

Enhancing Patient Safety by Preventing Catheter-Associated Urinary Tract Infection (CAUTI): The Journey Continues

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*April 2018
Webinar*



VA Health System Impact Award

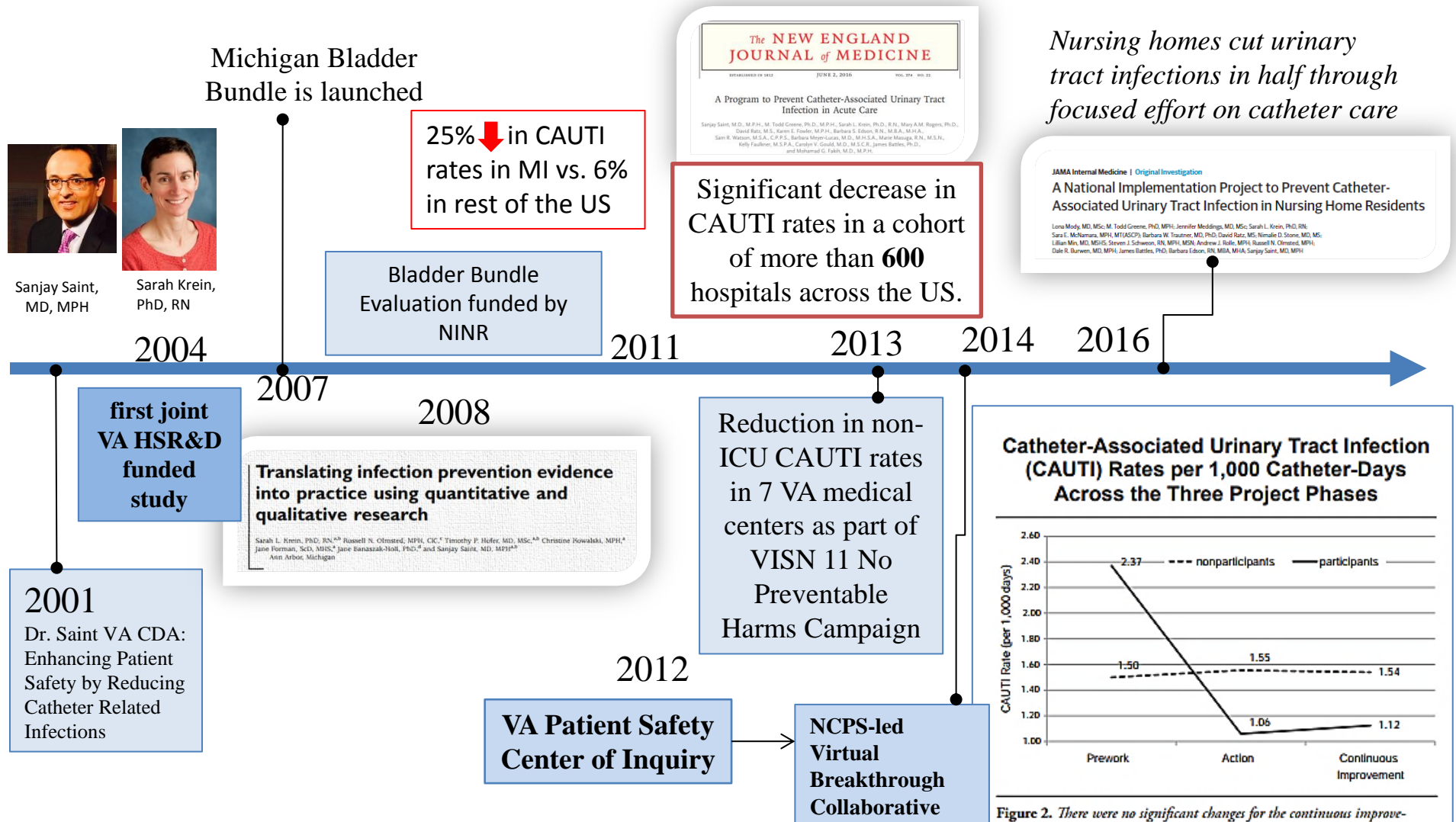
- Make Veterans' care safer by reducing the risks of unneeded and harmful urinary catheters
- VA focused work to reduce catheter-associated urinary tract infection (CAUTI) locally, regionally and nationally
- State-based CAUTI prevention initiative (aka “the Bladder Bundle”) in collaboration with MHA Keystone Center
- Nationwide effort funded by AHRQ to reduce CAUTI in more than 1,000 hospitals across the U.S.

Poll Question

What is your primary role in VA?

- Student, trainee, or fellow
- Clinician
- Researcher
- Administrator, manager or policy-maker
- Other

Preventing Catheter-Associated Urinary Tract Infection and Urinary Catheter Harm: Our Journey



Arrived in Ann Arbor in 1998

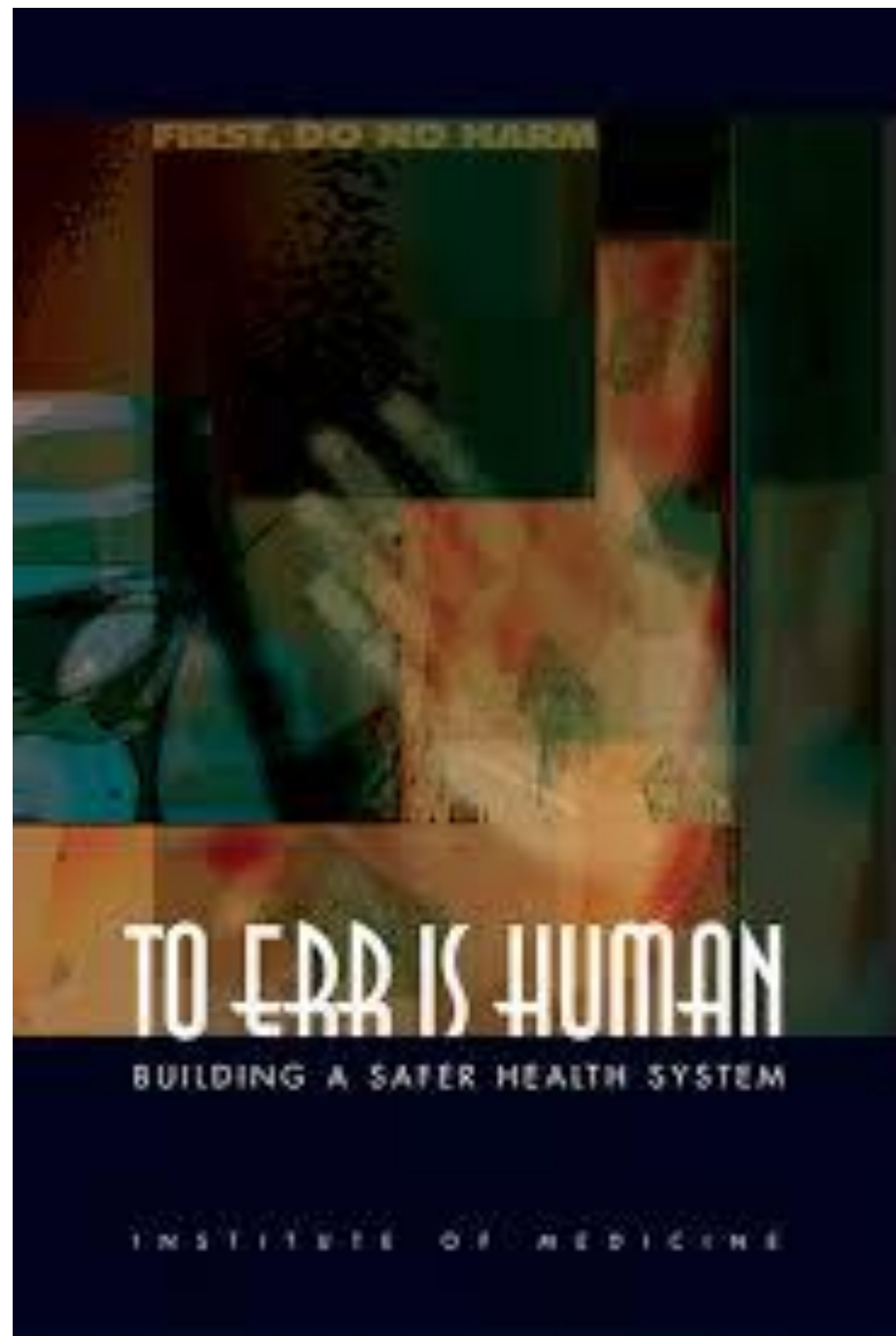


- Hospital-acquired complications are common, costly, and morbid
- Nosocomial infection affects ~2 million U.S. patients hospitalized annually
- Many complications seem preventable

Arrived in Ann Arbor in 1998

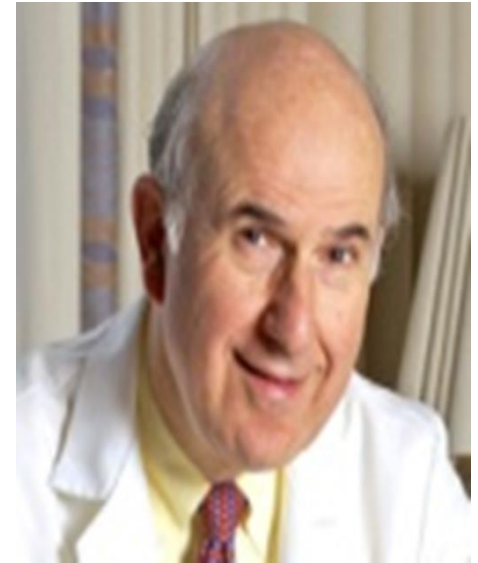
- We should have a program to address these complications
- My BHAG: “Program to Reduce Preventable Nosocomial Complications in Hospitalized Patients” (or “PRPNCHP”)

29 November
1999



“Patient Safety Enhancement Program”

- Build a new research-based program
- Provide a model for improving safety
- Focus on reducing *preventable* adverse events
- Funding came from both UMHS and VA Ann Arbor Healthcare System



VA Health Services Research and Development Career Development Award

- Enhancing Patient Safety by Reducing Catheter Related Infections
- 07/01/01 – 09/30/08; CDA-1 as well as Advanced Career Development Award

Catheter-Associated Urinary Tract Infection (CAUTI)

- One of the most common infections
- 1/4 of inpatients receive catheters
- 1/3 of catheter days unnecessary
- 1/3 of physicians unaware their patient has a catheter
- 1/3 of the time no order for a catheter

***The Foley also leads to
non-infectious harms.***

Patient Perspective

Satisfaction survey of 100 catheterized VA patients:

- 42% found the indwelling catheter to be uncomfortable
- 48% stated that it was painful
- 61% noted that it restricted their ADLs
- 2 patients provided unsolicited comments that their catheter “hurt like hell”

(Saint et al. JAGS 1999)

Indwelling Urinary Catheters: A One-Point Restraint?

Sanjay Saint, MD, MPH

Benjamin A. Lipsky, MD

Susan Dorr Goold, MD, MHSA, MA

16 July 2002

How Can We Implement Changes to
Reduce Indwelling Catheter Use?

Why Some Hospitals are Better than Others in Preventing Infection

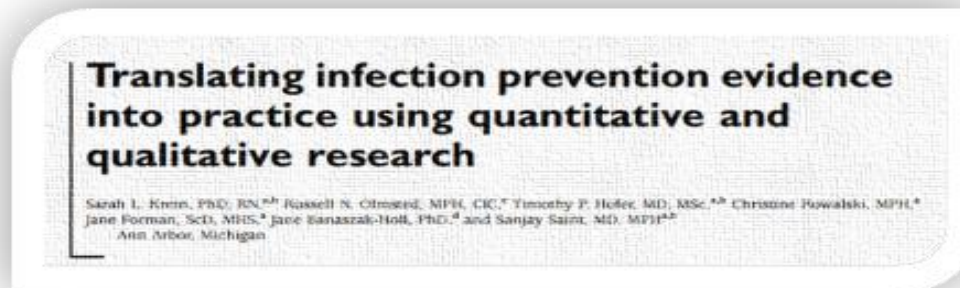


Translating Infection Prevention Evidence to Enhance Patient Safety

HSR&D project SAF 04-031; 10/01/2004 – 3/31/2008

A sequential mixed methods study design

- Survey of VA and non-VA hospitals to identify what hospitals are doing to prevent hospital-acquired infections
- Interviews and site visits to understand why hospitals are using or not using certain practices



(Krein et al. AJIC 2006; 34(8): 507-512.)

Implementation

⋮

Technical



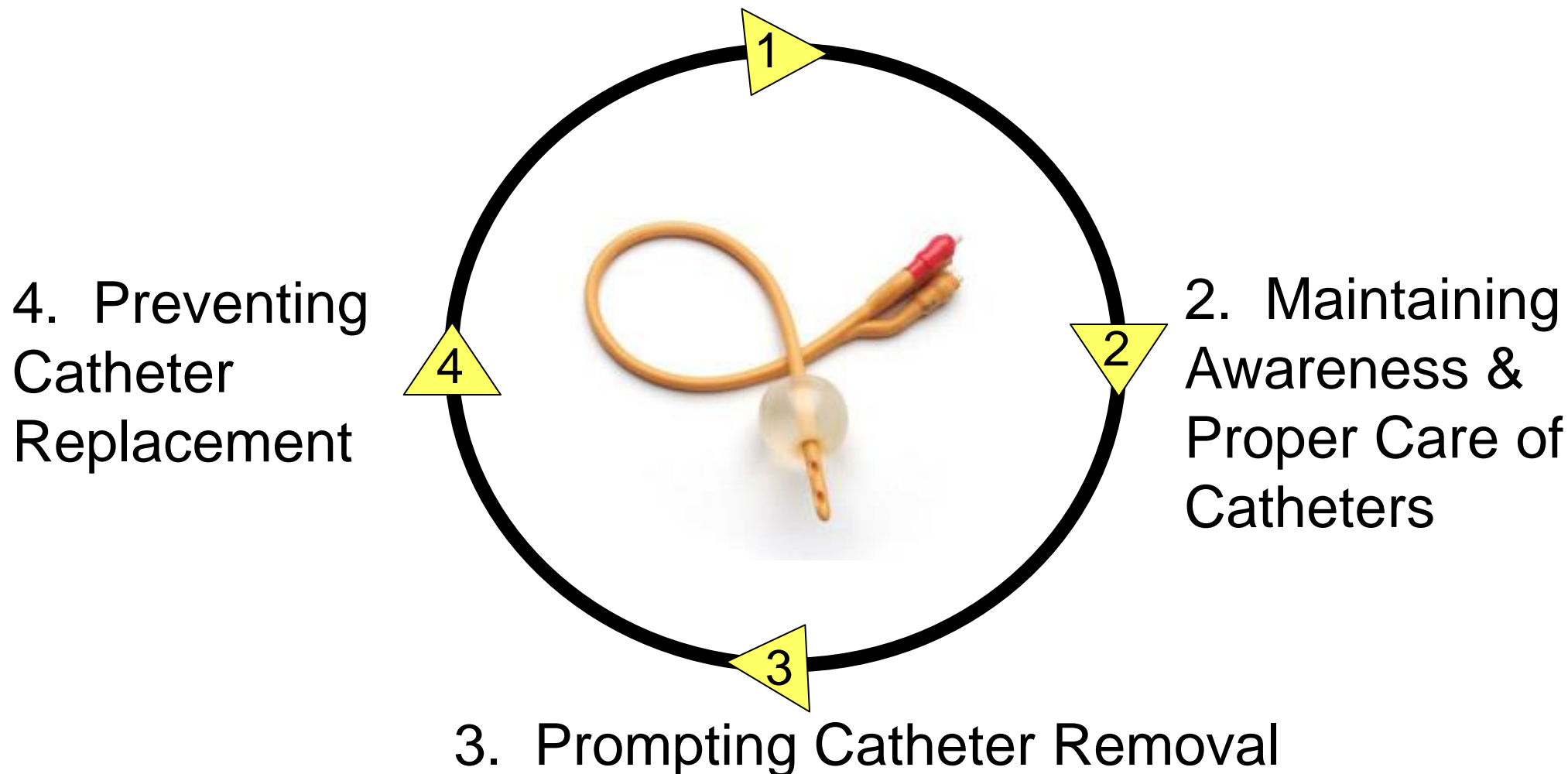
*Socio-
adaptive*

Technical Elements of the “Bladder Bundle”

- Reduce indwelling catheter use
- Proper insertion technique
- Proper maintenance
- Prompt removal of non-indicated catheters
- Proper hand hygiene

Disrupting the Lifecycle of the Urinary Catheter

1. Preventing Unnecessary and Improper Placement



Supplement

to Annals of Internal Medicine

The Ann Arbor Criteria for Appropriate Urinary Catheter Use in Hospitalized Medical Patients: Results Obtained by Using the RAND/UCLA Appropriateness Method

Jennifer Meddings, MD, MSc; Sanjay Saint, MD, MPH; Karen E. Fowler, MPH; Elissa Gaies, MD, MPH; Andrew Hickner, MS; Sarah L. Krein, PhD, RN; and Steven J. Bernstein MD, MPH

In Pursuit of Appropriate Urinary Catheter Indications: Details Matter

Carolyn V. Gould, MD, MSCR

Alternatives to Consider

- 1) Accurate daily weights
- 2) Urinal/commode/bedpan
- 3) Condom catheters
- 4) Intermittent catheterization with bladder scanning

But if the patient really, really
needs a Foley...

Ensure proper aseptic technique is
used during insertion

Timely Removal of Indwelling Catheters

- 30+ studies have evaluated urinary catheter reminders and stop-orders
 - Significant reduction in catheter-associated urinary tract infection (53%)
 - No evidence of harm (ie, re-insertion)
 - Will also address the non-infectious harms of the Foley

(Meddings J et al. BMJ Qual Saf 2013)

Implementation

⋮

Technical



*Socio-
adaptive*

Primary Socio-adaptive Challenge with CAUTI Prevention

“I would say there’s a general perception in the field that urinary tract infections don’t cause a lot of morbidity and mortality compared to the quote, sexy topics such as blood stream infection or surgical site infection or VAP.”

(Saint et al., ICHE, 2008)



Lack of physician and nurse engagement



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Contents lists available at [ScienceDirect](#)

American Journal of Infection Control

journal homepage: www.ajicjournal.org

AJIC
American Journal of
Infection Control

Original article

Engaging health care workers to prevent catheter-associated urinary tract infection and avert patient harm



Mohamad G. Fakih MD, MPH^{a,b,*}, Sarah L. Krein PhD, RN^{c,d},
Barbara Edson RN, MBA, MHA^e, Sam R. Watson MSA, MT^f, James B. Battles PhD^g,
Sanjay Saint MD, MPH^c

Active Resistors



Overcoming Resistance: Finding a Member of the Tribe

- A chief of staff (and a surgeon): “...surgeons are very tribal so what you need to do if you have something that you think is a best practice at your hospital...you need to get...either the chair of surgery or some reasonable surgeon...If you come in and you’re an internist ...into a group of surgeons ...the first thing we’re going to do is we’re going to say, ‘Look, you’re not one of us’...the way to get buy-in from surgeons is you got to have a surgeon on your team.”

(Saint et al. Joint

Comm Journal Qual Safety 2009)



Organizational Constipators

PREVENTING HOSPITAL INFECTIONS

PREVENTING HOSPITAL INFECTIONS

Real-World Problems, Realistic Solutions

Saint
Krein
Stock

Sanjay Saint
Sarah L. Krein
with Robert W. Stock

OXFORD

OXFORD

Step 1: Form a multidisciplinary
CAUTI prevention team

Key Roles and Responsibilities to Prevent CAUTI

Role or Responsibility	Example of Personnel to Consider
Project coordinator	IP, quality manager, nurse manager, nurse educator
Nurse champion (engage nursing personnel)	Bedside nurse, nurse educator, unit manager, charge nurse
Physician champion (engage medical personnel)	ID physician, hospitalist, hospital epidemiologist, urologist, ED doc
Data collection, monitoring, reporting	Infection preventionist, quality manager, utilization manager

The 6 Steps to Success

- ✓ Form a multidisciplinary CAUTI prevention team
- 2) Develop/modify a CAUTI policy for your institution
- 3) Pick an appropriate unit to start or go hospital-wide
- 4) Track performance and then escalate as necessary
- 5) Once successful, spread to other places
- 6) Consider sustainability at the outset; hard-wiring is worth the effort

*What if a hospital needs further
help in preventing CAUTI?*

Self-Assessment Tool for Hospitals

CAUTI Guide to Patient Safety (“CAUTI GPS”)

- A 1-page (10-item) trouble-shooting guide
- Help identify the key reasons why hospitals may not be successful in preventing CAUTI
- Once the barriers are identified, can then propose and implement solutions

CAUTI Guide to Patient Safety (GPS)

(Saint et al. AJIC 2014; Fletcher et al. AJIC 2016)

- On-line tool, recently validated
- Each question linked to troubleshooting tips



www.catheterout.org

<http://catheterout.org/questions.html>

CAUTI GUIDE TO PATIENT SAFETY (GPS)

Question 1:

Do you currently have a well-functioning team (or work group) focusing on CAUTI prevention?

☐ Yes ☐ No

Question 2:

Do you have a project manager with dedicated time to coordinate your CAUTI prevention activities?

☐ Yes ☐ No

Question 3:

Do you have an effective nurse champion for your CAUTI prevention activities?

☐ Yes ☐ No

Question 4:

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

☐ Yes ☐ No

Question 5:

Do bedside nurses take initiative to ensure 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

Question 6:

Do you have an effective physician champion for your CAUTI prevention activities?

☐ Yes ☐ No

Question 7:

Is senior leadership supportive of CAUTI prevention activities?

☐ Yes ☐ No

Question 8:

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

Question 9:

Do you routinely feedback CAUTI-related data to frontline staff (e.g., urinary catheter prevalence, urinary catheter appropriateness, and infection rates)?

☐ Yes ☐ No

Question 10:

Have you experienced any of the following barriers?

A. Substantial nursing resistance

☐ Yes ☐ No

B. Substantial physician resistance

☐ Yes ☐ No

C. Patient and family requests for an indwelling urinary catheter

☐ Yes ☐ No

D. Indwelling urinary catheters commonly being inserted in the emergency department without an appropriate indication

☐ Yes ☐ No

Submit

Clear form

Applying the Findings



At Home



*Across the
State of Michigan*

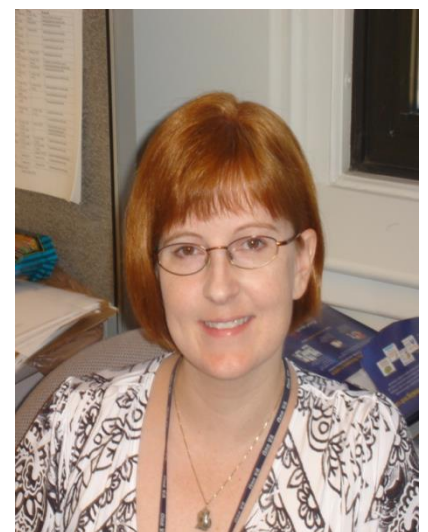


**Department of
Veterans Affairs**

**Medical Center
Ann Arbor**

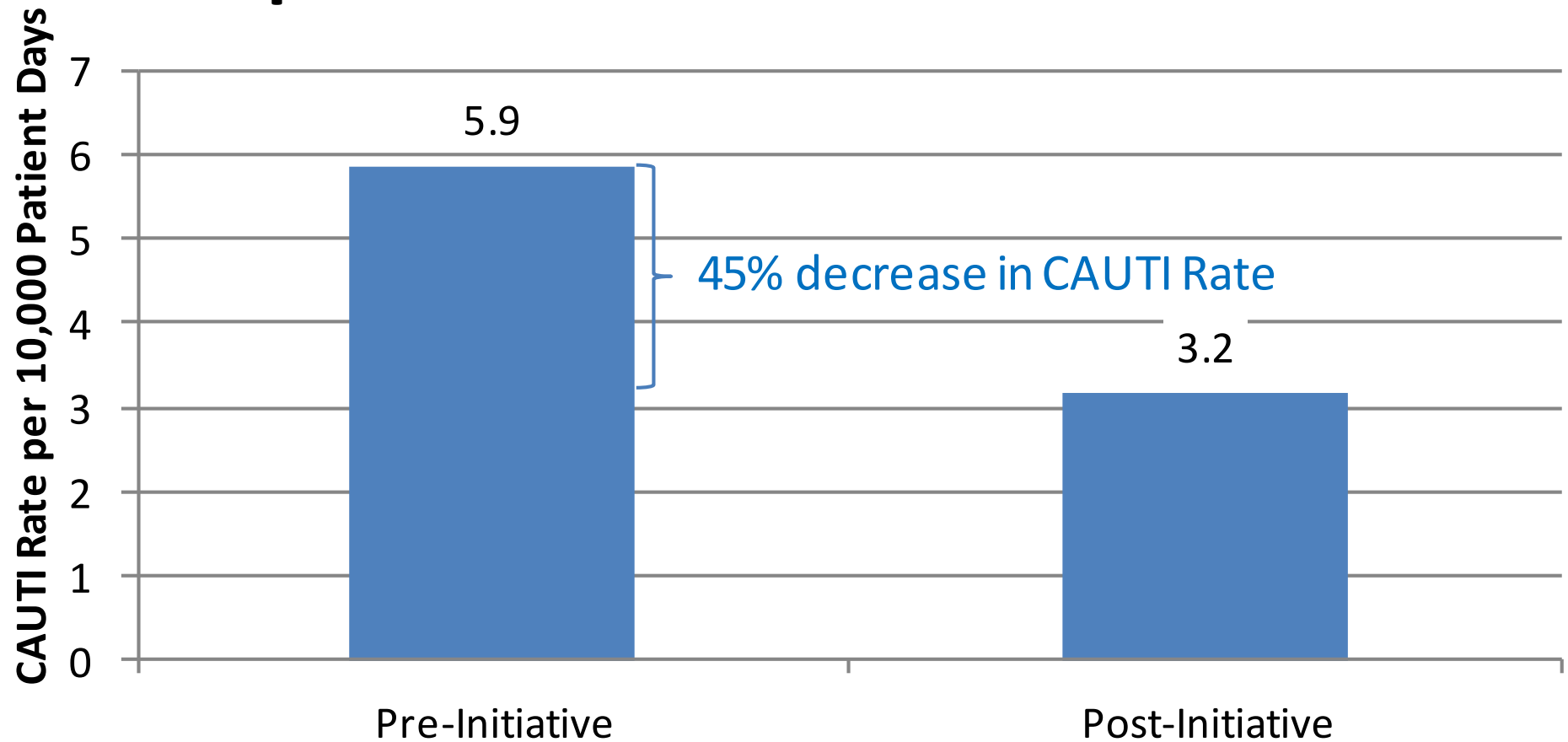
Hospital Outcomes Program of Excellence (HOPE)

- Systems redesign grant to Ann Arbor VAMC
- Behavioral lab for interventions to improve quality and efficiency of care
- CAUTI prevention one of many initiatives: nurse-initiated reminder



CAUTI Rate

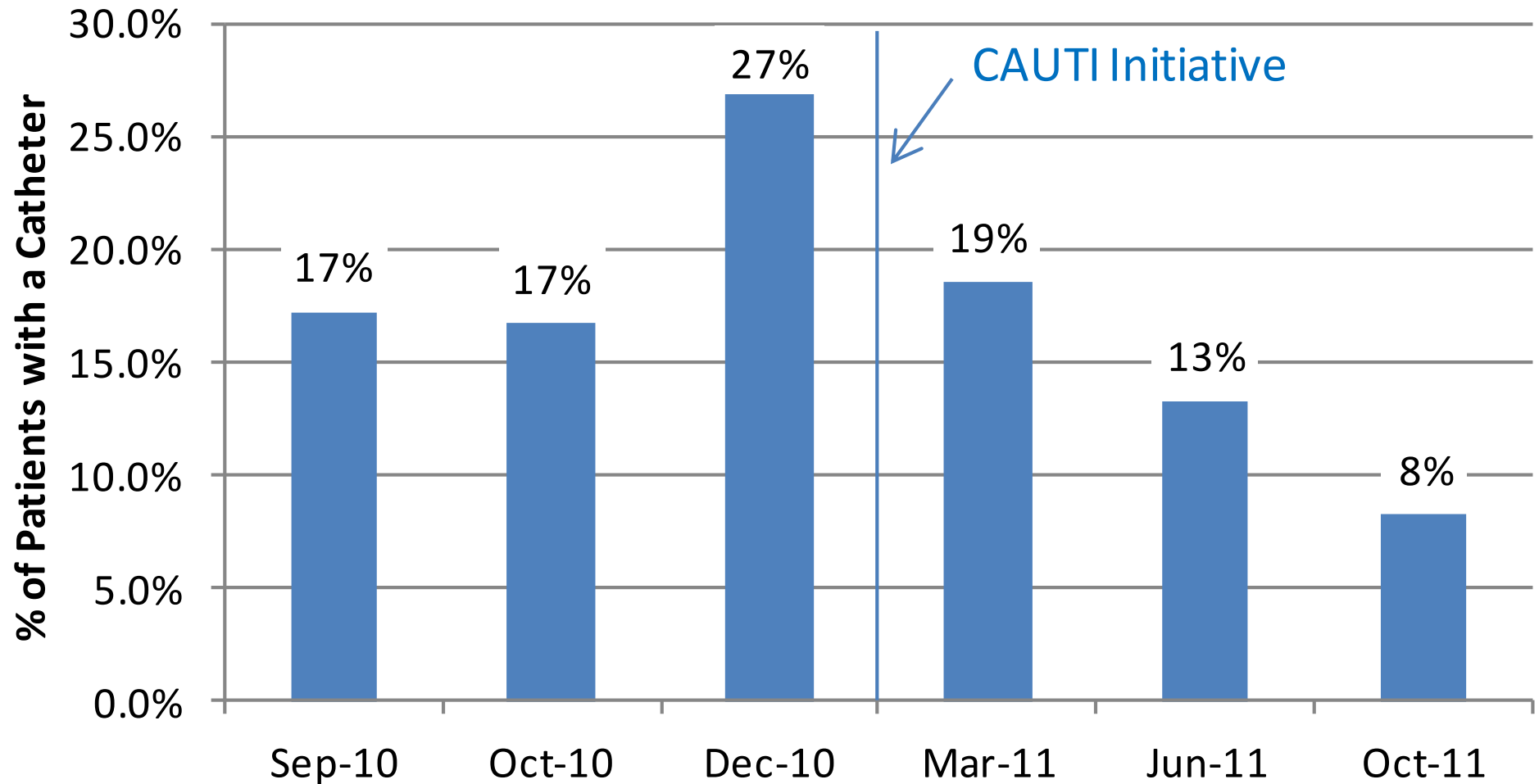
Average CAUTI Rate Before and After Implementation of CAUTI Initiative



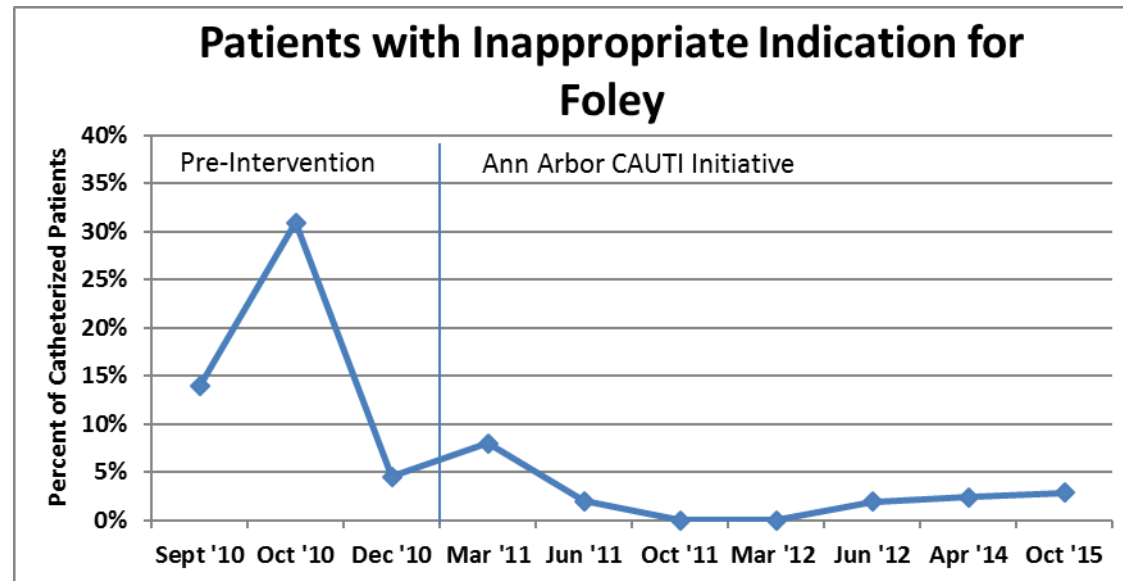
(Miller et al. Infect Control Hosp Epidemiol 2013)

Prevalence of Urinary Catheters

Urinary Catheter Point Prevalence



Indication for Catheter Placement



Applying the Findings



At Home



*Across the
State of Michigan*

Implementing Change Across the State of Michigan in 71 Hospitals



CAUTI ↓ by 25% in Michigan hospitals (95% CI: 13 to 37% ↓)

CAUTI ↓ by 6% in non-Michigan hospitals (95% CI: 4 to 8% ↓)

(Saint et al. JAMA Intern Med 2013)

Applying the Findings Across the U.S.

The NEW ENGLAND JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

JUNE 2, 2016

VOL. 374 NO. 22

A Program to Prevent Catheter-Associated Urinary Tract Infection in Acute Care

Sanjay Saint, M.D., M.P.H., M. Todd Greene, Ph.D., M.P.H., Sarah L. Krein, Ph.D., R.N., Mary A.M. Rogers, Ph.D.,
David Ratz, M.S., Karen E. Fowler, M.P.H., Barbara S. Edson, R.N., M.B.A., M.H.A.,
Sam R. Watson, M.S.A., C.P.P.S., Barbara Meyer-Lucas, M.D., M.H.S.A., Marie Masuga, R.N., M.S.N.,
Kelly Faulkner, M.S.P.A., Carolyn V. Gould, M.D., M.S.C.R., James Battles, Ph.D.,
and Mohamad G. Fakih, M.D., M.P.H.

Preventing CAUTI in Acute Care

(Saint et al. N Engl J Med 2016)

- Federally-funded national program
- Total of 603 hospitals (926 units) in 32 states, DC, & Puerto Rico
- ~60% non-ICU; ~40% ICU
- Non-ICUs: CAUTI reduced by 32% (& decrease in catheter use)
- ICUs: no change in CAUTI or catheter use

Applying the Findings Across the VA

No Preventable Harms Campaign

American Journal of Infection Control 43 (2015) 254-9



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Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org



Major article

Introducing the No Preventable Harms campaign: Creating the safest health care system in the world, starting with catheter-associated urinary tract infection prevention



Sanjay Saint MD, MPH^{a,b,c,*}, Karen E. Fowler MPH^{a,b},
Kelley Sermak MSHSA, RN^d, Elissa Gaies MD, MPH^a, Molly Harrod PhD^{a,b},
Penny Holland MSN, RN^e, Suzanne F. Bradley MD^{a,c}, J. Brian Hancock MD^f,
Sarah L. Krein PhD, RN^{a,b,c}

*In 7 VA hospitals CAUTI rate decreased by
66% in non-ICUs: 2.4 to 0.8*

Virtual Breakthrough Series Collaboration with NCPS

The Joint Commission Journal on Quality and Patient Safety

Performance Improvement

Virtual Breakthrough Series, Part 1: Preventing Catheter-Associated Urinary Tract Infection and Hospital-Acquired Pressure Ulcers in the Veterans Health Administration

Lisa Zubkoff, PhD; Julia Neily, RN, MS, MPH; Beth J. King, RN, BSN, MA, CCM; Mary Ellen Dellefield, PhD, RN; Sarah Krein, PhD, RN; Yinong Young-Xu, PhD; Shoshana Boar, MS; Peter D. Mills, PhD, MS

Catheter-Associated Urinary Tract Infection (CAUTI) Rates per 1,000 Catheter-Days Across the Three Project Phases

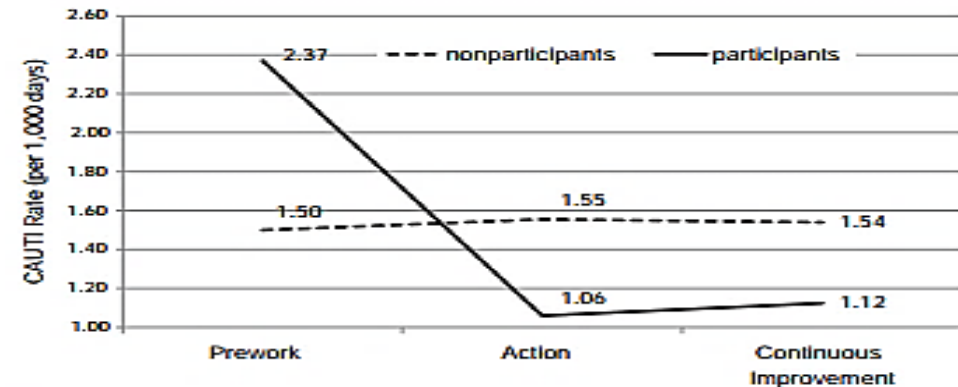


Figure 2. There were no significant changes for the continuous improve-

Applying the Findings to Nursing Homes



INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

ORIGINAL ARTICLE

Original Investigation

A Targeted Infection Prevention Intervention in Nursing Home Residents With Indwelling Devices A Randomized Clinical Trial

Lona Mody, MD; Sarah L. Krein, PhD; Sanjay K. Saint, MD; Lillian C. Min, MD; Ana Montoya, MD; Bonnie Lansing, LPN; Sara E. McNamara, MPH; Kathleen Symons, BA; Jay Fisch, BS; Evonne Koo, MPH; Ruth Anne Rye, BS; Andrzej Galecki, MD, PhD; Mohammed U. Kabeto, MS; James T. Fitzgerald, PhD; Russell N. Olmsted, MPH; Carol A. Kauffman, MD; Suzanne F. Bradley, MD

JAMA Internal Medicine | Original Investigation

A National Implementation Project to Prevent Catheter-Associated Urinary Tract Infection in Nursing Home Resident

Lona Mody, MD, MSc; M. Todd Greene, PhD, MPH; Jennifer Meddings, MD, MSc; Sarah L. Krein, PhD, RN; Sara E. McNamara, MPH, MT(ASCP); Barbara W. Trautner, MD, PhD; David Ratz, MS; Nimalie D. Stone, MD, MS; Lillian Min, MD, MSHS; Steven J. Schween, RN, MPH, MSN; Andrew J. Rolle, MPH; Russell N. Olmsted, MPH; Dale R. Burwen, MD, MPH; James Battles, PhD; Barbara Edson, RN, MBA, MHA; Sanjay Saint, MD, MPH

Comparing Catheter-Associated Urinary Tract Infection Prevention Programs Between Veterans Affairs Nursing Homes and Non-Veterans Affairs Nursing Homes

Lona Mody, MD, MSc;^{1,5} M. Todd Greene, PhD, MPH;^{2,6} Sanjay Saint, MD, MPH;^{2,3,6} Jennifer Meddings, MD, MSc;^{3,6,7} Barbara W. Trautner, MD, PhD;^{9,10} Heidi L. Wald, MD, MPH;¹¹ Christopher Crnich, MD, PhD;^{12,13} Jane Banaszak-Holl, PhD;^{8,14} Sara E. McNamara, MPH, MT(ASCP);⁵ Beth J. King, RN, BSN, MA;⁴ Robert Hogikyan, MD, MPH;^{1,3,5} Barbara S. Edson, RN, MBA, MHA;¹⁵ Sarah L. Krein, PhD, RN^{2,6}

American Journal of Infection Control 45 (2017) 1342-8



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journal homepage: www.ajicjournal.org

Major Article

A national collaborative approach to reduce catheter-associated urinary tract infections in nursing homes: A qualitative assessment

Sarah L. Krein PhD, RN ^{a,b,*}, Molly Harrod PhD ^a, Sue Collier MSN ^c, Kristina K. Davis MSN MPH ^c, Andrew J. Rolle MPH ^c, Karen E. Fowler MPH ^a, Lona Mody MD, MSc ^{d,e}

Back to the Future

***The Foley also leads to
non-infectious harms.***

Annals of Internal Medicine

ESTABLISHED IN 1927 BY THE AMERICAN COLLEGE OF PHYSICIANS

SEPTEMBER 17, 2013

Determining the Noninfectious Complications of Indwelling Urethral Catheters

A Systematic Review and Meta-analysis

John M. Hollingsworth, MD, MS; Mary A.M. Rogers, PhD; Sarah L. Krein, PhD, RN; Andrew Hickner, MSI; Latoya Kuhn, MPH; Alex Cheng, MD; Robert Chang, MD; and Sanjay Saint, MD, MPH

“Many noninfectious catheter-associated complications are at least as common as clinically significant urinary tract infections.”

VA HSR&D IIR 12-395-3 (July 2014 – March 2018)



Identifying and Reducing
Catheter-Related
Complications
("cath comp")

Patient-Reported Complications During Month after Urethral Catheter Insertion

Specific Complication	Catheter in Place (N=124)	Catheter Removed (N=2034)	Total* (N=2076)
Infectious Complication	15.3%	10.1%	10.5%
Non-Infectious Complication	70.2%	54.4%	55.4%
Other Complication	53.2%	4.9%	7.7%

Non-Infectious

- Pain or discomfort
- A sense of urgency or bladder spasms
- Blood in Urine
- Difficulty with starting or stopping urine stream
- Leaking urine
- Newly diagnosed urethral stricture disease
- Skin problems in the genital area
- Split stream of urine
- Spraying of urinary stream

Other

- Restrictions in activities of daily living relating to having the catheter
- Restrictions in social activities related to having the catheter
- Sexual problems
- Mechanical issues with catheter or securement device (e.g. leaking, issues with leg band)

Summary of Urethral Catheter Findings

- In this multicenter cohort study of 2076 adults with an indwelling urethral catheter, 57% of patients reported at least one complication due to the device
- Overall, non-infectious complications were five times as common as infectious complications

Selected Patient Comments About Urethral Catheters

- Having problems getting control back after having the catheter removed.
- I never want another Foley Catheter. Hurts like hell! My catheter was removed and then another catheter was reinserted.
- Pain in butt. Uncomfortable.
- Pt stated that while he was in SICU, the nurse got tangled up with the catheter tubing and almost fell. The pt felt a very strong pull on the catheter.
- I use to wear a diaper and change it 5 times a day. The catheter is nice to have.

Conclusions

- The Foley catheter is hazardous to your patient's health causing both infectious & non-infectious harm
- Several practices decrease CAUTI but it will not be easy; avoiding the catheter should be prioritized
- Both technical and socio-adaptive issues should be considered at the outset
- But most importantly...

Preventing Urinary
Catheter Harm is a
Team Sport!

Thank you!



Resources

- Catheter Out
 - <http://www.catheterout.org/>
- Patient Safety Enhancement Program (PSEP)
 - <http://psep.med.umich.edu/>

Questions/Comments

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Sarah Krein

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