Catheter-Associated Urinary Tract Infection (CAUTI): Progress Toward Zero

Jennifer A. Meddings, MD, MSc
University of Michigan Medical School

Disclosures:
Research Grant Funding: AHRQ, BCBSFM
Honorariums: SHEA, RAND, CSCR
Objectives

- Discuss major payment changes, public reporting and surveillance requirements involving CAUTI.

- Describe how challenges in data collection, interpretation, and documentation of urinary catheter use impacts public reporting and reimbursement regarding hospital-acquired CAUTIs.

- Describe recent trends in rates of CAUTIs, according to administrative data (i.e., claims data), surveillance data, and results from large scale interventions.
Catheter-associated urinary tract infection is a very common, uncomfortable, and often preventable complication that can lead to life-threatening infections.¹⁻⁴

The Problem

Catheter-associated urinary tract infection is a very common, uncomfortable, and often preventable complication that can lead to life-threatening infections.¹-⁴

Hospitals were paid extra per hospitalization to treat hospital-acquired catheter-associated UTI before October 2008.

### How much extra pay was provided for hospital-acquired CAUTI?

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Hospital Payment Prior to Oct 1, 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple pneumonia &amp; pleurisy</td>
<td>$6970.34</td>
</tr>
<tr>
<td>Pneumonia with hospital-acquired catheter-associated UTI</td>
<td>$8495.05</td>
</tr>
<tr>
<td>(minor complication/comorbidity)</td>
<td></td>
</tr>
<tr>
<td>Pneumonia with hospital-acquired catheter-associated UTI as pyelonephritis</td>
<td>$10,379.15</td>
</tr>
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<td>(major complication/comorbidity)</td>
<td></td>
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</table>

**Perverse Incentive!**
Strategy: Pay less or not at all when complications occur.

Goal: Motivate hospitals to prevent complications and save healthcare dollars.
Value-Based Purchasing Policies

Hospital-Acquired Conditions Initiative, October 2008
from the Deficit Reduction Act of 2005: section 5001(c)

- No extra pay for hospital-acquired conditions in claims data.
- Claims data changes: complication codes, hospital-acquired status
Simple Concept....but Complex Policy

Three diagnosis codes (ICD-9-CM) must each be listed accurately to trigger non-payment for hospital-acquired catheter-associated urinary tract infections:

1. Diagnostic code for Urinary Tract Infection (UTI) and
2. Catheter code 996.64 and
3. UTI diagnosis listed as not present-on-admission (i.e., hospital-acquired).

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2. Catheter code 996.64 and
3. UTI diagnosis listed as not present-on-admission (i.e., hospital-acquired).

But, if hospitals do not assign accurate diagnosis codes, hospitals receive payment for the UTI by default.¹

And, if patients have other comorbidities besides UTI that justify the additional payment, no payment change occurs.

Value-Based Purchasing Policies

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- **No extra pay** for hospital-acquired conditions in claims data.
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### Claims Data, 2007

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### Claims Data, after October 2008

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New use for claims data: compare hospitals by hospital-acquired complication rates for public reporting and financial penalty
"Provider notes": Physicians, Physician Assistants, Nurse Practitioners. *Not Nursing Notes

Medical Record

Coder

Claims Data

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Hospital Report Cards:
- Medicare’s Hospital Compare
- The Leapfrog Group
Value-Based Purchasing Solutions

Affordable Care Act of 2010: sections 3001, 3008

- Publicly report complication rates, 2011

- 2 penalties for complication rates by claims data:
  
  2014: the Hospital Value-Based Purchasing Program will redistribute 1-2% of Medicare payments.

  2015: all Medicare payments will be reduced by 1% to hospitals with complication rates in the worst quartile.

  1% for University of Michigan Hospitals = $2.4 million
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• SCIP-Inf-9: Proportion of urinary catheters removed on post-operative days 1 or 2, from **medical record reviews**, reported on *HospitalCompare*, 2011.

• National Healthcare Safety Network CAUTI measures: **surveillance methodology**, mandatory reporting from ICUs since January 2012.
  
  Symptomatic CAUTI per 1000 catheter days
  Urinary catheter days/ patient days
Surgical Care Improvement Project, Infection Process of Care Measure 9 (SCIP-Inf-9): Urinary catheter removed on Postoperative Day 1 or 2 with day of surgery being zero.

Rate of Postop Catheter removal =
Number of surgical patients whose catheter is removed on POD 1 or 2
All selected surgical patients with a catheter in place post-operatively
SCIP-Inf-9 details

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**Excluded patients:** <18 years old, LOS >120 days or <2 days, clinical trial,
- principal procedure was entirely laparoscopic (identified by ICD-9-CM),
- had other procedures with general or spinal anesthesia within 3 days (4 if cardiac surgery) during this hospitalization,
- surgery was urological, gynecological or perineal procedure,
- patient had suprapubic or intermittent catheterization (IC) preoperatively, or had urethral, suprapubic, or IC prior to the perioperative period,
- physician/APN/PA documented reason for not removing catheter postop,
- patient expired peri-operatively,
- patient did not have catheter post-operatively.

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SCIP-Inf-9 measure specifications: www.QualityNet.org

Downloaded from www.catheterout.org
Mandatory Public Reporting

Mandatory National Healthcare Safety Network Reporting

- CAUTI rates: symptomatic CAUTI events x 1000 urinary catheter days

- Urinary catheter utilization ratio: urinary catheter days patient days

Adult and Pediatric ICUs: January 1, 2012
Inpatient Rehabilitation Units: October 1, 2012

*Resource Intensive to Collect*
CAUTI rates: symptomatic CAUTI events x 1000 urinary catheter days

- Urinary catheter utilization ratio: urinary catheter days patient days

But the CAUTI measure may not reflect success of interventions to reduced catheter use...

1Fakih et al. AJIC. Aug 24, 2011.
CAUTI rates: symptomatic CAUTI events x 1000
urinary catheter days

• Urinary catheter utilization ratio: urinary catheter days
  patient days

But the CAUTI measure may not reflect success
of interventions to reduced catheter use...
so consider:
Population based outcome measure:
1 symptomatic CAUTI events
10,000 patient days

1Fakih et al. AJIC. Aug 24, 2011.
The Challenge

Elimination of Healthcare-Associated Catheter-associated UTI

• From common nosocomial infection to a “Never Event”? 

• National prevention target: 
  25% reduction in CAUTI in ICU and ward patients by 2014
Progress Report: How much progress is being made in prevention of CAUTI?

Depends on which measure evaluated, and by which data source
How about trends in CAUTI by claims data?
How often do hospitals request payment for Catheter-Associated Urinary Tract Infections?

Hospital Rates of Non-Catheter-Associated UTIs:
Rate Range: 2-38% of discharges. Mean: 10.5%, Mode: 9.0%

Hospital Rates of Catheter-Associated Urinary Tract Infections:
Rate Range: 0-2.3% of discharges. Mean: 0.11%, Mode: 0.04%

- 44 (30%) hospitals did not use catheter code for any discharge, despite a similar mean rate of non-catheter-associated UTIs (9.6%).
- 94 (65%) of all (N=144) hospitals requested payment for <5 cases of CAUTI as a secondary diagnosis.


Downloaded from www.catheterout.org
Trends in Non-Catheter-Associated UTI rates by Claims Data

Trends in Catheter-Associated UTI rates by Claims Data

**Data source:** Healthcare Cost and Utilization Project, State Inpatient Dataset for California, 2007 and 2009. Adult acute care admissions, excluding rehabilitation and obstetrics.

**Overall: 0.17%**
- Hospital-acquired CAUTI: 0.05%
- Present-on-Admission CAUTI: 0.12%

**Overall: 0.13%**
- Hospital-acquired CAUTI: 0.01%
- Present-on-Admission CAUTI: 0.12%

**2007 pre-policy**
- 0.12%

**2009 post-policy**
- 0.12%
Is lack of use of 996.64 code unique to these hospitals, states?  No

<table>
<thead>
<tr>
<th>Data Source</th>
<th>How many hospital-acquired UTIs are catheter-associated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC estimates:</td>
<td>66-86% of all hospital-acquired urinary tract infections</td>
</tr>
<tr>
<td>561,667 CAUTI cases annually</td>
<td></td>
</tr>
<tr>
<td>Our Academic Medical Center</td>
<td>CA-UTI rate is 1.1% of all UTIs listed as a secondary diagnosis</td>
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<tr>
<td>34,504 discharges for 2007</td>
<td></td>
</tr>
<tr>
<td>32 cases CAUTI: 3 hospital-acquired</td>
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</tr>
<tr>
<td>State of Michigan discharges, from 2007 HCUP SID</td>
<td>CA-UTI rate is 0.9% of all UTIs listed as a secondary diagnosis</td>
</tr>
<tr>
<td>dataset*</td>
<td></td>
</tr>
<tr>
<td>State of California discharges from 2006 HCUP</td>
<td>CA-UTI rate is 1.2% of all UTIs listed as secondary diagnosis</td>
</tr>
<tr>
<td>SID dataset*</td>
<td></td>
</tr>
<tr>
<td>National discharge estimates from 2006 HCUP</td>
<td>CA-UTI rate is 1% of all UTIs listed as secondary diagnosis</td>
</tr>
<tr>
<td>NIS 2006*</td>
<td></td>
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*HCUP = Healthcare Cost and Utilization Project, estimates from HCUPnet query tool

[83x433] Data Source

How many hospital-acquired UTIs are catheter-associated?

CDC estimates:
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State of Michigan discharges, from 2007 HCUP SID dataset*

State of California discharges from 2006 HCUP SID dataset*

National discharge estimates from 2006 HCUP NIS 2006*

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*HCUP = Healthcare Cost and Utilization Project, estimates from HCUPnet query tool
Comparing UTI Categorization by Physician-Abstractor vs. Hospital Coder?

- Hospital-Acquired Catheter-Associated UTI: 35%
- Present-on-Admission UTI: 34%
- Present-on-Admission UTI (Not catheter-associated): 17%
- Catheter-Associated UTI: 10%
- Present-on-Admission UTI: 4%

Comparing UTI Categorization by Physician-Abstractor vs. Hospital Coder?

Hospital-Acquired Catheter-Associated UTI
- 35%

Present-on-Admission Catheter-Associated UTI
- 10%

Present-on-Admission UTI (Not catheter-associated)
- 17%

Hospital-Acquired UTI
- 22%

★ NONE coded as catheter-associated
- 78%

Why rare use of catheter-code use?

1. Urinary catheter use is often evident only from nursing notes\textsuperscript{1} which - unlike physician notes - are not routinely reviewed by hospital coders.

2. Federal regulations mandate hospital coders obtain diagnosis information from only provider\textsuperscript{2} notes (physician, physician-assistant, nurse practitioner) - not nursing notes unless verified with provider.

\textsuperscript{1}Meddings J, et al. Saint S, McMahon L. Infect Control Hosp Epidemiol; in press

What is the likely financial impact of not paying extra for hospital-acquired CAUTI cases listed in claims data?

1. How often are UTIs described as CAUTIs?

2. How often does patient have other comorbidities that generate equal pay even with removal of CAUTI as a diagnosis?
What is the likely financial impact of not paying extra for hospital-acquired CAUTI cases listed in claims data?

1. How often are UTIs described as CAUTIs? **Very rarely**
2. How often does patient have other comorbidities that generate equal pay even with removal of CAUTI as a diagnosis?
How often do CAUTI patients have other comorbidities?

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>All 2007 Michigan Adult Discharges</th>
<th>Patients with secondary diagnosis of Non-catheter-associated UTI</th>
<th>Patients with secondary diagnosis of CAUTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (median) of Secondary Diagnoses</td>
<td>8</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Diabetes</td>
<td>25%</td>
<td>32%</td>
<td>39%</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>11%</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>CHF</td>
<td>10%</td>
<td>20%</td>
<td>26%</td>
</tr>
<tr>
<td>Paraplegia</td>
<td>3%</td>
<td>8%</td>
<td>19%</td>
</tr>
<tr>
<td>Other Neurologic Disease</td>
<td>8%</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td>Decubitus Ulcer</td>
<td>2%</td>
<td>8%</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Secondary Diagnosis other than UTI or CAUTI?</strong></td>
<td><strong>99.6%</strong></td>
<td><strong>100%</strong></td>
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Recap

What is the Likely Financial Impact of Not Paying for Hospital-Acquired Catheter-Associated Urinary Tract Infection?

**Likely Low, due to:**

- Rare use of the catheter code 996.64,
- Other patient comorbidities that would generate extra payment even without CAUTI diagnosis.
How about trends in CAUTI and catheter use by surveillance data?
Trends in Catheter-Associated UTI rates by NHSN Surveillance Data

Data source: NHSN Reports from 2009 and 2010 data. Dudeck et al. AJIC (June and December 2011)
Trends in Urinary Catheter Utilization Ratio by NHSN Surveillance Data

Data source: NHSN Reports from 2009 and 2010 data. Dudeck et al. AJIC (June and December 2011)
So little change by claims and surveillance data....but what really is possible?
Use of Bladder Bundles:

A. Aseptic insertion and proper maintenance is paramount
B. Bladder ultrasound may avoid indwelling catheterization
C. Condom or intermittent catheterization in appropriate patients
D. Do not use the indwelling catheter unless you must!
E. Early removal of the catheter using reminders or stop-orders appears warranted.

* With a step-by-step for implementing Bladder Bundles

Use of Champions:

Definition: Advocate who takes ownership of the problem (hospital-acquired CAUTI) and is willing to use his or her position to get a practice implemented by rallying others to help solve the problem.

- Respected by others at the hospital,
- Persuasive,
- Value of nurse champions: any staff nurse viewed on the unit as the “go to” RN.

Success in Changing Urinary Catheter Use
MHA Keystone Initiative for Michigan Hospitals


Sustained & significant reduction in urinary catheter use

18.1%\[\text{Catheter Use Rate, } \%\]

13.8%\[\text{p<0.001}\]
Success in Changing Urinary Catheter Use
MHA Keystone Initiative for Michigan Hospitals


Sustained & significant improvement in appropriateness of urinary catheter use

57.6% improvement, p=0.005

44.3% baseline

No CAUTI outcomes yet.... but what is possible with these interventions?
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Overall, the rate of CAUTI (episodes per 1000 catheter-days) was reduced by **52%** with use of a reminder or stop order (95% CI: 32% to 72% reduction).

Snapshot of Hospital Practices to Prevent CAUTI

CAUTI and inappropriate urinary catheter use are common and important challenges to address, with many new health policies involving public reporting and financial penalties intended to motivate improved care.

• Recognizing urinary catheter use and then identifying UTIs as catheter-associated UTIs requires different processes and resources than used to generate claims data...so few CAUTI events are noted in claims data.
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• The NHSN surveillance CAUTI measure may increase with significant reductions in catheter use...so consider CAUTIs per 10,000 patient days.

• Despite limited evidence to date in claims and surveillance data to date, we can significantly decrease urinary catheter use and CAUTI.
Interested in practical strategies to decrease CAUTI, with pearls and pitfalls in implementing a CAUTI prevention program?

Please join me this afternoon at the 3:00 pm “Ask the Expert” session: *Preventing CAUTI: Disrupting the Lifecycle of the Urinary Catheter*