Catheter Associated Urinary Tract Infection (CAUTI) Efforts

Introduction
The Massachusetts General Hospital (MGH) continues to address the concern of hospital acquired infections (HAIs) with a focused approach to Catheter Associated Urinary Tract Infections (CAUTI). In September of 2012, an interdisciplinary team called the CAUTI workgroup was formed to address high CAUTI rates in the intensive care units (ICUs). A wide representation of nurses from the ICUs and infection control worked with physicians to first develop a list of evidenced-based hospital approved indicators for the use of an indwelling urethral catheter. Today, the CAUTI group is co-led by nursing and infection control and includes nurses from general care units. The group is charged with “identifying opportunities for improvements and interventions to aide in decreasing the usage of urinary catheters and CAUTI rates to below the NHSN benchmarks in 50% of the ICUs and on the general care units.

Overview of Data
The CAUTI rates are nationally benchmarked with the Center for Disease Control’s (CDC) National Healthcare Safety Network (NHSN). While urinary catheter device utilization rates remained stable in ICUs and general care areas, infection rates have decrease in the ICUs. As of December 2014, the ICUs met the CAUTI workgroup goal of 50% of ICUs being below the national NHSN benchmark. An overview of the general care units’ data demonstrates that 23 units (62.16%) outperformed the NHSN benchmark for 5 or more quarters. Overall, the ICU trend is very favorable and the general care unit trend is flat.
Performance Improvement Initiatives

**Identify best practice and conduct a gap analysis.** First, a thorough literature review was conducted to identify the best evidence-based practices for CAUTI prevention. The best practices served as a guide to assess where gaps existed in our ICUs. This review revealed varying degrees (gaps) of adherence to approved indications for catheter use, identification of a plan for catheter removal and compliance with routine urinary catheter care principles. The analysis was used as baseline information as we begin to prioritize our efforts on practice improvement initiatives.

**Partners Internal Performance Framework (IPF).** The gap analysis findings were timely in providing the basis for participation in the *Partners Internal Performance Framework* (IPF); a Partners system-wide effort to standardize models for practice improvement. The CAUTI group selected “securing the catheter” and “adherence to approved indications for catheter use” as best practices to target improvements one ICU. Using the model as a guideline, the CAUTI workgroup selected and implemented best practices, conducted pre and post measurement and described lessons learned over specific time frames. Upon completion of the IPF, the pilot was extended to all ICUs and ultimately to all inpatient units.

Using the vehicle of daily nursing rounds, a paper checklist was used to evaluate proper securing of urinary catheters and an appropriate indication for catheter use (“MGH approved indicators”) for all patients with catheters (Attachment 1). Preliminary findings identified the need for education on both securing the catheter and the MGH approved indications for catheter use.

**Education.** In response to the IPF findings, a “CAUTI Prevention” Health Stream training module was developed and assigned to all ICU RN and PCA staff. Using established evidence based practices as a guide, the “ARM” acronym (Avoid/Reduce/Maintain) was created to reinforce strategies to prevent CAUTI. These strategies were introduced as a CAUTI prevention bundle (Attachment 2).

**Quarterly audits sustain practice improvements.** In order to sustain practice improvements, focused attention is given to measuring compliance. Ongoing assessment of proper securing of the urinary catheter and appropriate indication for catheter use is completed quarterly as a component of the quarterly prevalence study. CAUTI prevention strategies were also evaluated during unit based tracers in preparation for Joint Commission review.

**Annual unit performance improvement plans.** Quarterly unit based CAUTI Nurse Sensitive Indicator (NSI) reports identified units with opportunities for improvement. Performance Improvement Planning Sessions were conducted for unit leadership to assist in developing customized improvement plans (Attachment 3). Following these sessions, nurse directors created annual unit based performance improvement plans to address specific unit needs. In addition, real time reporting of patients with positive
CAUTI results provides a deeper understanding of the actual contributing risk factors that can lead to CAUTIs.

**Development of a CAUTI portal page: An information repository.** A CAUTI portal page was created as part of the Patient Care Services (PCS) Excellence Every Day website as a place to centralize CAUTI specific information and common core evidence based practices for nurses and other disciplines. The CAUTI portal page displays comprehensive information including: links to policies and procedures; customized tools to monitor performance; resources and references; updates; and a list of contacts on CAUTI prevention. [http://www.mghpcs.org/eed_portal/EED_CAUTI.asp](http://www.mghpcs.org/eed_portal/EED_CAUTI.asp) (Attachment 5)

**Ensure specimen integrity.** Urine culture samples must arrive to the laboratory in a timely manner in order to ensure that organism counts and infections are reported accurately. Unpreserved or unrefrigerated urine samples waiting longer than 2 hours could produce artificially inflated organism counts resulting in inaccurate infections and CAUTI rates. The CAUTI workgroup collaborated with staff from the Microbiology Lab and Specimen Transport Team to ensure the integrity and timeliness of the urine culture arriving to the microbiology lab within a 2 hour timeframe. A "Practice Alert" was designed and communicated to all units. Processes for transporting specimens were re-evaluated and documentation of collection times improved. Lastly, the work of this specific project was displayed on a poster on Nursing Research Day during Nurses’ Week (Attachment 5).

**Product review.** The CAUTI workgroup identified a need to review new products such as closed system catheters and alternatives to urinary catheters. Female urinals, urinary pouches and improved condom catheters were trialed by staff nurses. Feedback was positive and the new products were added to unit inventory. Closed system catheters with pre-connected urine-meters have been shown to contribute to the reduction of CAUTIs and therefore were also added as standard inventory for all ICUs and general care areas. Information about new products or product replacements is distributed through communications to unit leadership.
# Checklist: Indications for Foley Catheters

**Date:__________**  **Unit:__________**

<table>
<thead>
<tr>
<th>Room #</th>
<th>Last Name</th>
<th>MRN</th>
<th>Action Taken</th>
<th>Reason for Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“ARM Patients against CAUTI!”
(Catheter Associated Urinary Tract Infections)

**Avoid** the use of catheters (seek Alternatives)
- Never for the management of the incontinent patient
- Use alternatives to indwelling catheters (straight catheter, condom catheter, etc)
- Unless the patient meets the hospital approved clinical indications:
  - **Post-operative indications:**
    - Peri-operatively and up to 24 hours post-op
    - After minor urological, gynecological, or peri/rectal surgeries
    - Urethral trauma or post-op after radical prostatectomy
  - Other indications:
    - Acute urinary retention or bladder outlet obstruction including patients with difficult urinary catheter placement.
    - Monitoring of urinary output in critically ill patients (must meet at least one of the following criteria):
      - Patient’s current RAS score <2
      - Patient requires catheterization more frequently than every 4 hours
      - Patient in shock AND requires vasopressors
      - For NICU patients ONLY: need for precise monitoring of urinary output in neonates with concern for impaired renal function
    - Gross hematuria/risk for clotting
    - Epidural in place; or prolonged effect of epidural after removal
    - Chronic urinary retention with chronic indwelling catheter and no reasonable alternative exists

**Reduce** the number of days the catheter is in place
- By regularly assessing, documenting and communicating the need for catheter
- Use the POE order template to prompt and electronic reminder daily

**Maintain** the catheter appropriately
- Maintain a closed sterile system
- Obtain samples using the sterile port
- Keep the bag below the bladder
- Daily catheter care with soap and water
- Hand Hygiene before touching catheter
- Secure the catheter to the leg to prevent trauma and traction
- Use a separate (patient labeled) container for emptying collection systems
- Do not routinely replace catheters or collection systems
### Sample PI plan for CAUTI

**Indicator:** Catheter Associated Urinary Tract Infection

**Performance Review for quarter:** ___3_ (month/year) ____7/12_________

Performance is: Favorable__/Unchanged__/Unfavorable_XX_

**Unit Interventions/steps for improvement: (what/who/by when)**

- Distribute CAUTI best practice flyer to all staff as an attachment to weekly newsletter.
- Print out report from Quadra med after tomorrow mornings classification and follow up to see if catheter is still in place at noon. Be sure that staff are aware that this is the source of collecting catheter days and that this is a quality indicator only and not used for HPWI or staffing. This could be inflating your catheter device days.
- Identify patients who have unsecure catheters. Email Sandy S and Terry M that patients coming in from OR and PACU and ask for their assistance. They will reinforce the message of transfer with catheter secured.
- Encourage staff to document “risk for infection” when patient has a catheter in place, noting reason for continuation and plan to d/c. (ie. day 3 of catheter patient continues to require hourly urines for gross hematuria will reevaluate in am during rounds.)
- Conduct a tracer on 3 records. (see share point site for forms) to identify “hot spots” for improvement.
- Ask resource nurse to check for “presence of order” for any patient that has a catheter in place during rounds. Identify any order templates that do not prompt for 24hour reminders to D/C Foley and email Mary-Ann Walsh for routing.
- Ask staff during a staff meeting to identify 3 actions they perform daily to prevent CAUTIs. (How many more can they name?)
- Share strategies that you have found helpful on share point site. (ex. Weekly postings of what one thing to target this week in staff bathroom by El 4...secure the catheter)
- Post positive stories/exemplars...ie., number of days without a CAUTI on bulletin board... and post success in decreasing DUR.
- If Foley has been in place more than 2 days initiate daily sticker of what alternatives have been tried. (straight cath/condom cath/briefs/toileting q2)

Last updated on/by:
A focus on Preventing CAUTI

Catheter Associated Urinary Tract Infections or CAUTIs are preventable and account for 40% of all hospital acquired infections...every day a catheter is in place the risk of infection increases.

MGH NARRATIVES

Improving CAUTI rates at the unit level
The clinical staff of Blake 12 made a commitment to improve their CAUTI rates with one simple evidence based practice: “Daily review of the need for the catheter.” Every day Donna Sloci, Attending RN on Blake 12, conducted catheter rounds with staff. Using a checklist of the MGH approved indications...more

Donna Sloci, RN, staff nurse, Blake 12 intensive care unit

MGH CAUTI RESOURCE S

The most effective means to prevent a CAUTI is to remove the catheter ASAP

A.R.M. your patients against CAUTI by:

Avoid the use of catheters...consider Alternatives (See toolkit)
Reduce the number of days a catheter is in place by regularly assessing the need for the catheter. Remember the most effective means to prevent CAUTI is to remove the catheter as soon as possible. If the correct POE order template (see toolkit) is used a daily electronic reminder will be triggered. Without an order or use of a scripted order this step is missed

Maintain the catheter below the level of the bladder and

MGH CAUTI Toolkit

- MGH Approved Indications for an Indwelling Urinary Catheter (1/13)
- POE Order (template view)
- Checklist: Indications for Foley Catheters
- Best practices for CAUTI prevention - poster/flyer
- Alternatives to Foley Catheters - poster/flyer
  - Intermittent catheterization
  - Condom catheter
  - Portable bladder ultrasound scanner
  - Bedside urinals
  - Bedside female urinals
  - Urinary pouch
  - Bed pans
  - Briefs, diapers, absorbent pads...
ENSURING SAMPLE PROCESS TO IMPROVE CAUTI RATES
Mary Ann Walsh RN, BSN, Deb Frost RN, DNP, Joe Braidt BS, MT (ASCP); Donna Macmillan BS, MT (ASCP) MBA, Edward Raeke, BA
Massachusetts General Hospital, Boston, MA

BACKGROUND AND SIGNIFICANCE

- Hospitals Acquired Conditions (HACs) have implications for morbidity and mortality. Urinary tract infections are the most common type of HAC accounting for more than 10% of infections reported by acute care hospitals. Efforts to decrease Catheter Associated Urinary Tract Infections (CAUTI) are included as part of National Patient Safety Goal number 7.
- Urine Culture colony count is one of the primary determinants of positive or negative CAUTI. Urine samples submitted for culture must meet the standard of less than 2 hours from time of collection to time of processing in the Microbiology Lab. This will ensure integrity and avoid misidentification of CAUTI.

IMPLEMENTATION

A multidisciplinary team designed an approach to improve compliance with documentation of time and date of collection and to improve specimen arrival to the Microbiology lab.

OBJECTIVES

To ensure the pre-analytic integrity of urine culture by improving or ensuring turnaround times of less than 2 hours.

PERFORMANCE IMPROVEMENT/OUTCOME

Compliance with Time and Date of sample collection improved from an average of 4% non-compliance to an average of 1% non-compliance. The percentage of samples received in less than 2 hours increased from an average of 23% to an average of 44%. CAUTI rates also decreased.

IMPLICATIONS FOR NURSING PRACTICE AND/OR FUTURE RESEARCH

Ensuring the pre-analytic quality of any lab specimen ensures that patients are not over treated or incorrectly diagnosed with infections. The importance of the pre-analytic phase of testing specimen collection and transport should be stressed during education sessions and as part of procedures.
Situation:
Urine Cultures should be processed within 2 hours of sample collection.

Background:
Urine Cultures that are unprocessed and remain at room temperature for greater than 2 hours can quickly multiply bacteria thus increasing the colony count of organisms. This is important for urine cultures obtained from indwelling urinary catheters which determine our CAUTI rates.

Assessment:
The length of time from collection to receipt to the Laboratory must not exceed 2 hours. Once collected, ensure all samples are sent to the Laboratory as soon as possible to help improve result accuracy. Documentation of “Time of collection” is an important element to include on the lab requisition form.

Recommendations:
- Additional fields will be implemented to the current inpatient “Microbiology Order Sheet” (see below). The “Microbiology Order Sheet” is the only document needed.
- Complete: a) time and date of collection b) patient temperature >100.4 c) sample source
- Place the sample in the designated pick up area.
- Samples are picked up routinely by transport on an hourly basis from 7am – 11pm. Between 11pm – 7am, please call: 1-617-726-2255

Required Information for ALL Specimens

<table>
<thead>
<tr>
<th>Collection Date:</th>
<th>Collection Time:</th>
</tr>
</thead>
</table>

Please Fill In Where Appropriate

For Urine Cultures Only:
- Patient Temperature > 100.4 Y / N (Circle One)
- Source of Sample: Clean Voided Specimen / Foley / Kidney / Stent / Straight Cath / Other: ________ (Circle One)

BLUE BAG - Send to Microbiology

Micro Blue Bag  Micro Blue Bag  Micro Blue Bag  Micro Blue Bag  Micro Blue Bag  Micro Blue Bag  Micro Blue Bag

*Please Note: All Cultures Need to be Retrieved Within 2 Hours of Collection*