

## OPERATIONAL DEFINITION

### MEASUREMENT: Catheter Associated Urinary Tract Infections (CAUTI)

#### I. Description and Rationale

This measure answers the question: How often are patients harmed by the occurrence of a catheter associated urinary tract infections?

The [current version](#) of the National Healthcare Safety Network (NHSN) Manual: Patient Safety Component Protocol will serve as the official reference guide for rules around defining/reporting catheter associated urinary tract infections.

#### II. Population Definition

The patient population for this measure is defined per the patient population operational definition. Inpatient and observational stay patients will be included in the measure.

##### **Inclusion criteria**

All patients admitted to an inpatient unit are included who are defined as inpatient or under observation at the hospital with an indwelling urinary catheter.

##### **Exclusion criteria**

[Ambulatory patients](#), Observation patients admitted to observation units, and patients admitted to neonatal intensive care units will be excluded.

#### III. Data Source(s)

Each hospital will report data using their own collection methods until specific high detection methods are prescribed by the network.

#### IV. Sampling and Data Collection Plan

CAUTIs are assigned to the month when the infection occurred.

#### V. Calculation

##### **CAUTI Events per Catheter Day**

**Numerator:** Number of CAUTI infections, as defined by CDC guidelines.

**Denominator:** Total number of indwelling urinary catheter days during the time period.

**Number of catheter associated urinary tract infections per 1000 urinary catheter days (Numerator/Denominator) x 1000**

**Catheter Days per Patient Days (Utilization)**

**Numerator:** Number of catheter days.

**Denominator:** Total number of patient days (excluding NICU)

**Number of catheter per 1000 patient days (Numerator/Denominator) x 1000**

The catheter days per patient days (utilization) metric is not required in the SPS data webform.

**VI. Data Quality Audit Procedures**

Hospitals should develop their own procedures for auditing data quality until quality auditing procedures are suggested by the network.

**VII. Notes**

N/A

**VIII. Experts/Resources**

[www.cdc.gov/nhsn](http://www.cdc.gov/nhsn)

<http://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf>

[Urinary Tract Infection \(cdc.gov\)](http://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf)

**IX. Attachments**

N/A

**X. Revision History**

Version	Primary Author(s)	Description of Version	Date Completed
V1	Karen Zieker	Initial Draft	30-Mar-2012
V2	Sharyl Wooton	Addition of catheter rate calculation, and further inclusion/exclusion criteria	02-July-2012
V3	Karen Zieker	Added the year (2015) after the current version of NHSN in section 1.	25-Mar-2015
V4	Matt Short	Added the year (2016) after the current version of NHSN in section 1.	11 – Jul - 2016
V5	Trey Coffey, Katie Nowacki, CAUTI leaders	Revised to align to current NHSN CAUTI surveillance definition and language	16-May - 2022

# SPS PREVENTION BUNDLE

## Catheter – Associated Urinary Tract Infections (CAUTI)

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## I. Background & Team

CAUTI (Catheter – Associated Urinary Tract Infections) is the 6th largest contributor to harm caused across the SPS network. In 2011, approximately 19 children were harmed each month as a result of CAUTI across the Phase I SPS hospitals (n=33). The CAUTI team formed in May of 2012 to develop strategies consistent with high reliability concepts to reduce harm caused by CAUTI, and released the first recommended bundle to the network. In 2013, Phase II hospitals (n=55) joined the network and the number of children harmed per month increased to 38.

The network strategy has been successful with a 25% CAUTI reduction across the network as of May 2014. Using data obtained from the SPS network as well as external evidence in the medical literature, the CAUTI team has identified those bundle elements within the first recommended CAUTI bundle that when reliably implemented are highly likely to result in decreased harm to hospitalized children.

As a result, SPS is stratifying bundle elements based on their level of evidence to assist hospitals in prioritizing their efforts at designing and implementing evidence-based bundles for CAUTI and the other aviator HACs:

- *Standard Element:* Strong evidence suggests that implementation of this element is associated with significant decrease in patient harm; **all SPS hospitals should implement and measure reliability of this element.**
- *Recommended Element:* Preliminary data and clinical expert opinion support the implementation of this element; **SPS hospitals should strongly consider implementing this element.**

### CAUTI Co-Leaders

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## II. Prevention Bundle Elements – Overview

### Insertion

#### SPS Standard Elements

- Use aseptic technique for insertion
- Avoid unnecessary catheterization

#### SPS Recommended Elements

- Not applicable

### Maintenance

#### SPS Standard Elements

- Maintain a closed drainage system
- Maintain hygiene
- Keep bag below level of bladder
- Maintain Unobstructed flow
- Remove catheter when no longer needed

#### SPS Recommended Elements

- Secure catheter

## III. Prevention Bundle Elements – Evidence Reviewed

Prevention Bundle Element - Insertion	Level of Evidence CDC*/SPS**	Evidence Cited (Numbers refer to Reference Section)
<b>Standard Elements</b>		
Use aseptic technique for insertion	*IB/**Scenario 4	2, 3, 4
Avoid unnecessary catheterization	*IB/**Scenario 4	2, 3, 4

Prevention Bundle Element - Maintenance	Level of Evidence SPS**	Evidence Cited (Numbers refer to Reference Section)
<b>Standard Elements</b>		
Maintain a closed drainage system	*IB/**Scenario 2	2, 3, 4
Maintain Hygiene	*IB/**Scenario 2	2, 3, 4
Keep bag below level of bladder	*IB/**Scenario 4	2, 3, 4
Maintain Unobstructed flow of urine	*IB/**Scenario 4	2, 3, 4
Remove catheter when no longer needed	*IB/**Scenario 4	2, 3, 4
<b>Recommended Elements</b>		
Secure catheter	*IB//N/A	2, 3, 4

**\*CDC Modified Recommendation Category**

- **IA** - A strong recommendation supported by high to moderate quality† evidence suggesting net clinical benefits or harms
- **IB** - A strong recommendation supported by low quality evidence suggesting net clinical benefits or harms or an accepted practice (e.g., aseptic technique) supported by low to very low quality evidence
- **IC** - A strong recommendation required by state or federal regulation.
- **II** - A weak recommendation supported by any quality evidence suggesting a trade off between clinical benefits and harms

**\*\*SPS Evidence**

- **Scenario 1:** Reliably implementing element is associated with statistically significant improvement
- **Scenario 2:** Failing to implement element is associated with statistically significant failure to improve along with the system,
- **Scenario 3:** In cases where all hospitals implement, implementing an element without measuring reliability of the element is associated with statistically significant failure to improve along with the system,

- **Scenario 4:** Reliably implementing element is not associated with statistically significant improvement; however, literature supports adoption of element as an SPS Standard

#### IV. Prevention Bundle Elements Care Descriptions

Prevention Bundle Element - Insertion	Care Descriptions
<b>Standard Elements</b>	
Use Aseptic Technique for Insertion	<ul style="list-style-type: none"> <li>• Perform hand hygiene immediately before and after insertion or any manipulation of the catheter device or site [CDC Reference]</li> <li>• Use sterile gloves, drape, sponges, and appropriate antiseptic or sterile solution for per urethral cleaning, and a single packet of lubricant jelly for insertion [CDC Reference]</li> </ul>
Avoid unnecessary catheterization	<ul style="list-style-type: none"> <li>• Consider having written clinical indications [CDC Reference]</li> </ul>

Prevention Bundle Element - Maintenance	Care Descriptions
<b>Standard Elements</b>	
Maintain closed drainage system	<ul style="list-style-type: none"> <li>• If breaks in aseptic technique, disconnection, or leakage occur, replace the catheter and collecting system using aseptic technique and sterile equipment</li> </ul>
Maintain Hygiene	<ul style="list-style-type: none"> <li>• Perform perineal hygiene at minimum daily.</li> </ul>
Keep bag below level of bladder	<ul style="list-style-type: none"> <li>• Do not rest bag on floor [CDC Reference]</li> </ul>
Maintain Unobstructed flow of urine	<ul style="list-style-type: none"> <li>• Keep the catheter and collecting tube free from kinking</li> </ul>
Remove catheter when no longer needed	<ul style="list-style-type: none"> <li>• Review necessity daily</li> <li>• Document indication daily</li> </ul>
<b>Recommended Elements</b>	
Secure catheter	

## V. Measurement – Prevention Bundle Reliability

Measurement	Formula	Standards	Reporting Period
CAUTI Prevention Bundle Insertion and Maintenance to be measured separately.	Number of audits totally compliant with SPS Prevention Bundle Elements/ Number of audits completed* x 100	<ul style="list-style-type: none"> <li>Your bundle reliability data should include <b>all</b> the SPS Prevention Bundle Standard elements</li> <li>SPS strongly encourages hospitals to also include the SPS Recommended Elements.</li> <li>Hospitals can choose to include additional elements. Please note that including too many (&gt;5) elements may confuse and overwhelm care providers so proceed with caution.</li> <li>Measure your bundle as ALL or None. See Reference 5 for IHI description of All on None. <sup>5</sup></li> <li>Minimum of 20 audits per month. If procedures are fewer than 20, then include all procedures.</li> </ul>	Monthly

## VI. Spotlight Tools

We have asked hospitals to share their spotlight tools, and have highlighted a few in this SharePoint [folder](#) (note: this folder is password protected and can only be accessed by SPS network member hospitals). The highlighted categories are: Bundle Measure Methodology, PDSAs and Interventions, Risk Assessment, Training, Patient & Family Engagement and Failure Analysis.

## VII. Spotlight Hospitals

Please click [here](#) to view the Sharing Hospitals' Innovation for Network Engagement (SHINE) report.



## VIII. References

1. Muir Gray JA, 1997 Evidence-Based Health Care: How to Make Health Policy and Management Decisions. London, UK: Churchill Livingstone;
2. Gould, CA, et al, 2009<sup>4</sup>. Guideline for Prevention of Catheter-Associated Urinary Tract Infections. HICPAC
3. 2014 A Special. On the CUSP: Stop CAUTI, APIC
4. 2014 Update Author(s): Evelyn Lo, MD; Lindsay E. Nicolle, MD; Susan E. Coffin, MD, MPH; Carolyn Gould, MD, MS; Lisa L. Maragakis, MD, MPH; Jennifer Meddings, MD, MSc; David A. Pegues, MD; Ann Marie Pettis, RN, BSN, CIC; Sanjay Saint, MD, MPH; Deborah S. Yokoe, MD, MPH. (May 2014), Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals: Source: Infection Control and Hospital Epidemiology, Vol. 35, No. 5, pp. 464-479
5. Resar R, Griffin FA, Haraden C, Nolan TW. 2012 Using Care Bundles to Improve Health Care Quality. IHI Innovation Series white paper. Cambridge, Massachusetts: Institute for Healthcare Improvement (Available on [www.IHI.org](http://www.IHI.org))

## IX. Revision History

Version	Primary Author(s)	Description of Version	Date Completed
Version 1	Sharyl Wooton & Rachel Bowes	Initial Draft	October 2, 2012
Version 2	Erin Goodman & Sharyl Wooton (on behalf of HAC Co-Leader Team)	Format & Release of new SPS Prevention Bundle content	June 10, 2014
Version 3	SPS Staff	Contact information updated	April 5, 2017
Version 4			

*Thank you to the following CAUTI Co-Leaders and Subject Matter Experts who contributed to this document:*

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