CAUTI Prevention

CAUTI Prevention-
An Overview of the Latest Evidence

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• Discuss the most recent evidence related to CAUTI prevention
• Identify common barriers to CAUTI prevention practices
• Describe recent evidence related to patient and family engagement in CAUTI prevention
• Identify best practices to overcome barriers
A new point prevalence study will commence 2015 Spring-Summer

http://nursingworld.org/ANA-CAUTI-Prevention-Tool
Prevention Practices

- Appropriate Indications for use
- Proper Insertion and Maintenance
- Prompt Removal Intervention

https://s3.amazonaws.com/Hosted_Files/cauti+prevention+bundle+infographic+19.6+by+25.2+inches.jpg

Recent Guidelines

Only 2 recommendations with high level of Evidence:

1. Do not ROUTINELY use antiseptic catheters to prevent CAUTI (quality of evidence: I).

2. Do not treat asymptomatic bacteriuria in catheterized patients except before invasive urologic procedures (quality of evidence: I).

What is new since HICPAC Guidelines?

- Technical evidence – minimal
- Pickard Study (RCT) – no support for antiseptic catheters
- Much more evidence on socio-adaptive aspects of prevention and on hard wiring insertion and removal protocols (nurse-driven protocols, stop orders, indications for insertion)
- Connection to other causes of patient harm

Evidence

What has not changed?

- Maintain a closed system
- Use aseptic technique
- Use the smallest catheter possible
- Keep urine flow unobstructed
Practices not Recommended

Not Recommended
No evidence to support an effect on UTI prevention
• Complex urinary drainage systems
• Routinely changing catheters or drainage bags
• Routine antimicrobial prophylaxis
• Cleaning the periurethral area with antiseptics
• Antimicrobial irrigation of the bladder
• Antiseptic / antimicrobial solution instillation into drainage bags
• Routine screening for asymptomatic bacteriuria

Prevention Activities

1. Avoiding Insertion
2. Correct Insertion
3. Proper Maintenance
4. Appropriate Culturing
5. Prompt Removal
Reduce urinary catheter use

Promote aseptic insertion and maintenance

Reducing CAUTI

Avoid obtaining urine cultures unless clinically indicated

Do not treat asymptomatic bacteriuria except for select conditions

What has changed?

• More attention to adaptive aspects
• More attention to patient and family engagement
• Use of antiseptic coated catheter not recommended
• Use of human factor’s engineering
Reducing CAUTI in the ICU While Improving Safety Culture

Human Factor’s Engineering

Rank Order of Error Reduction Strategies

Forcing functions and constraints
 Automation and computerization
 Standardization and protocols
 Checklists and double check systems
 Rules and policies
 Education / Information

Leveraging the EHR

The Online Journal of Issues in Nursing

Electronic Health Record: Driving Evidence-Based Catheter-Associated Urinary Tract Infections (CAUTI) Care Practices

Lein M. Welden, MSN, RN
Interventions to Reduce Catheter Use
(Meddings et al, BMJ Qual Saf Sep 2013)

- 30 studies: Reminders, stop orders to prompt removal of unnecessary urinary catheters
- Average 1 day drop for urinary catheter use with interventions
- Overall reduction in CAUTI was about 53% with such interventions

Reducing Urinary Catheter Use and CAUTI
(Meddings et al, BMJ Qual Saf Sep 2013)

Meta-analysis of rate ratios for catheter-associated urinary tract infection episodes per 1000 catheter days, for intervention versus control groups, stratified by type of intervention to prompt catheter removal.

Success with ~53% reduction in CAUTI rates
3. Prompt Catheter Removal

- **Prompt Catheter Removal**
  1. Physician recognizes catheter is present
  2. Physician recognizes catheter is no longer needed
  3. Physician writes order to remove catheter
  4. Nurse sees order and plans to remove the catheter
  5. Urinary catheter is removed

- **Reminder:**
  - Reminds that a urinary catheter is still in use; may also remind of appropriate indications to continue catheterization.

- **Stop order:**
  - Prompts removal of urinary catheter based upon specified time after placement (e.g., 24 hours), based upon clinical criteria.
Reducing CAUTI in the ICU While Improving Safety Culture

3. Prompt Catheter Removal

Reminders and Stop Orders

- Can be directed at physicians or nurses
- Can be written, verbal, or electronic (computer order entry)
- Nurse to nurse communication during transitions (ED, ICU):
  - “Does this patient have a catheter? Why?”
  - If not indicated, ask for catheter to be removed before transfer.

Pearls
- Tailor to care setting
- Embed appropriate indications
- Include catheter alternatives
- Automate and time order
- Direct to primary care team
- Nurse-driven removal

Pitfalls
- Reminders often ignored
- Sustainability over time

Systematic Review of Reminder Systems to Reduce CAUTI and Urinary Catheter Use

- Methods:
  - Systematic review
  - Outcome measures: CAUTI risk, urinary catheter utilization, and catheter replacement
  - 14 studies evaluating reminders or stop orders met inclusion criteria
- Conclusions:
  - Low cost / high impact strategies
  - Potential to change the default from “persistent use” to “timely removal”
- Limitations:
  - Only 1 of 14 included studies was RCT
  - Only 1 in 10 US hospitals use reminders or stop orders

Results

<table>
<thead>
<tr>
<th></th>
<th>RR (95% CI)</th>
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<tbody>
<tr>
<td>CAUTI rate</td>
<td></td>
</tr>
<tr>
<td>- Reminder</td>
<td>0.44 (0.13,0.74)</td>
</tr>
<tr>
<td>- Stop order</td>
<td>0.59 (0.45,0.73)</td>
</tr>
<tr>
<td>- Overall</td>
<td>0.52 (0.28,0.68)</td>
</tr>
<tr>
<td>Catheter days</td>
<td>↓2.61 days (37%)</td>
</tr>
<tr>
<td>Reinsertion</td>
<td>NS</td>
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</tbody>
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Reducing CAUTI in the ICU While Improving Safety Culture

Resident physicians (n=106) and Nurses (n=159): triggers for cultures in catheterized patients
(Sibai et al, ID Week 2013, presentation 205)

<table>
<thead>
<tr>
<th>Trigger for Urine Culture</th>
<th>Resident Physicians (Answered Yes)</th>
<th>Nurses (Answered Yes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foul smelling urine</td>
<td>75 (70.8%)</td>
<td>146 (94.8%)</td>
</tr>
<tr>
<td>Cloudy urine</td>
<td>84 (79.2%)</td>
<td>146 (94.8%)</td>
</tr>
<tr>
<td>Sediments in urine</td>
<td>57 (53.8%)</td>
<td>129 (84.3%)</td>
</tr>
<tr>
<td>Darker urine</td>
<td>39 (36.8%)</td>
<td>72 (47.7%)</td>
</tr>
<tr>
<td>Chronic UC on admission</td>
<td>46 (43.4%)</td>
<td>115 (74.2%)</td>
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All of the above should **not** trigger a urine culture in catheterized patients!


Assess daily the necessity of the indwelling catheter

<table>
<thead>
<tr>
<th>Assess and document competency of health care workers performing insertion</th>
<th>Consider Root Cause Analysis or Focused Review of CAUTI or catheter use to identify improvement opportunities</th>
<th>Measure monthly for 6 months; re-evaluate. If rate has dropped below indicated levels proceed back to Tier 1</th>
<th>Sources: HICPAC CDC Guidelines on CAUTI Prevention</th>
<th><a href="http://www.catheterout.org">www.catheterout.org</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage use of alternatives to indwelling catheter</td>
<td>Use standard indwelling urinary catheter kit with pre-sealed junction</td>
<td>Ensure proper aseptic insertion technique</td>
<td>Follow maintenance and removal template for care and removal of the catheter</td>
<td>Measure CAUTI rates monthly</td>
</tr>
</tbody>
</table>
Reducing CAUTI in the ICU While Improving Safety Culture

## Culturing Stewardship

<table>
<thead>
<tr>
<th>When to obtain or not obtain a urine culture in a patient with an indwelling urinary catheter</th>
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</thead>
<tbody>
<tr>
<td><strong>Discourage Urine Culture Use</strong></td>
</tr>
<tr>
<td>Urine quality: color, smell, sediments, turbidity (do not constitute signs of infection)</td>
</tr>
<tr>
<td>Screening urine cultures (whether on admission or before non-urologic surgeries)</td>
</tr>
<tr>
<td>Standing orders for urinalysis or urine cultures without an appropriate indication</td>
</tr>
<tr>
<td>“PAN” culturing (mindfulness in evaluating source is key)</td>
</tr>
<tr>
<td>Obtaining urine cultures based on pyuria in an asymptomatic patient</td>
</tr>
<tr>
<td>Asymptomatic elderly and diabetics (high prevalence of asymptomatic bacteriuria)</td>
</tr>
<tr>
<td>Repeat urine culture to document clearing of bacteriuria (no clinical benefit to patients)</td>
</tr>
</tbody>
</table>

Fakih, Improving the Culture of Culturing

## Effects of adhering to guidelines

**Preventing Catheter-Associated Urinary Tract Infection in the United States**

A National Comparative Study

Sanjay Satish, MD, MPH; Fadl Grama, PhD, MPH; Christine P. Kowalski; MPH; Sam R. Watson, MS, MT; Timothy F. Heffner, MD; MS; Sarah L. Klein, PhD, RN

**Importance:** Despite the national goal to reduce catheter-associated urinary tract infections (CAUTI) by 25% by 2013, limited data exist describing prevention practices for CAUTI in US hospitals and more associate national practice use with CAUTI-specific standardized infection rates (SIRs).

**Objectives:** To identify practices currently used to prevent CAUTI and to compare use and SIRs for a national sample of US hospitals with hospitals in the state of Michigan, which launched a CAUTI prevention initiative in 2007 (“Keystone Bladder Bundle Initiative”).

**Design and Setting:** In 2009, we surveyed infection preventionists at a sample of US hospitals and all Michigan hospitals. CAUTI rate differences between Michigan and non-Michigan hospitals were assessed using SIRs.

**Participants:** A total of 450 infection preventionists.

**Main Outcome Measures:** Reported regular use of CAUTI prevention practices and CAUTI-specific SIR data.

**Results:** Michigan hospitals, compared with hospitals in the rest of the United States, more frequently participated in collaboratives to reduce healthcare-associated infections (HCAI) and used bladder scans (53% vs 30%, P < .04), as well as catheter reminders or step order forms, more than hospitals in the rest of the United States. In contrast, Michigan hospitals were no more likely to use a urinary catheter challenge protocol to guide all decisions observed in the rest of the United States.

**Conclusions and Reference:** We observed more frequent use of key prevention practices for CAUTI in Michigan hospitals relative to non-Michigan hospitals. This may be related to Michigan’s significantly higher use of practices aimed at timely removal of urinary catheters, key features of the Michigan Keystone Bladder Bundle initiative. For the full study, see: *EHP* 2012;120(5):879-879. Published online March 23, 2013. doi:10.1289/ehp.1201340 (in press).
Involving the Patient

Preventing CAUTI: A patient-centered approach

PFE and Patient-Family Centered Care (PFCC)

“An approach to the planning, delivery, and evaluation of health care that is grounded in mutually beneficial partnerships among health care providers, patients, and families.”

Source: Institute for Patient and Family Centered Care

“A partnership among practitioners, patients, and their families to ensure that decisions respect patient's wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care.”

Source: IOM, 2001
PFE Defined

Definition of patient and family engagement

“Patient and family engagement [is defined] as patients, families, their representatives, and health professionals working in active partnership at various levels across the health care system – direct care, organizational design and governance, and policy making – to improve health and health care.”

Carman et al, 2013, *Health Affairs*

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Principles of PFCC

- **Dignity and Respect** – *listen and honor choices*

- **Information Sharing** – *communicate and share accurate, unbiased and timely knowledge with patients and families*

- **Participation** – *encourage shared decision making*

- **Collaboration** – *partners in all aspects of care*
Where’s the Evidence Concerning PFE?

EVIDENCE BOOST: A REVIEW OF RESEARCH HIGHLIGHTING HOW PATIENT ENGAGEMENT CONTRIBUTES TO IMPROVED CARE
G. Ross Baker, Ph.D.
Institute of Health Policy, Management and Evaluation
University of Toronto

Improving patient experience and incorporating patient input into the design of healthcare services have emerged as critical priorities for many healthcare systems but progress has been limited. Greater engagement of patients and families in organizational roles and care teams has helped a number of healthcare organizations to improve quality, safety and patient experience. Insights from exemplary organizations suggest broader opportunities to improve health system performance. This brief provides a context and summary of research findings on case studies of patient engagement for health system improvement across organizations in four countries.

Background
Patient-centered care was identified as one of the six core goals for United States healthcare in the seminal Institute of Medicine report, Crossing the Quality Chasm, and new initiatives in that country (such as Accountable Care Organizations and Patient Centered Medical Homes) are commonly judged on the extent to which they are patient-centered.\(^6\) In England, the National Health Service (NHS) Operating Framework describes each patient’s experience as “the final arbiter of everything the NHS does.” And, in Canada, patient-centered care has been adopted as “the foundation and principal aim of the Saskatchewan health system” and a number of organizations in other provinces have committed to patient and family-centered care or have made their initiatives and strategies clear. Provide these health systems with evidence does suggest that patient and family engagement translates into patient and organizational improvements (primarily in the areas of safety and effectiveness) but the mechanisms that translate patient and family engagement into better outcomes are not well understood.

Creating the Environment for PFE

- Mutual respect for skills and knowledge
- Honest, clear, two-way communication
- Understanding and empathy by being accessible and responsive
- Mutually agreed upon goals through joint planning and evaluation
- *Shared planning and decision-making (doing things with patients-families, not for or to them)*
### Meaningful PFE Practices

- Bedside rounds and shift report
- Shared decision making tools and aides
- Teach back, motivational interviewing
- Family presence policy and practice
- Patient stories in meetings
- Planning documents, HR policies and leadership expectations include PFE as a priority
- Patient-family advisors and councils
- Program planning includes patients & families faculty
  - Patient Advisors serve on patient safety and quality performance improvement teams
- Patients serve on facility and IT design teams
- Patients co-design physician office practices
- Patient advisors serve on hospital leadership teams

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### Strategies to Engage Patients and Family in CAUTI Reduction

- **Individual (skills & knowledge)**
  - Mutually agreed upon treatment plan
  - Encourage active participation and presence

- **Healthcare Team (shared understanding)**
  - Bedside shift report
  - Teach-back
  - Access to medical records and decision aids

- **Organization (integrate perspectives)**
  - Patient-family advisors and advisor councils
  - Family presence (open visitation)
  - Patient advisors serve on CAUTI team

- **Community (population health)**
  - Health education programs with patients as faculty
  - Engage consumers in policy and practice changes
Patients as Safety Liaisons

- Liaisons complete risk assessments, HIPPA training and role orientation
- Patients Advisors participate in safety rounds and use consistent questions focused on safety priorities
- Findings are documented and staff and advisors conduct debriefs with patient safety manager
- Advisors serve on CAUTI and other patient safety performance improvement teams (e.g. Falls, Skin Breakdown, Medication Errors with Harm, VAP, Hand Hygiene, Central Lines, etc.)

SCCM and AACN Initiatives Enhancing PFE

SCCM
- Project Dispatch (Disseminating Patient-Centered Outcomes Research to Healthcare Professionals)
- THRIVE project (effects of ICU)
- ACCCM Statement on EOL Care in ICU
- Podcasts (Family Presence, Family-centered rounds, Interruption communication bundles)

AACN
- Scope & Standards for Acute & Critical Care Nursing Practice
- Practice Alert: Family Presence During Resuscitation and Invasive Procedures
- Clinical Practice Guidelines for Support of the Family in ICU
Your Organization’s PFE Practices

• How does your organization demonstrate the principles and practices of patient and family engagement in infection prevention, especially CAUTI prevention?
• What is your organization’s long-term plan to advance patient- and family-centered care across all areas of patient safety, especially CAUTI prevention?
• Who is guiding your unit’s or organization’s efforts in this area?

Best Practice: Story Telling

"Facts bring us to knowledge, but stories lead to wisdom."

Dr. Rachel Naomi Remen
Best Practice: Storytelling

Patients & Family As Team Members

“Leverage point four is the leverage point with the greatest potential to drive the long-term transformation of the entire system.”

IHI Seven Leadership Leverage Points to Drive Organizational Improvement
2008 IHI innovation series
Other Emerging Evidence

Chlorhexidine for catheter care - Associated with decrease in CAUTIs
Huang 2014 SHEA/IDSA Abstract

Barriers to appropriate insertion practices
Milisa Manojlovich, RN, PhD, CCRN
May National Content call “on the CUSP - Stop CAUTI”

CAUTI

Lessons Learned:

- CAUTI is not easy
- Knowledge deficits still exist
- Physician engagement is still an issue
- May need to return to the beginning
CAUTI GPS - Discussion

CAUTI Guide to Patient Safety (GPS)

1. Do you currently have a well-functioning team (or work group) focusing on CAUTI prevention?
   - Yes
   - No
2. Do you have a project manager with dedicated time to coordinate your CAUTI prevention activities?
   - Yes
   - No
3. Do you have an effective nurse champion for your CAUTI prevention activities?
   - Yes
   - No
4. Do bedside nurses assess, at least daily, whether their catheterized patients still need a urinary catheter?
   - Yes
   - No
5. Do bedside nurses take initiative to assure the indwelling urinary catheter is removed when the catheter is no longer needed (e.g., by contacting the physician or removing the catheter per protocol)?
   - Yes
   - No
6. Do you have an effective physician champion for your CAUTI prevention activities?
   - Yes
   - No
7. Have physicians fully embraced CAUTI prevention activities?
   - Yes
   - No
8. Is senior leadership supportive of CAUTI prevention activities?
   - Yes
   - No
9. Do you currently collect CAUTI-related data (e.g., urinary catheter prevalence, urinary catheter appropriateness, and infection rates) in the unit(s) in which you are intervening?
   - Yes
   - No
10. Do you routinely feedback CAUTI-related data to frontline staff (e.g., urinary catheter prevalence, urinary catheter appropriateness, and infection rates)?
    - Yes
    - No

CAUTI Discussion

From the previous slide

How many questions did you answer “Yes” to
New Web Based Form

On line: Link to trouble shooting tips

**Question 4:** Do bedside nurses assess, at least daily, whether their catheterized patients still need a urinary catheter?

You indicated that nurses do not assess, at least daily, the continued appropriateness of the indwelling urinary catheter. Throughout a patient’s stay their need for the indwelling catheter is likely to change. Without continual reassessment for appropriateness, the catheter is likely to stay in beyond its necessity, the greatest risk for infection. For more specifics, please follow this link.

**Question 10C:** Have you experienced patient and family requests for an indwelling urinary catheter?

You indicated that you have received requests from patients and family for an indwelling catheter. In these circumstances talking with them and offering some education about catheter appropriateness criteria, as well as the benefits and risks can overcome this barrier. For more specifics, please follow this link.