

Implementing Change: The Technical & Socio-Adaptive Aspects of Preventing CAUTI

Prof. Sanjay Saint, University of Michigan Medical School

Teleclass sponsored by WHO, Clean Care is Safer Care

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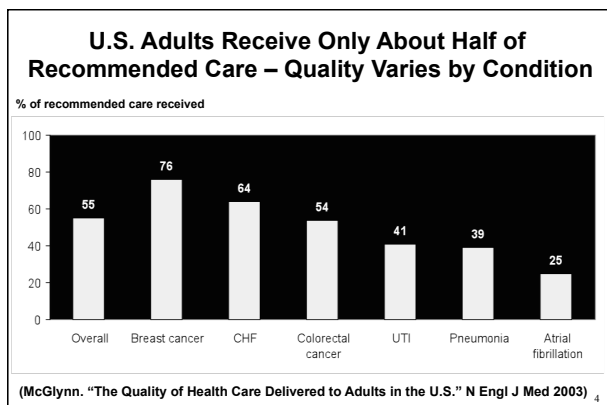
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“Nothing is more difficult to plan nor more perilous to conduct than the introduction of change. The innovator has for enemies all those who have prospered under the old, and only lukewarm defenders in those who may prosper under the new.... When his enemies have the opportunity to attack they do so with the zeal of partisans, while supporters defend him feebly, endangering both the innovator and the cause.”

– Niccolo Machiavelli. The Prince, 1513 AD

Consistently Implementing Evidence-Based Practices Remains a Challenge...



Hand Hygiene Compliance in Healthcare Workers

(Erasmus et al. Infect Control Hosp Epidemiol March 2010)

- Systematic review of 96 studies
- Overall median compliance of 40%
- Lower rates in physicians (32%) than nurses (48%)
- Lower rates “before” (21%) patient contact rather than “after” (47%)

Given this Gap Between What *Should* Be Done and What *Is* Done...

- Focus on “implementation science”
- “The scientific study of methods to promote the systematic uptake of research findings into routine practice”
(Eccles & Mittman. Implementation Science. Feb 2006)
- Synonyms:
 - “T3” translation
 - Knowledge transfer
 - Knowledge utilization

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Prevention of Catheter-Associated UTI

- Make sure the catheter is indicated
- Adhere to general infection control principles (eg, aseptic insertion, proper maintenance, hand hygiene, education, feedback)
- Remove the catheter as soon as possible
- Consider other methods of prevention

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UTI Prevention Rule #1: Make Sure the Patient Really Needs the Catheter

Appropriate indications

- Bladder outlet obstruction
- Incontinence and sacral wound
- Urine output monitored
- Patient's request (end-of-life)
- During or just after surgery

(Wong and Hooton - CDC 1983) (Jain, Arch Int Med 95)

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Why are Catheters Used Inappropriately?

- Perhaps physicians “forget” that their patient has a urinary catheter
- We determined the extent to which doctors are aware which of their inpatients have catheters
- Surveyed 56 medical teams at 4 sites across US
(Saint S, Wiese J, Amory J, et al. Am J Med 2000)

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One Reason Catheters Are Used Inappropriately

Level	Proportion Unaware of the Catheter
Medical students	18%
House officers	25%
Attending physicians	38%

(Saint S, Wiese J, Amory J, et al. Am J Med 2000)

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Urinary Catheters Often Placed in the Emergency Department: A National U.S. Study

- Catheters often inserted without clear indications and may remain in place for convenience rather than medical necessity
- **An Infection Control Nurse:** “our other barrier is the Emergency Department and this is where most Foleys are placed. . . . Doctors forget to look under the sheets to say, ‘Oh yeah, there’s a Foley there’ and . . . the nurses aren’t going to take the initiative. . . .”

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2009 Prevention of CAUTI HICPAC Guidelines

(Gould et al, Infect Control Hosp Epidemiol 2010; 31: 319-326)

Table 2.
A. Examples of Appropriate Indications for Indwelling Urethral Catheter Use ¹⁴
Patient has acute urinary retention or bladder outlet obstruction
Need for accurate measurements of urinary output in critically ill patients
Perioperative use for selected surgical procedures:
<ul style="list-style-type: none"> • Patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract • Anticipated prolonged duration of surgery (catheters inserted for this reason should be removed in PACU) • Patients anticipated to receive large-volume infusions or diuretics during surgery • Need for intraoperative monitoring of urinary output
To assist in healing of open sacral or perineal wounds in incontinent patients
Patient requires prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)
To improve comfort for end of life care if needed

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Use Aseptic Technique for Catheter Insertion

- NEJM Videos in Clinical Medicine: 
 - Male Urethral Catheterization
T. W. Thomsen and G. S. Setnik - 25 May, 2006
 - Female Urethral Catheterization
R. Ortega, L. Ng, P. Sekhar, and M. Song - 3 Apr, 2008
- Goal is to avoid contamination of the sterile catheter during the insertion process
- Should not assume that the healthcare workers inserting urinary catheters know how to do so

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Proper Insertion Technique



- Hand hygiene before and after placement
- Aseptic technique and use of sterile equipment
- Sterile gloves, drape, and antiseptic solution for periurethral cleaning
- Use the appropriate catheter size

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Proper Maintenance

- Keep the urinary system closed
- Make sure flow is unobstructed:
 - No kinking of the catheter
 - Drainage bag should be lower than the bladder
 - Regularly empty the bag

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A Systems Solution: Timely Removal of Indwelling Catheters

- 14 studies have evaluated urinary catheter reminders and stop-orders (written, computerized, nurse-initiated)
 - Significant reduction in catheter use (~2.5 days)
 - Significant reduction in infection (~50%)
 - No evidence of harm (ie, re-insertion)

(Meddings J et al. Clin Infect Dis 2010)

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Disrupting the Lifecycle of the Urinary Catheter

1. Preventing Unnecessary and Improper Placement

4. Preventing Catheter Replacement

2. Maintaining Awareness & Proper Care of Catheters

3. Prompting Catheter Removal

(Meddings. Clin Infect Dis 2010) 25

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Prevention of CAUTI using Antimicrobial Catheters

Different antimicrobial urinary catheters have been evaluated in patients:

- Silver (either alloy or oxide)
- Nitrofurazone-releasing

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Cochrane Review of Antimicrobial Catheters
 (Schumm & Lam. *Cochrane Database* 2008)

- 23 trials involving 5236 hospitalized adults in 22 parallel group trials met inclusion criteria
- Conclusions: "...Silver alloy (antiseptic) coated or nitrofurazone-impregnated (antibiotic) urinary catheters might reduce infections in hospitalised adults ... but the evidence was weak."
- "Larger, more scientifically rigorous, trials are needed on whether catheters impregnated with antibiotics or antiseptics reduce infection."

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8 Center Trial of Antimicrobial Catheters
 (<http://www.hta.ac.uk/1536>)

- Coordinating Center: University of Aberdeen
- Compare standard catheters with either silver or nitrofurazone for short-term catheterization
- Also looking at costs and QALY's
- Funded by the UK NHS Health Technology Assessment Programme
- Website indicates the paper is at the "editorial review stage" (as of 8 April 2012)

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Other Methods for Preventing CA-UTI

- Alternatives to the indwelling catheter
 - Bladder ultrasound
 - Intermittent catheterization
 - Condom catheter

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Recent Guidelines on CAUTI Prevention

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Supplement Article: Infection Control Practice Recommendation


Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals

Authors: Robert W. Gould, MD, MSCR¹; Craig A. Umscheid, MD, MSCE²; Rajender K. Agarwal, MD, MPH³; Gretchen Kuntz, MSW, MSLIS⁴; David A. Pegues, MD⁵; and the Healthcare Infection Control Practices Advisory Committee (HICPAC)

OBJECTIVES

1. The main goal of catheter-associated urinary tract infection (CAUTI) prevention is to avoid the need for a catheter.
2. Catheters should be inserted only when necessary and removed as soon as possible.
3. Catheters should be inserted using aseptic technique.
4. Catheters should be secured to the patient's leg to prevent movement.
5. Catheters should be changed only if necessary.
6. Catheters should be removed when no longer needed.

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GUIDELINE FOR PREVENTION OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 2009

Carolyn V. Gould, MD, MSCR¹; Craig A. Umscheid, MD, MSCE²; Rajender K. Agarwal, MD, MPH³; Gretchen Kuntz, MSW, MSLIS⁴; David A. Pegues, MD⁵ and the Healthcare Infection Control Practices Advisory Committee (HICPAC)⁶

<http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf>

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CAUTI Prevention: Concise Summary of Recommendations

- Adherence to infection control principles (eg, aseptic insertion, proper maintenance, education) is important
- Bladder ultrasound may avoid indwelling catheterization
- Condom or intermittent catheterization in appropriate pts
- Do not use the indwelling catheter unless you must !
- Early removal of the catheter using reminders or stop-orders appears warranted

(Saint et al., Jt Comm J Qual Saf 2009)

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"ABCDE"

- Adherence to infection control principles (eg, aseptic insertion, proper maintenance, education) is important
- Bladder ultrasound may avoid indwelling catheterization
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Catheter-Associated
Urinary Tract Infection (CAUTI) Prevention

✓ Technical Aspects

▪ The Socio-Adaptive

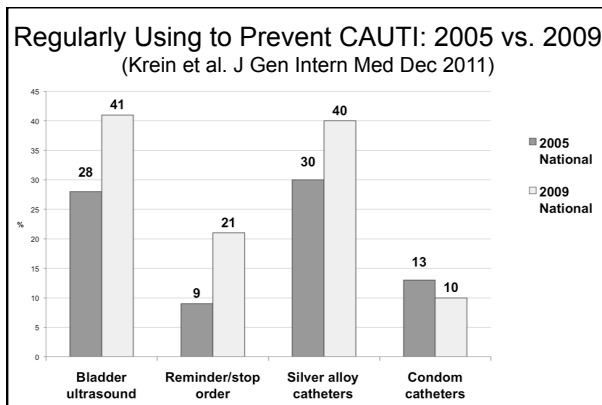


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What are Hospitals Using to Prevent CAUTI?

- National survey of U.S. hospitals (focused on device-related infection)
- > 700 hospitals surveyed (2005 and 2009)
- Lead Infection Control Professional filled out the survey
- ~70% response rate in both years

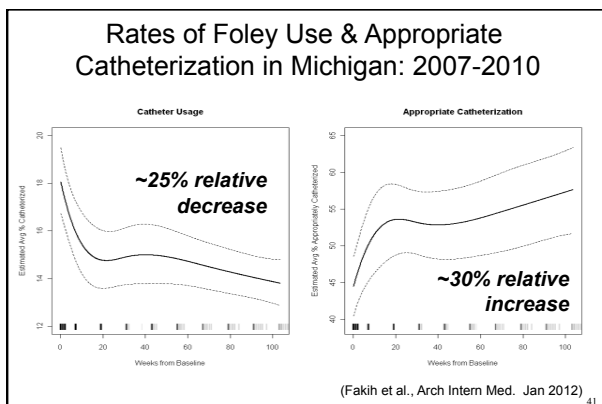
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Socio-Adaptive Aspects

- No dominant practice is being used
- About 1 in 5 U.S. hospitals using catheter reminders or stop-orders
- Next Step: evaluate a statewide initiative to reduce urinary catheter use

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Qualitative Themes from Michigan's CAUTI Experience: The Socio-Adaptive

- Tailoring
- Workflow
- Leadership

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The Importance of Tailoring

- May need to tailor (ie, modify) your approach to CAUTI given your specific context and circumstances
- We saw different solutions at different hospitals; different solutions within different units at the same hospital
- Examples:
 - Who assesses for catheter appropriateness
 - Modifying the indications for catheter use (slightly)
 - Focus on insertion or early removal or both?

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Qualitative UTI Themes from Michigan's CAUTI Experience: The Socio-Adaptive

✓ *Tailoring*

▪ *Workflow*

▪ *Leadership*

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The Challenge: How to Make Urinary Catheter Removal Part of the Workflow

- The intervention(s) should become part of the workflow: both removal (floor) and insertion (ED)
- Nursing workload was a big issue - since Foleys can be easier for the nurses, this may be a disincentive to remove

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The Challenge: How to Make Urinary Catheter Removal Part of the Workflow

- The intervention(s) should become part of the workflow: both removal (floor) and insertion (ED)
- Nursing workload was a big issue - since Foleys can be easier for the nurses, this may be a disincentive to remove
- For insertion, ED is paramount
 - Foleys put in for specimen collection and left in
 - ED nurses may think they're doing floor nurses a favor
 - Nursing aides often insert Foleys in the ED

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Qualitative UTI Themes from Michigan's CAUTI Experience: The Socio-Adaptive

✓ *Tailoring*

✓ *Workflow*

▪ *Leadership*

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The Importance of Leadership

- Leadership at various levels appears to be important, especially at the nurse manager level
- Physicians often play an important role
 - Behind-the-scenes (getting buy-in from medical executive committees and other physicians)
 - Front-line (eg, hospitalists, hospital epidemiologists)

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- Physicians often play an important role
 - Behind-the-scenes (getting buy-in from medical executive committees and other physicians)
 - Front-line (eg, hospitalists, hospital epidemiologists)
- The type of champion that is needed depends on organizational culture
 - Nurse manager or charge nurse may be best option
 - Not a one-size-fits-all strategy

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4 Key Behaviors of Effective Infection Prevention Leaders

(Saint et al. Infect Cont Hosp Epid. Sept 2010)

- 1) Cultivated a culture of clinical excellence
 - Developed a clear vision
 - Successfully conveyed that to staff
- 2) Inspired staff
 - Motivated and energized followers
 - Some, not all, were charismatic

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4 Key Behaviors of Effective Infection Prevention Leaders

(Saint et al. Infect Cont Hosp Epid. Sept 2010)

- 3) Solution-oriented
 - Focused on overcoming barriers rather than complaining
 - Dealt directly with resistant staff
- 4) Thought strategically while acting locally
 - Planned ahead leaving little to chance; politicked before crucial issues came up for a vote in committees

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Qualitative UTI Themes from Michigan's CAUTI Experience: The Socio-Adaptive

- ✓ *Tailoring*
- ✓ *Workflow*
- ✓ *Leadership*

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2 More Potential Hurdles...

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Potential Hurdles

- Active Resisters: people who prefer doing things the way they have always done them

(Ford et al. Acad Manag Rev 2008)


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Potential Hurdles

- Active Resisters: people who prefer doing things the way they have always done them
(Ford et al. Acad Manag Rev 2008)
- Organizational Constipators: passive-aggressives who undermine change without active resistance
(Saint et al. Joint Comm Journal Qual Safety 2009)



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- ✓ Implementation
- ✓ Preventing CAUTI
 - ✓ Technical Aspects
 - ✓ Socio-adaptive
- Conclusions



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Conclusions

- CAUTI is a common and costly patient safety problem
- Several practices likely decrease CAUTI but there are no easy solutions
- Avoiding the indwelling catheter should be prioritized
- Early removal has robust evidence to support its use
- Understand the implementation process and tailor as appropriate: one size unlikely to fit all

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Conclusion

Preventing Catheter-Associated UTI is a Team Sport!

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Thank you!

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