their admissions (see Figure 1 below).

Figure 1. Indwelling Urinary Catheter Utilization Timeline, CAUTI Eligibility

	March 29th	March 30th	March 31st	April 1st	April 2nd	April 3rd	April 4th	April 5th
Patient A	IUC Inserted (Day 1)	IUC (Day 2)	IUC (Day 3)	IUC Removed (Day 4)	IUC Inserted (Day 5)	IUC Inserted (Day 6)	IUC Removed (Day 7)	No IUC
Patient B	IUC Inserted (Day 1)	IUC (Day 2)	IUC (Day 3)	IUC Removed (Day 4)	No IUC	IUC Inserted (Day 1)	IUC (Day 2)	IUC (Day 3)

- **Rationale (*Patient A*):** A UTI with a date of event on or between March 31st and April 5th, would be a CAUTI since the patient had an IUC in place for greater than two consecutive days. Please note, a UTI with a date of event on April 5th does qualify as a CAUTI, even though the IUC was removed the day prior (see Table 1).

- **Rationale (*Patient B*):** A UTI with a date of event on or between March 31st and April 2nd, would be a CAUTI since the patient had an IUC in place for greater than two consecutive days. A UTI with a date of event on April 2nd does qualify as a CAUTI, even though the IUC was removed the day prior (see Table 1). Additionally, Patient B becomes eligible again for a CAUTI on April 5th.

Example

A patient in an inpatient unit has an indwelling urinary catheter (IUC) inserted, and the following day is found to be the UTI date of event (see Figure 2 below).

Figure 2. Indwelling Urinary Catheter Utilization Timeline, Non-CAUTI Eligibility

January 22nd	January 23rd	January 24th	January 25th
IUC Inserted (Day 1)	IUC **Date of Event** (Day 2)	IUC (Day 3)	IUC (Day 4)

- **Rationale**: The IUC on the date of event has not been in place for more than two consecutive days in an inpatient location, therefore this UTI event is not catheter-associated (see Table 1).

Note: The examples above were created to depict various catheter-association scenarios. Please refer to Chapter 2 Identifying HAIs in NHSN when making a present on admission (POA) or healthcare-associated infection (HAI) determination.

Table 1. Urinary Tract Infection Criteria

Note: All elements of the UTI criterion must occur during the IWP (see IWP Definition Chapter 2 Identifying HAIs in NHSN).

Criterion	Urinary Tract Infection
	Symptomatic UTI (SUTI) Must meet at least ***one*** of the following criteria:
SUTI 1a **Catheter-associated Urinary Tract Infection (CAUTI) in any age patient**	Patient must meet 1, 2, and 3 below: 1. Patient had an indwelling urinary catheter that had been in place for more than 2 consecutive days in an inpatient location on the date of event AND was either: • Present for any portion of the calendar day on the date of event†, **OR** • Removed the day before the date of event‡ 2. Patient has at least ***one*** of the following signs or symptoms: • fever (>38.0°C) • suprapubic tenderness* • costovertebral angle pain or tenderness* • urinary urgency^ • urinary frequency^ • dysuria^ 3. Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of ≥100,000 CFU/ml (see Comments below). † When entering event into NHSN choose "INPLACE" for Risk Factor for IUC ‡ When entering event into NHSN choose "REMOVE" for Risk Factor for IUC * With no other recognized cause ^ These symptoms cannot be used when an indwelling urinary catheter (IUC) is in place. An IUC in place could cause patient complaints of "frequency," "urgency," or "dysuria".

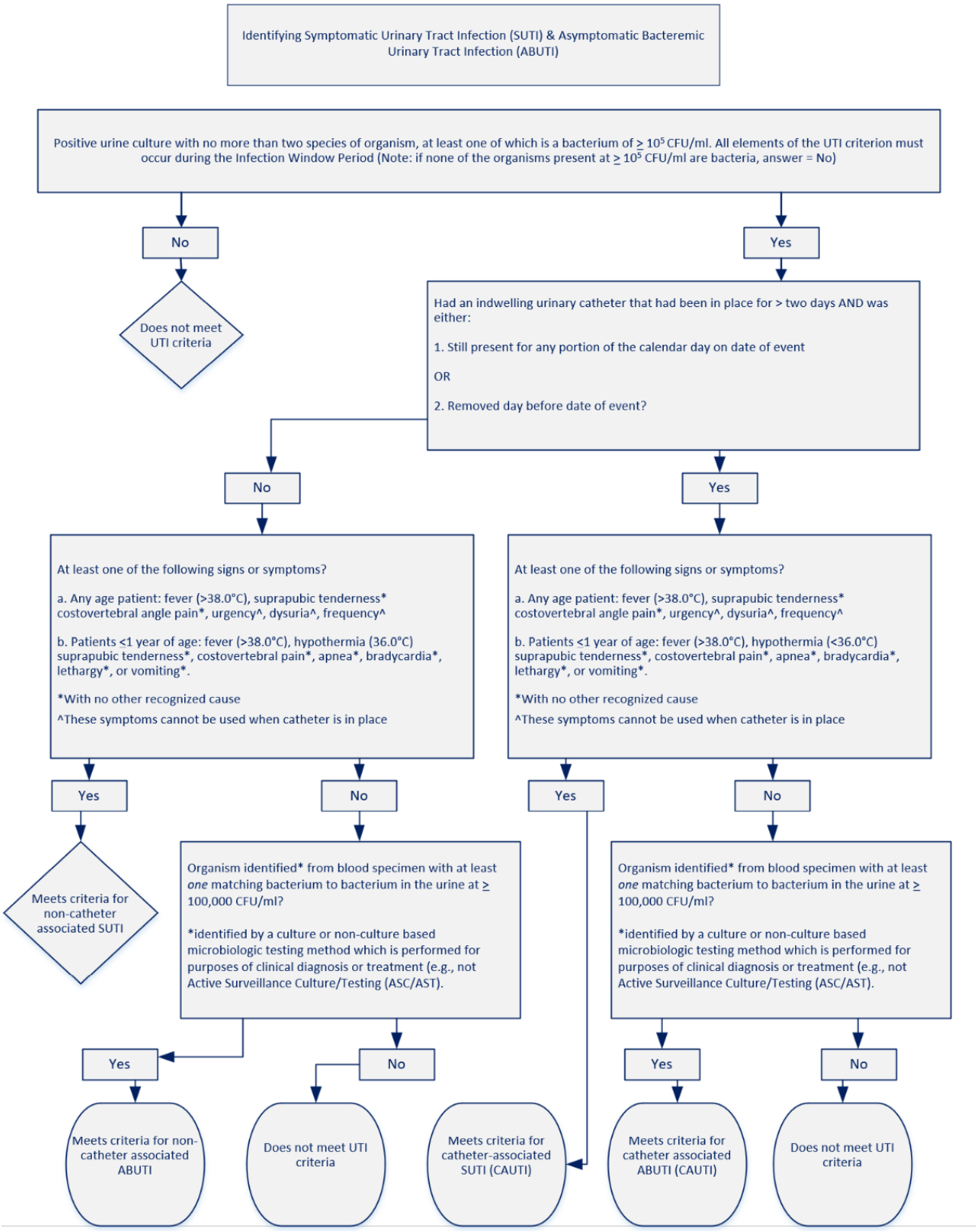
Criterion	Urinary Tract Infection (UTI)
SUTI 1b **Non-Catheter-associated Urinary Tract Infection (Non-CAUTI) in any age patient**	Patient must meet 1, 2, and 3 below: 1. One of the following is true: • Patient has/had an indwelling urinary catheter, but it has/had not been in place for more than two consecutive days in an inpatient location on the date of event† **OR** • Patient did not have an indwelling urinary catheter in place on the date of event nor the day before the date of event † 2. Patient has at least ***one*** of the following signs or symptoms: • fever (>38°C) • suprapubic tenderness* • costovertebral angle pain or tenderness* • urinary frequency^ • urinary urgency^ • dysuria^ 3. Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of ≥100,000 CFU/ml (see Comments below). † When entering event into NHSN choose "NEITHER" for Risk Factor for IUC ***** With no other recognized cause ^These symptoms cannot be used when an indwelling urinary catheter (IUC) is in place. An IUC in place could cause patient complaints of "frequency," "urgency," or "dysuria".

Criterion	Urinary Tract Infection (UTI)
SUTI 2 **CAUTI or Non-CAUTI in patients 1 year of age or less**	Patient must meet 1, 2, and 3 below: 1. Patient is ≤ 1 year of age (with‡ or without an indwelling urinary catheter) 2. Patient has at least ***one*** of the following signs or symptoms: • fever (>38.0°C) • hypothermia (<36.0°C) • apnea* • bradycardia* • lethargy* • vomiting* • suprapubic tenderness*^ 3. Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of ≥100,000 CFU/ml (see Comments below). ‡ If patient had an indwelling urinary catheter (IUC) in place for more than two consecutive days in an inpatient location and the IUC was in place on the date of event or the previous day, the CAUTI criterion is met. If no such IUC was in place, UTI (non-catheter associated) criterion is met. *With no other recognized cause
Comments	Mixed flora cannot be reported as a pathogen for a UTI event. Additionally, "mixed flora" represents at least two species of organisms and cannot be used to meet the NHSN UTI criteria. Any additional organisms recovered from the same culture would be in addition to the mixed flora, meaning there are at least three organisms present making the culture ineligible for use to meet NHSN UTI criteria. The following excluded organisms cannot be used to meet the UTI definition: • Any yeast or yeast species yeast • mold • dimorphic fungi or • parasites

	An acceptable urine specimen may include the above organisms if no more than one bacterium with ≥100,000 CFU/ml is also present. Additionally, these non-bacterial organisms identified from a blood culture cannot be deemed secondary to a UTI since the above non-bacterial organisms are excluded as organisms in the UTI definition. ➢ Suprapubic tenderness documentation - whether elicited by palpation (tenderness-sign) or provided as a subjective complaint of suprapubic pain (pain-symptom) - found in the medical record is acceptable to meet SUTI criterion if documented in the medical record during the Infection Window Period. ➢ Lower abdominal pain or bladder or pelvic discomfort are examples of symptoms that can be used as suprapubic tenderness. Generalized “abdominal pain” in the medical record is too general and not to be interpreted as suprapubic tenderness as there are many causes of abdominal pain. ➢ Lower back pain (left, right, or bilateral) or flank pain (left, right, or bilateral) are examples of symptoms that can be used as costovertebral angle pain or tenderness. Generalized "low back pain" is not to be interpreted as costovertebral angle pain or tenderness. ➢ Fever and hypothermia are non-specific symptoms of infection and cannot be excluded from UTI determination because they are clinically deemed due to another recognized cause.

Criterion	Urinary Tract Infection (UTI)
Asymptomatic Bacteremic Urinary Tract Infection (ABUTI) (Any age patient)	
	Patient must meet 1, 2, and 3 below: 1. Patient with* or without an indwelling urinary catheter has no signs or symptoms of SUTI 1 or 2 regardless of age. 2. Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of ≥100,000 CFU/ml (see Comments below). 3. Patient has recognized pathogen(s) identified** from blood specimen with at least ***one*** matching bacterium to the ≥100,000 CFU/ml bacterium identified in the urine specimen **OR** Patient is eligible to meet LCBI 2 with chills or hypotension (not fever) and common commensal(s) in the blood and urine specimens match. *Patient had an IUC in place for more than two consecutive days in an inpatient location on the date of event, and an IUC was in place on the date of event or the day before. ** Organisms identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST)). **Note**: Catheter-associated ABUTIs are reportable if CAUTI is in the facility's reporting plan for the location.
Comments	Mixed flora cannot be reported as a pathogen for a UTI event. Additionally, "mixed flora" represents at least two species of organisms and cannot be used to meet the NHSN UTI criteria. Any additional organisms recovered from the same culture would be in addition to the mixed flora, meaning there are at least three organisms present making the culture ineligible for use to meet NHSN UTI criteria. Additionally, the following excluded organisms cannot be used to meet the UTI definition: • Any yeast or yeast species • mold • dimorphic fungi or • parasites An acceptable urine specimen may include these excluded organisms if no more than one bacterium with ≥100,000 CFU/ml is also present. Additionally, these non-bacterial organisms identified from blood cannot be deemed secondary to a UTI since they are excluded as organisms in the UTI definition.

Figure 3. Identifying SUTI and ABUTI Flowchart



Monthly Summary Data

Numerator Data: The *Urinary Tract Infection (UTI)* form (CDC 57.114) is used to collect and report each CAUTI that is identified during the month selected for surveillance. The Instructions for Completion of Urinary Tract Infection form include brief instructions for collection and entry of each data element on the form. The UTI form includes patient demographic information and information on whether an indwelling urinary catheter was present. Additional data include the specific criteria met for identifying the UTI, whether the patient developed a secondary bloodstream infection, whether the patient died, and the organisms isolated from cultures and their antimicrobial susceptibilities.

Reporting Instructions:
If no CAUTIs are identified during the month of surveillance, the "Report No Events" box must be checked on the appropriate denominator summary screen, (for example, *Denominators for Intensive Care Unit (ICU)/Other Locations (Not NICU or SCA/ONC)*.

Denominator Data: Device days and patient days are used for denominators (see Key Terms chapter).The method of collecting device-day denominator data may differ depending on the location of patients being monitored. The following methods may be used:

Table 2: Denominator Data Collection Methods

Denominator Data Collection Method	Details
Manual, Daily (specifically, collected at the same time **every day** of the month)	Denominator data (patient days and device days) should be collected at the same time, every day, for each location performing surveillance to ensure that differing collection methods don't inadvertently result in device days being greater than patient days. The Instructions for Completion of Denominators for Intensive Care Unit (ICU)/Other Locations (Not NICU and SCA/ONC) and Instructions for Completion of Denominators for Specialty Care Areas (SCA)/Oncology (ONC) contain brief instructions for collection and entry of each data element on the form. Indwelling urinary catheter days, which are the number of patients with an indwelling urinary catheter device, are collected daily, at the same time each day, according to the chosen location using the appropriate form (CDC 57.117 and 57.118). These daily counts are summed and only the total for the month is entered into NHSN. Indwelling urinary catheter days and patient days are collected separately for each of the locations monitored.

Denominator Data Collection Method	Details
Manual, sampled once/week (collected at the same time on the same designated day, **once per week**)	To maximize staff resources on time spent collecting surveillance data, once/week sampling of denominator data to generate estimated urinary catheter days may be used as an alternative to daily collection in non-oncology ICUs and wards (see Notes below). Sampling may not be used in SCA/ONC locations or NICUs. During the month, the number of patients in the location (patient-days) and the number of patients with an indwelling urinary catheter (urinary catheter-days) is collected on a designated day each week (for example, every Tuesday), at the same time each day. Evaluations of this method have repeatedly shown that collecting weekly denominator data on Saturday or Sunday generates the least accurate estimates of denominator data, therefore, Saturday and Sunday should not be selected.[7-9] If the designated sampling collection day is missed, collect the data the next available day instead. The following must be collected and entered NHSN: 1. The monthly total for patient-days, collected daily 2. The sampled total patient-days 3. The sampled total urinary catheter-days When these data are entered, the NHSN application will calculate an estimate of urinary catheter-days. **Notes:** • To ensure the accuracy of estimated denominator data obtained by sampling, only ICUs and ward locations with an average of 75 or more urinary catheter-days per month are eligible to use the sampling method. A review of each location's urinary catheter denominator data for the past 12 months in NHSN will help determine which locations are eligible to use the sampling method. • The accuracy of estimated denominator data generated by sampling can be heavily influenced by incorrect or missing data. Using the guidance in this protocol is essential to avoid erroneous fluctuations in rates or Standardized Infection Ratios (SIRs) when implementing data collection by sampling.

Denominator Data Collection Method	Details
Electronic	For ***any*** location, denominator data from electronic sources (for example, urinary catheter days from electronic charting), may be used after validation of a minimum of three consecutive months proves the electronic data to be within 5% (+/-) of the manually-collected, once a day counts. Perform the validation of electronic counts separately for each location conducting CAUTI surveillance. When converting from one electronic counting system to another electronic counting system, the new electronic system should be validated against manual counts as above. If electronic counts for the new electronic system are 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 consecutive months. **Note:** This guideline is important because validating a new electronic counting system against an existing electronic system can magnify errors and result in inaccurate denominator counts. • Perform the validation of electronic counts separately for each location conducting CAUTI surveillance.

Data Analyses

All CAUTI data entered into NHSN can be analyzed at event (for example, CAUTI event) or summary level (for example, location or facility level). You can visualize both with descriptive reports (line lists, frequency tables, bar/pie charts, rate tables, and run charts) and with risk-adjusted summary metrics (SIR, SUR).

Before running reports in NHSN, generate data sets. This process freezes your NHSN data at a point in time and copies those data into defined data sets. When you want updates reflected in NHSN reports, regenerate data sets.

Types of CAUTI Analysis Reports

Standardized Infection Ratio (SIR)

The Standardized Infection Ratio (SIR) is a summary metric used to track HAI incidence over time at a national, state, or local level. The SIR adjusts for various facility and/or patient-level factors that contribute to HAI risk within each facility. In HAI data analysis, the SIR compares the observed (numerator) number of HAIs to the number predicted (denominator), given the standard population (i.e., NHSN baseline), adjusting for several risk factors that have been found to be significantly associated with differences in infection incidence. The number of predicted CAUTI events is calculated using negative binomial regression (2015 or 2022 NHSN baselines) to estimate expected counts from facility denominator (i.e., urinary catheter days) and risk-factor data.

For more information on the SIR, exclusion factors and the CAUTI parameter estimates, refer to the appropriate SIR guide:

- 2015 Baseline: https: //www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf
- 2022 Baseline: https://www.cdc.gov/nhsn/2022rebaseline/sir-guide.pdf

The SIR is calculated by dividing the number of observed infections by the number of predicted infections.

$$\text{SIR} = \frac{Observed\ (O) HAIs}{Predicted\ (P) HAIs}$$

A SIR greater than 1.0 indicates that more HAIs were observed than predicted; conversely, a SIR less than 1.0 indicates that fewer HAIs were observed than predicted.

Note: In order to enforce a minimum precision criterion, SIRs are only calculated when the number of predicted infections is at least 1.0. This rule was instituted to avoid the calculation and interpretation of statistically imprecise SIRs, which typically have extreme values.

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

For more information on using the CAUTI SIR reports, please see the troubleshooting guide: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/clabsicauti_sirtroubleshooting.pdf.

For further information regarding the p-value and 95% confidence interval, please see the guide below: https://www.cdc.gov/nhsn/ps-analysis-resources/keys-to-success.html

Standardized Utilization Ratio (SUR)

The SUR, or Standardized Utilization Ratio is a summary metric used to track device use at a national, state, local, or facility level over time. The SUR adjusts for various facility and/or location-level factors that contribute to device use. The method of calculating an SUR is similar to the method used to calculate the Standardized Infection Ratio (SIR), a summary metric used in NHSN to track HAIs in device-associated HAI data analysis. The SUR compares the observed (numerator) number of device days reported to what would be predicted (denominator), given the standard population (specifically, the NHSN baseline), adjusting for factors that have been found to be significantly associated with differences in device utilization.

More information regarding the CAUTI 2015 and 2022 baseline SUR model and the parameter estimates, refer to:

- https://www.cdc.gov/nhsn/2015rebaseline/index.html
- https://www.cdc.gov/nhsn/2022rebaseline/analysis-resources.html

The SUR is calculated by dividing the number of observed indwelling-urinary catheter (IUC) days by the number of predicted IUC days.

$$\text{SUR} = \frac{Observed\ (O)\ Catheter\ Days}{Predicted\ (P)\ Catheter\ Days}$$

A SUR greater than 1.0 indicates that more device days were observed than predicted; conversely, a SUR less than 1.0 indicates that fewer device days were observed than predicted.

> Note: In order to enforce a minimum precision criterion, SURs are only calculated when the number of predicted device-days is at least 1.0.

Rates and Ratios

The CAUTI rate per 1000 urinary catheter days is calculated by dividing the number of CAUTIs by the number of catheter days and multiplying the result by 1000.

$$\text{CAUTI Rate per 1000 IUC Days} = \frac{No.\ of\ CAUTI\ Events}{No.\ of\ IUC\ Days} \cdot 1000$$

Device Utilization Ratio (DUR)

The Urinary Catheter Utilization Ratio is calculated by dividing the number of urinary catheter days by the number of patient days.

$$\text{DUR} = \frac{No.\ of\ Urinary\ Catheter\ Days}{No.\ of\ Patient\ Days}$$

These calculations will be performed separately for the different types of ICUs, specialty care areas, and other locations in the institution, except for neonatal locations. DURs are useful for the purposes of tracking device use over shorter periods of time and for internal trend analyses.

Descriptive Analysis

Descriptive analysis output options of numerator and denominator data, such as line listings, frequency tables, and bar and pie charts are available in the NHSN application. SIRs, SURs and CAUTI rates and run charts are also available. Guides on using NHSN analysis features are available at: www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html.

NHSN Group Analysis

NHSN Group Users can perform the same analysis as facility level users in NHSN. A few helpful tools in NHSN for groups are listed in the resources below. These tools are guides on how to start and join a Group; how to create a template to request data from facilities; how to determine the level of access granted by the facility following the previous steps, and how to analyze the facilities data.

Group Analysis Resources

- NHSN Group Users Page:
  - https://www.cdc.gov/nhsn/group-users/index.html
- Group User's Guide to the Membership Rights Report:
  - https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/GroupAnalysisWebinar.pdf
- Group User's Guide to the Line Listing- Participation Alerts: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/group-alerts.pdf

Data Quality Resources

- Data Quality Website: https://www.cdc.gov/nhsn/ps-analysis-resources/data-quality/index.html
- Data Quality Manual: https://www.cdc.gov/nhsn/pdfs/pscmanual/Instructions_DQ.pdf
- Data Quality Training: https://www.cdc.gov/nhsn/training/analysis/index.html

Additional Resources

- Analysis Resources:
  - https://www.cdc.gov/nhsn/ps-analysis-resources/index.html
- Analysis Reference Guides:
  - https://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html
- NHSN Training:
  - https://www.cdc.gov/nhsn/training/index.html
- Data Quality Website:
  - https://www.cdc.gov/nhsn/ps-analysis-resources/data-quality/index.html

Table 3. CAUTI Measures Available in NHSN

Measure	Calculation	Application
CAUTI SIR	$\frac{Observed\ (O) HAIs}{\Pr e\ dicted\ (P)\ HAIs}$	Both location specific and summarized measure
CAUTI Rates*	$\frac{No.\ of\ CAUTIs}{No.\ IUC\ Days} \cdot 1000$	Location specific measure only
Indwelling Urinary Catheter (IUC) SUR*	$\frac{Observed\ (O)\ IUC\ Days}{\Pr e\ dicted\ (P)\ IUC\ Days}$	Both location specific and summarized measure
DUR	$\frac{No.\ of\ IUC\ Days}{No.\ of\ Patient\ Days}$	Location specific measure only

*Rates do not account for factors that could contribute to differences in risk of CAUTI/device use between facilities and locations. Therefore, comparing rates should be used with caution.

References

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[9]See, I., et al. ID Week 2012 (Abstract #1284): Evaluation of Sampling Denominator Data to Estimate Urinary Catheter and Ventilator Days for the NHSN. San Diego, California. October 19, 2012.