

Questionable Validity of the Catheter-Associated Urinary Tract Infection (CAUTI) Metric for Value-based Purchasing

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What is a CAUTI?

- ◆ Catheter-Associated Urinary Tract Infection
- ◆ Projected to occur in 290,000 US Hospital patients annually, costing \$290 million ¹
- ◆ Prevention of CAUTI centers around sterile catheter insertion, proper catheter maintenance, and decreasing catheter usage.



Importance of the CAUTI Metric in Value-Based Purchasing

- ◆ Hospitals performing in lowest quartile for HAC reduction are penalized 1% of the entire Medicare fee reimbursement in an all-or-none fashion (totaling \$373 million across 721 institutions)⁸
- ◆ 1/3 of Centers for Medicare and Medicaid Services HAC reduction penalty based on the CDC CAUTI metric analysis²
- ◆ Financial repercussions drive hospital behavior

Indications for an Indwelling Catheter

Appropriate use of the Indwelling Catheter

Need for accurate measurement of urinary output in critically ill patients

Acute urinary retention or bladder outlet obstruction

Perioperative use for selected surgical procedures or anticipated to receive large-volume infusions or diuretics during surgery

Intraoperative monitoring of urinary output

To assist in healing of open sacral or perineal wounds in incontinent patients

Patients requiring prolonged immobilization, such as an unstable thoracic or lumbar spine or multiple traumatic injuries such as a pelvic fracture

To improve comfort for end of life care if needed

Risk Factors for Catheter-Associated Urinary Tract Infections

Factor	Relative Risk
Prolonged catheterization (>6 days)	5.1-6.8
Female gender	2.5-3.7
Catheter insertion outside of operating room	2.0-5.3
Urology service	2.0-4.0
Other active sites of infection	2.3-2.4
Diabetes	2.2-2.3
Malnutrition	2.4
Azotemia (creatinine >2.0 mg/dL)	2.1-2.6
Ureteral stent	2.5
Monitoring of urine output	2.0
Drainage tube below level of bladder and above collection bag	1.9
Antimicrobial-drug therapy	0.1-0.4

Alternatives to Foley Catheters

- ◆ External catheter for men
- ◆ Intermittent catheterization
- ◆ Scheduled toileting
- ◆ Suprapubic catheter

Decreasing Catheter Usage Hinges on Adequate Staffing

About a Nurse



*"To save money, we laid off all the nurses.
We now realize the hospital needs them,
so can you call them back?"*

Interventions to Reduce CAUTIs

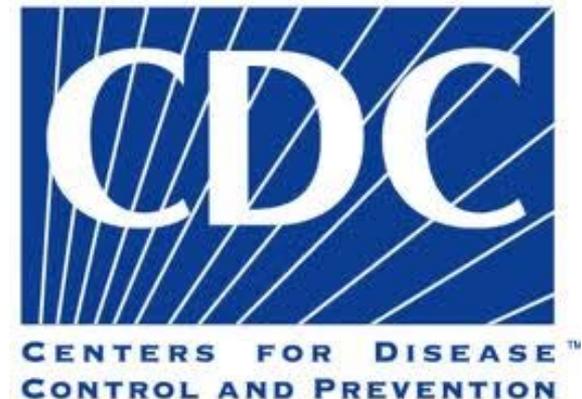
- ◆ Improved catheter maintenance- Castile soap/Theraworx spray utilized to clean the catheter and decrease the biofilm.
- ◆ Foley Care Bundle: Ensuring the foley bag never touches the floor, the tubing remains kink-free, foley securement devices, maintaining a closed system, and documenting the reason for foley necessity every shift.
- ◆ Nurse-Driven Catheter Removal Protocols- algorithm allowing nurses to be proactive at removing a catheter without an MD order
- ◆ CAUTI Huddles to identify trends and gaps
- ◆ Daily Rounds on Catheter Necessity

National Increase in CAUTI Rates: How is this possible?

	Data and Dates of Acquisition				
Metric	2009	2010	2011	2012	2013
Centers for Disease Control and Prevention NHSN (Data.Medicare.Gov)					
Standardized Infection Ratio	1.00			0.99	1.03
Number of Facilities	~1,749			2,293	2,277
Centers for Disease Control and Prevention NHSN (HAI Progress Reports)					
Standardized Infection Ratio	1.00			1.03	1.06
Number of Facilities	~1,749			3,597	2,781

Center for Disease Control National Healthcare Safety Network CAUTI Metric

- ◆ Current metric
- ◆ Self-reported data
- ◆ $\# \text{ Urinary Infections} \div \# \text{ Catheter Days} \div (1,000 \text{ converted to a Standardized Infection Ratio})$
- ◆ Measures catheter maintenance



Agency for Healthcare Research & Quality CAUTI Metric

- ◆ Data obtained from 18,000-33,000 randomly selected medical records from patients with the subset of diagnoses for myocardial infarction, heart failure, pneumonia, and major surgical patients.
- ◆ # Urinary Infections ÷ **1,000 Hospital Discharges**
- ◆ Metric combines **catheter usage** and **catheter care**



AHRQ CAUTI Metric Comparison

	Data and Dates of Acquisition				
Metric	2009	2010	2011	2012	2013
Agency for Healthcare Quality and Research (AHRQ)					
Infections/1,000 Discharges		12.25	11.30	10.58	8.8
Baseline Ratio		1.00	0.92	0.86	0.72
Number of Charts	~18,000-33,000 medical records from 800 hospitals				

A statistically significant **28.2% decrease** in the CAUTI rate between 2010-2013 ($p < .011$)

Concerns about the CDC Metric

- ◆ 1. May inadvertently inflate the CAUTI rate when unnecessary foley catheters are removed.
- ◆ 2. The data used for this metric is self-reported from hospitals.
- ◆ 3. In failing to account for catheter removal, hospitals are not incentivized to provide adequate staffing.

Concerns about the CDC Metric

- ◆ CDC Metric= 3-6% **increase** in CAUTI rate
- ◆ AHRQ= 28.2% **decrease** in CAUTI rate during the same time period
- ◆ Removing unnecessary foley catheters may inadvertently increase the Standardized Infection Ratio
 - ◆ # Infections/# Catheter Days
 - ◆ Catheters remain in most critically ill patients with an increased risk of infection
 - ◆ Both the numerator and denominator decrease, but the denominator decreases more than the numerator, resulting in an increase in the SIR.

Concerns about the CDC Metric Continued

- ◆ Data is self-reported from hospitals and not independently verified
 - ◆ CDC reports that only 20 of the 50 states check the CDC NHSN CAUTI data for quality and completeness



Concerns about the CDC Metric Continued

- ◆ Does not reward hospitals for removing unnecessary foley catheters
 - ◆ May actually penalize the hospital for proactive efforts to decrease catheter usage
 - ◆ Does not promote adequate staffing ratios



Limitations of this Analysis

- ◆ AHRQ metric not risk-adjusted for CAUTI rates
 - ◆ May not have the same validity in making comparisons between facilities caring for patients with different levels of acuity.
- ◆ The data sets were comparing two slightly different, but largely overlapping patient populations



Recommendations

- ◆ CAUTI Metric should incorporate BOTH catheter usage and catheter care.
- ◆ APIC indicates **Catheter Usage > Catheter Care**
- ◆ The current metric fails to accurately differentiate between good and poor performers.

The CDC Guidelines state that it is inappropriate to use urinary catheters “as a substitute for nursing care of the patient or resident with incontinence.”⁷



“I was going to ask how working with a severely limited staff was, but I think I can already guess.”

References

1. Agency for Healthcare Research and Quality. Partnership for patients. Interim Update on 2013 Annual Hospital-Acquired Condition Rate and Estimates of Cost Savings and Deaths Averted from 2010 to 2013. Available from <http://www.ahrq.gov/professionals/quality-patient-safety/pfp/interimhacrate2013.pdf>. Accessed May 13, 2015.
2. Center for Medicare & Medicaid Services. Department of Health and Human Services. Medicare Program: Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Fiscal Year 2015 Rates; Quality Reporting Requirements for Specific Providers; Reasonable Compensation Equivalents for Physician Services in Excluded Hospitals and Certain Teaching Hospitals; Provider Administrative Appeals and Judicial Review; Enforcement Provisions for Organ Transplant Centers; and Electronic Health Record (HER) Incentive Program; Final Rule 42 CFR Parts 405, 412, 413, et al. Federal Register. Vol. 79. No. 163 August 22, 2014. Available from <http://www.gpo.gov/fdsys/pkg/FR-2014008-22/pdf/2014-18545.pdf>. Accessed May 14, 2015.
3. Association for Professionals in Infection Control and Epidemiology. Guide to the Elimination of Catheter-Associated Urinary Tract Infections (CAUTIs) Developing and Applying Facility-Based Prevention Interventions in Acute and Long-Term Care Settings. 2008. Available from: http://www.apic.org/Resource/_EliminationGuideForm/c0790db8-2aca-4179-a7ae-676c27592de2/File/APIC-CAUTI-Guide.pdf. Accessed May 13, 2015.
4. Fakhri, M.G., Dueweke, C., Meisner, S., Berriel-Cass, D., Savoy-Moore, R., Brach, N. et al, **Effect of nurse-led multidisciplinary rounds on reducing the unnecessary use of urinary catheterization in hospitalized patients.** *Infect Control Hosp Epidemiol.* 2008;29:815–819 (Available from:) <http://www.ncbi.nlm.nih.gov/pubmed/18700831>. Accessed May 13, 2015.

References Cont.

5. Nicolle, L.E. **Catheter associated urinary tract infections.** *Antimicrob Resist Infect Control.* 2014;3:23 (eCollection 201 2015. Available from <http://www.aricjournal.com/content/3/1/23>. Accessed May 13, 2015.
6. Kavanagh, K.T., Cimiotti, J.P., Abusalem, S., Coty, M.B. **Moving healthcare quality Forward with nursing-sensitive value-based purchasing.** *J Nurs Scholarsh.* 2012;44:385–395.
7. Gould, C.V., Umscheid, C.A., Agarwal, R.K., Kuntz, G., Pegues, D.A. **Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009.** *Infect Control Hosp Epidemiol.* 2010;31:319–326 (Available from: <http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf>. Accessed May 13, 2015.
8. Rau J, Medicare cuts payments to 721 hospitals with highest rates of infections, injuries. Kaiser Health News. Dec. 18, 2014. Available from: <http://kaiserhealthnews.org/news/medicare-cuts-payments-to-721-hospitals-with-highest-rates-of-infections-injuries/>. Accessed May 13, 2015.
9. Dudeck, M.A., Horan, T.C., Peterson, K.D., Allen-Bridson, K., Morrell, G.C., Pollock, D.A. et al, **National Healthcare Safety Network (NHSN) report, data summary for 2009, device-associated module.** *Am J Infect Control.* 2011; 39:349–367.

References Cont.

10. Tumpey A. **Methodology for SIR**. Centers for Disease Control and Prevention. May 17, 2012. Available from: http://www.healthwatchusa.org/downloads/SIR-Definition/20120517-Gmail-Methodologr_SIR.pdf. Accessed May 13, 2015.
11. Centers for Disease Control and Prevention. **National and State Healthcare Associated Infections Progress Report**. Mar. 2014. Available from: <http://stacks.cdc.gov/view/cdc/22160>. Accessed March 15, 2015.
12. Centers for Disease Control and Prevention. **National and State Healthcare Associated Infections Progress Report**. U.S. Department of Health and Human Services. Jan. 13, 2015. Available from: <http://www.cdc.gov/HAI/pdfs/progress-report/hai-progress-report.pdf>. Accessed March 15, 2015.
13. Agency for Healthcare Research and Quality. **Partnership for patients. Updated Information on the Annual Hospital-Acquired Condition Rate: 2011 and 2012**. AHRQ Pub. No. 14-0068-EF. September 2014. Available from: <http://www.ahrq.gov/professionals/quality-patient-safety/pfp/hacrate2011-12.pdf>. Accessed May 13, 2015.