Chasing Zero: Using Innovative Thinking and Strategies to Reduce CAUTI

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Kathleen Vollman
ADVANCING NURSING THROUGH KNOWLEDGE & INNOVATION

Carmen R Davis MSN, RN, CCNS, CNS-BC
Clinical Nurse Specialist/Consultant
crdavis2017@gmail.com

Kathleen M. Vollman MSN, RN, CCNS, FCCM, FCNS, FAAN
Clinical Nurse Specialist / Educator / Consultant
ADVANCING NURSING
kvollman@comcast.net
Northville Michigan
www.Vollman.com

Disclosures

Kathleen Vollman

- Consultant-Michigan Hospital Association Keystone Center
- Subject matter expert for CAUTI, CLABSI, CDI, Sepsis, HAPI and culture of Safety for HIIN/CMS
- Consultant and speaker bureau
  - Stryker's Sage business
  - Eloquest Healthcare

Carmen Davis

- Consultant and speaker bureau
  - Stryker's Sage business

Learning Objectives

- Describe the forces within the current healthcare environment that are targeting zero for device related infections
- Identify and detail the evidence-based practices that go beyond the guidelines in preventing CAUTIs

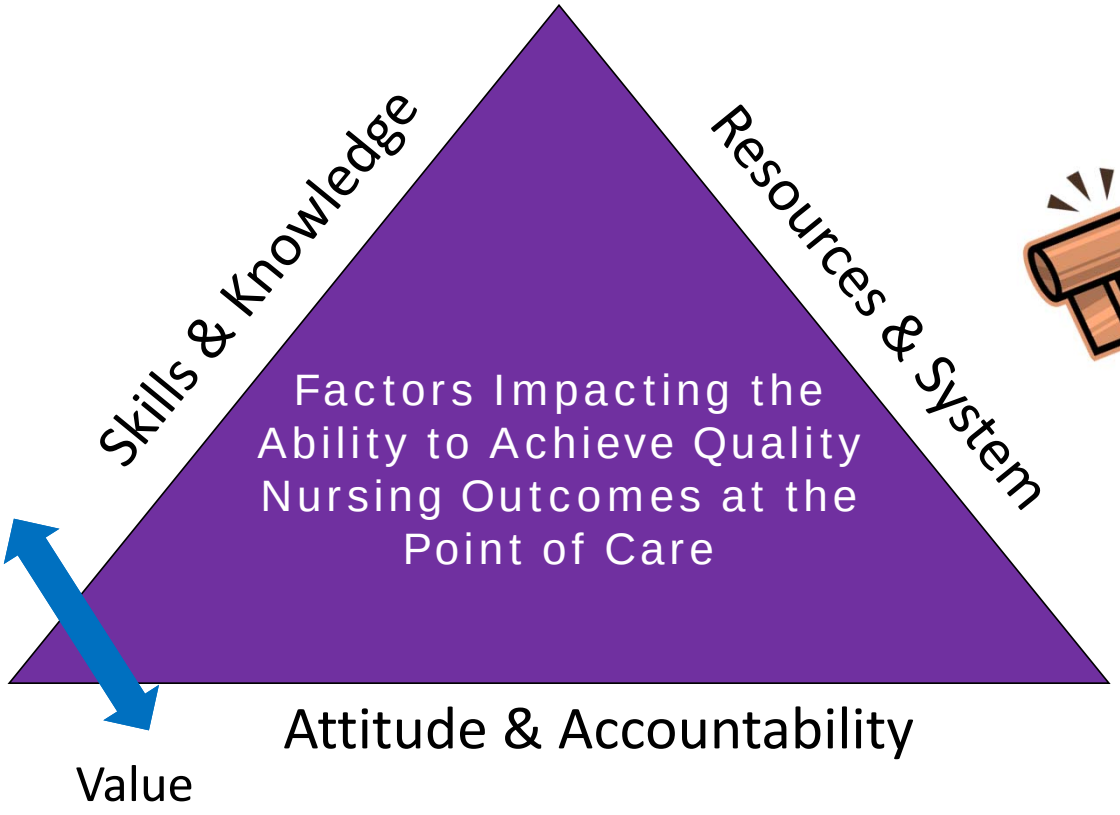
Notes on Hospitals: 1859

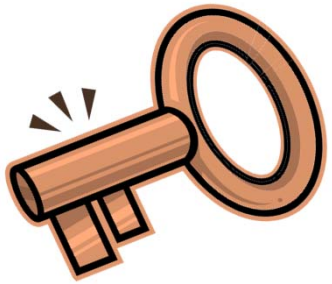
"It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm."

- Florence Nightingale

Advocacy = Safety

Achieving the Use of the Evidence





Vollman KM. Intensive Crit Care Nurs, 2013;22(4): 152-154

CAUTI impact

How many patient deaths per year are associated with a CAUTI infection?

A. 5,000

B. 7,500

C. 10,000

D. 13,000

Retrieved from https://www.hospitalsafetygrade.org › media › file › CAUTI

The Why: CAUTI Incidence

- One of the most common healthcare acquired infections (HAIs)- nearly up to 40% of all HAIs[1,2]
- 70% urinary catheter associated HAIs; up to 95% in the intensive care setting[2]
- Approximately 20% of hospital patients have urinary catheter at some point in their stay[3]

1. Magill et al NEJM 2014; APIC Guide to Prevention of CAUTI, 2014;
2. Chenoweth, C. et al. *Infectious Disease Clinics of North America*, 2014 28(1), pp.105-119.
3. Saint, S et al. *Clinical Infectious Diseases*, 2008 46(2), pp.243-250

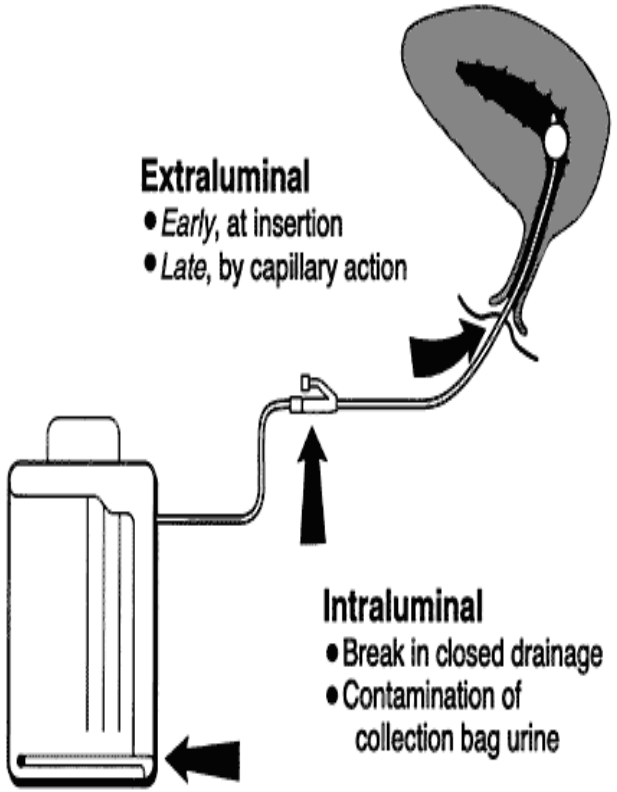
Associated CAUTI Costs

- Catheter associated urinary tract infections (CAUTIs) are associated with increased morbidity, mortality, and costs
  - △ Leads to ↑ increased morbidity, ↑ LOS 2-4 days
  - △ CAUTIs are associated with an ↑ cost of $400 million to $500 million annually
  - △ Estimated additional inpatient CAUTI costs:
    - $4694-29,743 (Review of 6 studies)
- Specific patient impact---
  - △ Discomfort r/t to mild signs of infection
  - △ Potential urethral trauma
  - △ Embarrassment
  - △ Pyelonephritis
  - △ Urosepsis leading to potential death

Zimlichman E, et al. JAMA Intern, 2013;17:373:2039-2046;
Agency for Healthcare Research and Quality (2017). Retrieved from https://www.ahrq.gov/hai/pfp/haccost2017-results.html.

Pathogenesis of CAUTI

- Source: colonic or perineal flora on hands of personnel
- Microbes enter the bladder via extraluminal {around the external surface} (proportion = 2/3) or intraluminal {inside the catheter} (1/3)
- Daily risk of bacteriuria with catheterization is 3% to 10%; by day 30 = 100%



APIC Guide to Preventing CAUTI: 2014

Risk Factors for Development

- **Duration of indwelling urinary catheter**
- Female sex, older age
- Break in system
- Urine collection bags as reservoir for transmission

Table 3. Risk factors for catheter-associated urinary tract infection, based on prospective studies and use of multivariable statistical modeling (27-30)

Factor	Relative risk
Prolonged catheterization >6 days	5.1-6.8
Female gender	2.5-3.7
Catheter insertion outside operating room	2.0-5.3
Urology service	2.0-4.0
Other active sites of infection	2.3-2.4
Diabetes	2.2-2.3
Malnutrition	2.4
Azotemia (creatinine >2.0 mg/dL	2.1-2.6
Ureteral stent	2.5
Monitoring of urine output	2.0
Drainage tube below level of bladder and above collection bag	1.9
Antimicrobial-drug therapy	0.1-0.4

Maki, D. and Tambyah, P. (2001).

Lo E, et al. 2014;35(5):464-479.

Addressing CAUTIs Through Evidence Based Care Practices

Practice Recommendations

- SHEA/IDSA Practice Recommendation (2014)
  - http://www.icpsne.org/SHEA%202014%20Updated%20CAUTI%20Prevention%20Guidelines%20(1).pdf.
- APIC Guide to Preventing Catheter Associated Urinary Tract Infections (2014)
  - http://apic.org/Resource_/EliminationGuideForm/0ff6ae59-0a3a-4640-97b5-eee38b8bed5b/File/CAUTI_06.pdf.
- CDC CAUTI Guideline (2009)
  - https://www.cdc.gov/infectioncontrol/guidelines/cauti/index.html.
- ANA CAUTI Prevention Tool
  - http://nursingworld.org/ANA-CAUTI-Prevention-Tool.
- AHRQ Toolkit for Reducing Catheter-Associated Urinary Tract Infections in Hospital Units (2014)
  - https://www.ahrq.gov/professionals/quality-patient-safety/cusp/index.html.

iPCaRe: Evidence-Based Algorithms

Continence Care

J Wound Ostomy Continence Nurs. 2020;47(6):601-618.
Published by Lippincott Williams & Wilkins

Interventions Post Catheter Removal (iPCaRe) in the Acute Care Setting

An Evidence- and Consensus-Based Algorithm

Mikel Gray ◆ Terrie Beeson ◆ Dea Kent ◆ Dianne Mackey ◆ Laurie McNichol ◆ Donna L. Thompson ◆ Sandra Engberg

iPCaRe
Interventions Post Catheter Removal

Image retrieved from https://www.wocn.org/blog/the-latest-decision-support-tool-from-wocn/.

CUSP & CAUTI Interventions

Adaptive /Cultural

CUSP

- Educate on the Science of Safety
- Identify Defects (Staff Safety Assessment)
- Senior Executive Partnership
- Learn from Defects
- Implement Teamwork & Communication Tools

Technical

CAUTI

Insertion

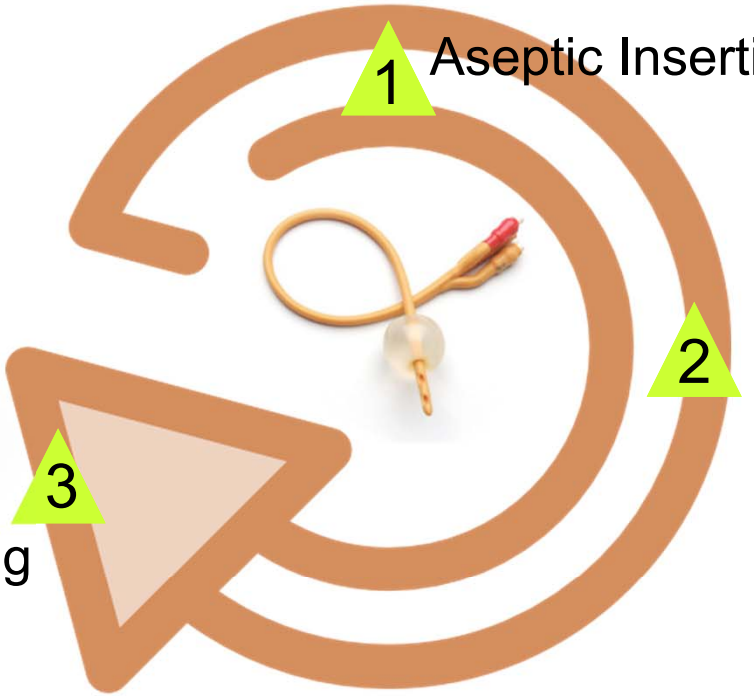
- Limiting use
- Using aseptic technique for site prep, equipment & supplies

Maintenance

- Securing the catheter for unobstructed flow
- Maintaining the sterility of the urine collection system
- Replacing the urine collection system when required
- Collecting urine samples

Disrupting the Lifecycle of the Urinary Catheter

Step 0:
Avoid
Catheter is
Possible



www.catheterout.org, (Adapted Meddings. Clin Infect Dis 2011)

Before Placing an Indwelling Catheter

Please Consider if These Alternatives Would be Appropriate:

- **Bedside commode, urinal, or continence garments:** to manage incontinence.
- **Bladder scanner:** to assess and confirm urinary retention, prior to placing catheter to release urine.
- **Straight catheter:** for one-time, intermittent, or chronic voiding needs.
- **External catheter:** appropriate for cooperative men without urinary retention or obstruction.

Nurse Protocol Before Insertion or After Removal

Intermittent Catheterization Program:

If retention is suspected pre or post catheter:

- If no voiding within 4-6 hours of assessment pre insertion or post removal, a bladder scan ultrasound used.
- Volume < 400-500mL, encourage the patient to void by using techniques to stimulate bladder reflex (cold water to abdomen, stroke inner thigh, run water, flush toilet).
- Continue to assess the patient and repeat the bladder scan in 2 hours if no voiding.
- If the bladder volume > 400-500mL, and intake is less than 3 L a day-catheterize for residual urine volume rather than place an indwelling catheter.
- If volumes are greater/catheter goes back in 24hrs

STOP CAUTI Sample Policy and Procedure
http://www.ucdenver.edu/academics/colleges/medicalschool/departments/medicine/hcpr/cauti/documents/Sample%20Policy%20and%20Procedures.pdf
University of Virginia Health System nurse driven intermittent cath program

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Alternative External Management Systems: Male and Female

Buried & Micro Penis



Challenges with Male External Urine Collection Devices

- Skin irritation and maceration
- Difficult to keep the condom from falling off/retraction of the penis or decrease size
- Ischemia and penile obstruction/tightness
- Adherence: requires securement on the shaft & adhesive mechanisms are challenging

Gray, M., Skinner, C. and Kaler, W. (2016). External Collection Devices as an Alternative to the Indwelling Urinary Catheter. *Journal of Wound, Ostomy and Continence Nursing*, 43(3), pp.301-307.

New Male Devices: Overcoming the Challenges

- Adjusts to different sized penises
  - △No sizing chart required
- Prevents backflow with continuous suction
- Diverts urine away from the skin- addressing the risk factors of IAD

West, D., Ecklund, B. and Griggs, R. (2020). Continuous Temperature and Humidity Monitoring Using Sensors Within and External Male Incontinence Device over 12 Hours of Wear-time. *American Journal of Infection Control*, 48 (8), pp S27-S27.

Challenges with Female External Urine Collection Devices

- Limited options
- Materials used in development of early devices used rubber and were held in place with belts and straps
- Other previous devices had inserts into the vagina
- Systems that used adhesive barriers on the labia

Pieper, B. and Cleland, V. (1993). An External Urine-Collection Device for Women. *Journal of Wound, Ostomy and Continence Nursing*, 20(2), pp.51-55.

Alternative Female External Collection Devices

- **How do they work?**
  - They are placed between the labia and the urethral opening
  - The devices are attached to wall suction

Quality Improvement Project

- 18 bed adult SICU
- 10 month pre/post QI study
- Utilization of an external female collection device
- Daily rounds discussion
  - Inter-professional discussion regarding indications
    - Avoid placement
    - Early removal
- Measurement: CAUTI & SIR rates

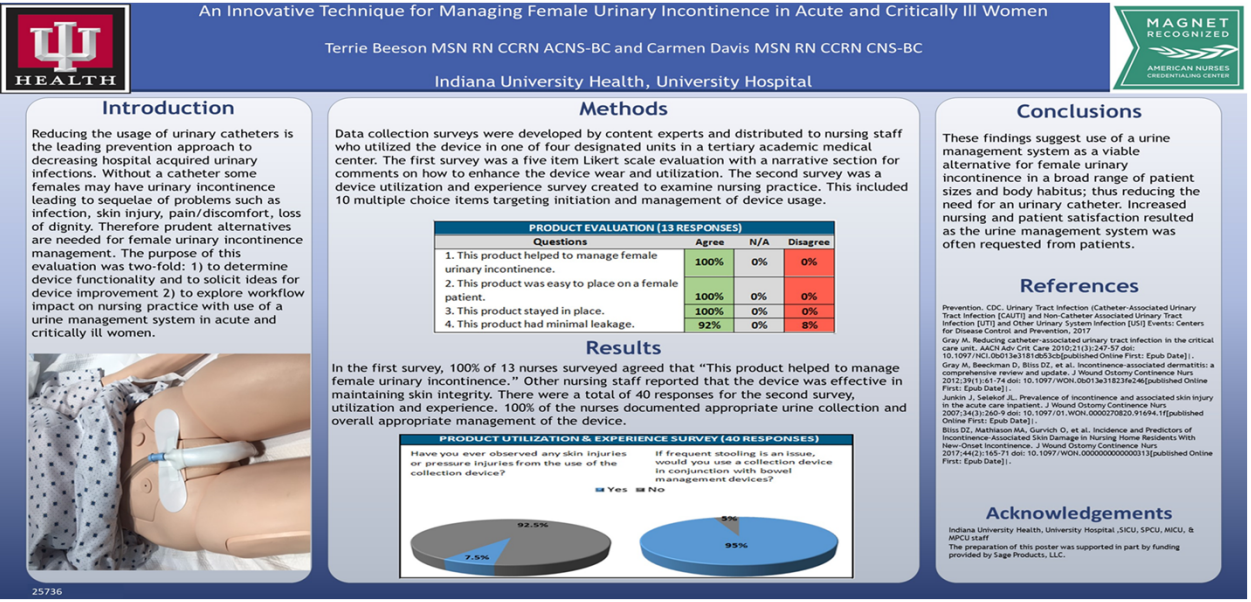
Beeson T, Davis C & Vollman K. Presented at the NACNS Meeting in Austin TX, March 2, 2018

Outcomes

Pre/Post Comparison Using Female External Device		
	Before	After
CAUTI Rate	2.55	0.7
Standardized Infection Ratio (SIR)	1.395	0.381

Indwelling Catheter Days ↓ 9%

Beeson T, Davis C & Vollman K. Presented at the NACNS Meeting in Austin TX, March 2, 2018



An Innovative Technique for Managing Female Urinary Incontinence in Acute and Critically Ill Women

Terrie Beeson MSN RN CCRN ACNS-BC and Carmen Davis MSN RN CCRN CNS-BC

Indiana University Health, University Hospital

MAGNET RECOGNIZED

AMERICAN NURSES CREDENTIALING CENTER

Introduction

Reducing the usage of urinary catheters is the leading prevention approach to decreasing hospital acquired urinary infections. Without a catheter some females may have urinary incontinence leading to sequelae of problems such as infection, skin injury, pain/discomfort, loss of dignity. Therefore prudent alternatives are needed for female urinary incontinence management. The purpose of this evaluation was two-fold: 1) to determine device functionality and to solicit ideas for device improvement 2) to explore workflow impact on nursing practice with use of a urine management system in acute and critically ill women.

Methods

Data collection surveys were developed by content experts and distributed to nursing staff who utilized the device in one of four designated units in a tertiary academic medical center. The first survey was a five item Likert scale evaluation with a narrative section for comments on how to enhance the device wear and utilization. The second survey was a device utilization and experience survey created to examine nursing practice. This included 10 multiple choice items targeting initiation and management of device usage.

PRODUCT EVALUATION (13 RESPONSES)

Questions	Agree	N/A	Disagree
1. This product helped to manage female urinary incontinence.	100%	0%	0%
2. This product was easy to place on a female patient.	100%	0%	0%
3. This product stayed in place.	100%	0%	0%
4. This product had minimal leakage.	92%	0%	8%

Results

In the first survey, 100% of 13 nurses surveyed agreed that "This product helped to manage female urinary incontinence." Other nursing staff reported that the device was effective in maintaining skin integrity. There were a total of 40 responses for the second survey, utilization and experience. 100% of the nurses documented appropriate urine collection and overall appropriate management of the device.

PRODUCT UTILIZATION & EXPERIENCE SURVEY (40 RESPONSES)

Conclusions

These findings suggest use of a urine management system as a viable alternative for female urinary incontinence in a broad range of patient sizes and body habitus; thus reducing the need for an urinary catheter. Increased nursing and patient satisfaction resulted as the urine management system was often requested from patients.

References

Prevention. CDC. Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter Associated Urinary Tract Infection [UTI] and Other Urinary System Infection [USI] Events: Centers for Disease Control and Prevention, 2017

Gray M. Reducing catheter-associated urinary tract infection in the critical care unit. AACN Adv Crit Care 2010;21(3):247-57 doi: 10.1097/NCI.0b013e3181db53cb[published Online First: Epub Date]|.

Gray M, Beeckman D, Bliss DZ, et al. Incontinence-associated dermatitis: a comprehensive review and update. J Wound Ostomy Continence Nurs 2012;39(1):61-74 doi: 10.1097/WON.0b013e31823fe246[published Online First: Epub Date]|.

Junkin J, Selekof JL. Prevalence of incontinence and associated skin injury in the acute care inpatient. J Wound Ostomy Continence Nurs 2007;34(3):260-9 doi: 10.1097/01.WON.0000270820.91694.1f[published Online First: Epub Date]|.

Bliss DZ, Mathiason MA, Gurvich O, et al. Incidence and Predictors of Incontinence-Associated Skin Damage in Nursing Home Residents With New-Onset Incontinence. J Wound Ostomy Continence Nurs 2017;44(2):165-71 doi: 10.1097/WON.0000000000000313[published Online First: Epub Date]|.

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Beeson, T. & Davis, C. Poster Abstract at the Wound Ostomy Continence Society Meeting in Philadelphia, PA., June 3-6, 2018.

Building the Case for Use of Alternatives

- CAUTI reduction
- Decreased urinary catheter (device) days
- Patient satisfaction
- Clinician satisfaction
- Reduce incontinence associated dermatitis incidence

CDC, SHEA, IDSA and NHS:
Indications for Placement of Indwelling Catheter

- Perioperative use for selected surgical procedures
- **Urine output in critically ill patients**
- Management of acute urinary retention and urinary obstruction
- Assistance in pressure ulcer healing for incontinent patients
- At a patient request to improve comfort (SHEA) or for comfort during end of life care (CDC)

How-to Guide: *Prevent Catheter-Associated Urinary Tract Infections*. Cambridge, MA: Institute for Healthcare Improvement; 2011. (Available at www.ihi.org).

Examples of Indications for Urinary Catheters

	2009 HICPAC Guidelines	American Nurses Association's Streamlined Evidence-Based RN Tool: CAUTI Prevention	Ann Arbor Criteria for Appropriate Urinary Catheter Use in Hospitalized Medical Patients
Example Indications	• Acute urinary retention/obstruction • Perioperative use for selected surgeries • To assist with healing of open wounds in incontinent patients • End-of-life care • Accurate measurement of urinary output in critically ill patients	• Acute urinary retention/obstruction • Perioperative use for selected surgeries • To assist with healing of open wounds in incontinent patients • End-of-life care • Critically ill and need for accurate measurements of I&O (e.g., hourly monitoring)	• Indwelling catheters are appropriate for measuring and collecting urine only when fluid status or urine CANNOT be assessed by other means. • Location in an ICU alone is NOT an appropriate indication. • Criteria for 3 catheter types: indwelling, external and intermittent use catheters
Comments	• Appropriate use in critically ill patients has varied interpretations	• Helpful algorithm to make decisions • Based on 2009 Guidelines • Use in critically ill patients still ambiguous	• Provides clarification to the 2009 guidelines on use for specific clinical scenarios • Includes ICU Daily Checklist for indwelling catheter use

Meddings J, et al. Ann Intern Med. 2015 May 5;162(9 Suppl):S1-34.
Gould CV,et al. *Infect Control Hosp Epidemiol*. 2010;31(4):319-326.
ANA: https://www.nursingworld.org/practice-policy/work-environment/health-safety/infection-prevention/ana-cauti-prevention-tool/

Types Of Treatments Requiring Close UO Monitoring

- Bolus fluid resuscitation
- Vasopressors
- Inotropes
- High dose diuretics
- Hourly urine studies to measure life threatening laboratory abnormalities

Are you responding hourly to the patient's urine output??

Strategies for Early Removal

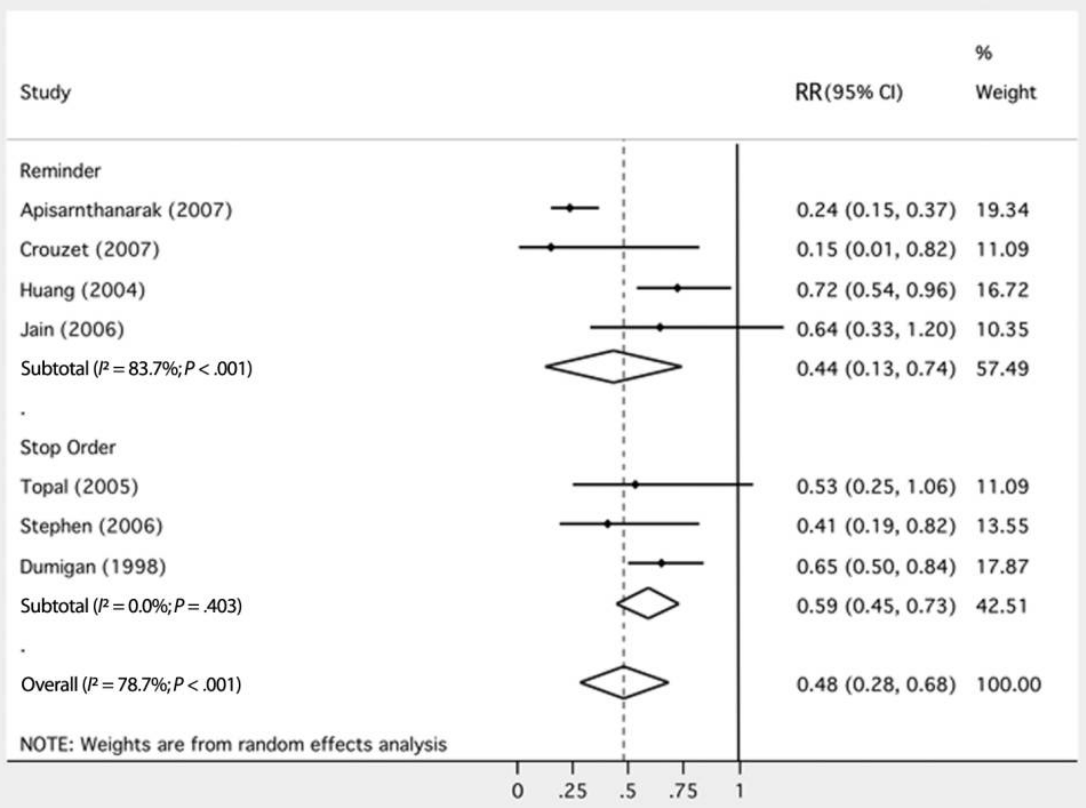
	Example Strategy
Physicians	• Daily physician assessment of catheter need • Computerized order entry system to prompt physicians to remove/reorder catheter if placed in ED or in place >24 hours • Orders in place for removal in the OR and/or length of time for catheter to remain in place.
Nurses	• Nurse Driven protocol to remove all urinary catheters that do not meet criteria • Daily review by nurses for catheter indication to make recommendations for removal • Nurse-generated daily bedside reminders to encourage physicians to remove unnecessary urinary catheters • Nurse-to-nurse communication during transitions (ED, ICU): “Does this patient have a urinary catheter? Why?” If not indicated, ask for catheter to be removed before transfer.

Mitchell B, et al. *Infection Control & Hospital Epidemiology, 2019 40*(4), 427-431.
Tyson AF, et al J Intensive Care Med. 2018 Jan 1

Reminder Systems Reduce Inpatient Catheter Use and Associated CAUTIs

Reminder
56% reduction

Stop Order
41% reduction



Meddings J et al. Clin Infect Dis, 2010;51:550-560

Factors That Affect Success of Reminders, Stop Orders and Nurse Driven Protocols

- Communication patterns and unit culture relative to urinary catheter use
- Nurse comfort with urinary catheter removal protocols
- Right urine collection alternatives
- Staff knowledge and skills
- Respect among nurses and physicians
- Ownership by frontline staff, local leadership and quality to review, remind, and reinforce using RCA's or learn from a defect
- Information technology support for data collection
- Feedback using data on catheter use
- ICU team's recognition of the hazard of urinary catheters

Meddings J, et al. BMJ Qual Saf. 2014 Apr;23:277-89.
Quinn M, et al Jt Comm J Qual Patient Saf. 2019 Dec 23.

"Even if you are on the right track, you will get run over if you just sit there."

Will Rogers

The Culture of Culturing

Asymptomatic bacteriuria" (ASB) is the condition of having a specified count of bacteria in an appropriately collected urine sample obtained from a person without clinical signs and symptoms of urinary tract infection.

1. Overuse of antibiotics that can potentially cause complications in the individual patient, including *C. difficile*
2. ↑increase in resistant pathogens impact the individual, organization & community patterns of resistance.
3. Falsely inflates an organization's CAUTI rate as bacteremia is unnecessarily treated
4. 23% to 50% antibiotic days for UTI are from ASB

Health Research & Educational Trust (2017). : 2017. Chicago, IL: Health Research & Educational Trust. Accessed at www.hret-hiin.org
Garcia, R & Spitzer ED. American J of Infect. Control. 2017;45(10):1143-1153.

Survey of Doctors and Nurses for Indications to Urine Culture

Order Indication	Physicians	Nurses
Appearance	23%	61%
Odor	42%	74%
Dysuria	54%	35%
Pan culture	38%	45%
UA > 100 WBCs/hpf	58%	43%

Advani SD, et al. Open Forum Infect Dis. 2019 Aug 1;6(8).

Recommandations on Urine Culture Management

- Establish a preculture strategy that directs efforts at how cultures are ordered rather than solely addressing issues after a UA or UC test is finalized:
  - Modify the electronic medical record to include appropriate and inappropriate indications for UAs/UCs that address patient symptomology
  - Eliminate automatic orders in care plans where appropriate
  - Provide education for all clinicians who order UCs with emphasis on appropriate indications for UCs and UTI symptoms in catheterized and non-catheterized patients
  - Carefully evaluate patients with fever and order UCs as appropriate
  - Reflex urine testing should be considered only if used in conjunction with careful clinical evaluation for signs and symptoms of UTI

Garcia, R & Spitzer ED. American J of Infect. Control. 2017;45(10):1143-1153.

Modify Your EMR Ordering Process

- Incorporated mandatory selection of standardized indications in EMR for ordering a UC in catheterized patients:
  - △ Suprapubic pain/tenderness
  - △ Acute gross hematuria
  - △ Costovertebral angle tenderness
  - △ New fever/rigors with clinical assessment negative for more likely etiology
  - △ Acute alteration of mental status with clinical assessment negative for more likely etiology
  - △ Alteration in medical condition with clinical assessment negative for more likely etiology in patient whom fever may not be a reliable sign
  - △ Increased spasticity or autonomic dysreflexia in patients with altered neurologic sensation

Lowers urine cultures and CAUTI rates

Shirley D, et al. Infect Control Hosp Epidemiol 2017;38:486-88.
Garcia, R & Spitzer ED. American J of Infect. Control. 2017;45(10):1143-1153.

Collection & Transport to Reduce Contamination

- If a catheter placed > 2 weeks, change the catheter before collecting a specimen
- Clamp tubing 12 inch below sample port allowing urine to fill the tube. Scrub the hub with antiseptic aspiration from the sampling port. Follow by unclamping of the tube.
- If specimen can't be transported and plated on culture medium within 2 hrs. of collection, then specimen should be refrigerated.
- To overcome logistic barriers: most use urine collection tubes with preservatives.

Lo E, et al. Infect Contr & Hosp Epidemiol. 2014;35(5):464-479,
www.apic.org/implementationguides April 2014,
Garcia, R & Spitzer ED. American J of Infect. Control.
2017;45(10):1143-1153

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Contaminated urine cultures lead to additional diagnostic evaluation and inappropriate antibiotic administration > 40%

Klausing BT, et al. American Journal of Infection Control.2016;44:1166-1167

Lo E, et al. Infect Contr & Hosp Epidemiol. 2014;35(5):464-479,
www.apic.org/implementationguides April 2014,
Garcia, R & Spitzer ED. American J of Infect. Control.
2017;45(10):1143-1153

On Transfer

- What devices can be removed before the patient is transferred to a different level of care?

Core Recommendations

- Insert catheters only for appropriate indications (1B)
- Leave catheters in only as long as needed (1B)
- Ensure that only properly trained persons insert and maintain catheters (1B)
- Insert catheters using aseptic technique and sterile equipment (1C)
- Consider use of alternatives (II)
- Maintain a close drainage system (1B)
- Secure the system (1B)
- Maintain unobstructed urine flow (1B)
- Key the collecting bag below the level of the bladder at all times (1B)
- Unresolved:
  - Antiseptic or sterile saline for meatal cleaning before insertion

Lo E, et al. Infect Contr & Hosp Epidemiol. 2014;35(5):464-479

Simplified Insertion Checklist for Urinary Catheter

Components of Checklist	Compliant	
	Yes	Yes, after correction
Hand hygiene before and after procedure		
Sterile gloves, drapes, sponges, aseptic sterile solution for cleaning, and single use packet lubricant used		
Aseptic insertion technique (no contamination during placement)		
Proper securement of urinary catheter post-procedure		
Closed drainage system and bag below patient post-procedure		

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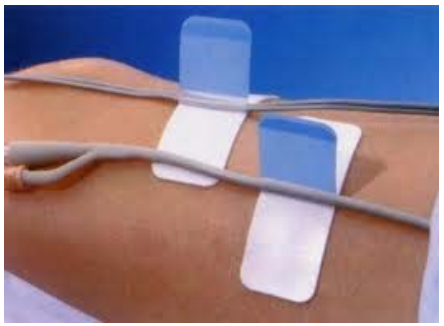
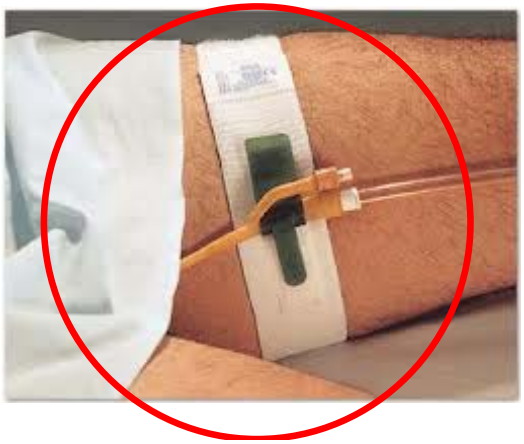
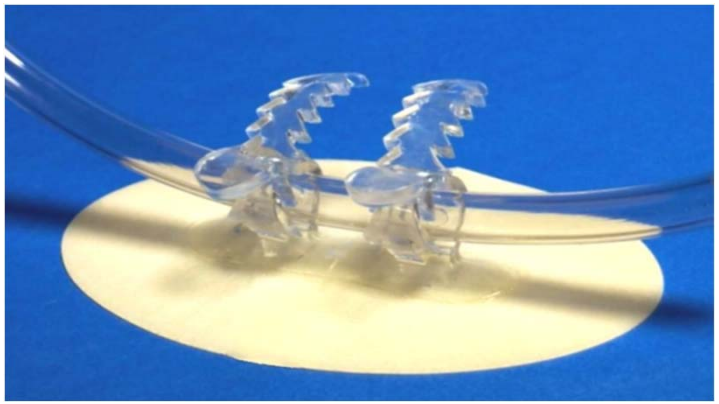
Securement Devices







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- Unresolved:
  - Antiseptic or sterile saline for meatal cleaning before insertion

Lo E, et al. Infect Contr & Hosp Epidemiol. 2014;35(5):464-479

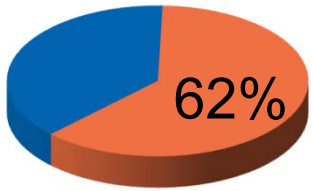
How We Bathe May Impact CAUTI's

Bath Basins
Potential Source of Infection

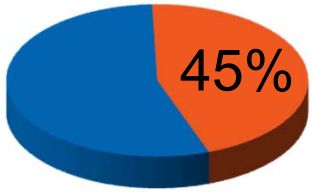
Large multi-center study evaluates presence of multi-drug resistant organisms

Total hospitals: 88

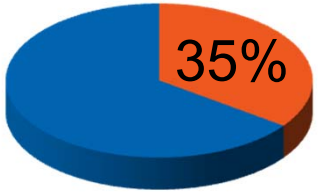
Total basins: 1,103



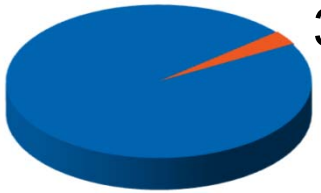
Contaminated
686 basins/88 Hospital



Gram negative bacilli
495 basins/86 hospitals



Colonized w/ VRE
385 basins/80 hospitals



MRSA
36 basins/28 hospitals

Marchaim D, et al. *Am J of Infect Control*. 2012;40(6):562-564

Mechanisms of Contamination

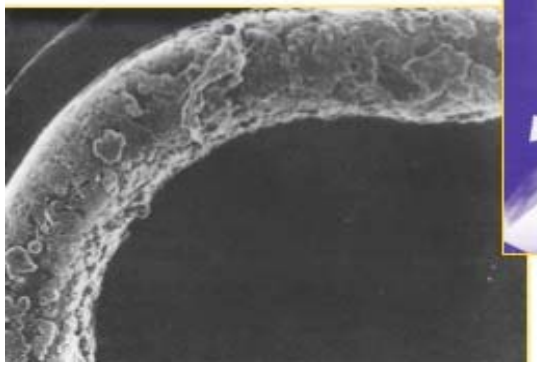
- Skin flora
- Multiple-use basins
  - Incontinence cleansing
  - Emesis
  - Product storage
- Bacterial biofilm from tap water

Larson EL, et al. *J Clin Microbiol*. 1986;23(3):604-608
Johnson D, et al. *Am J Crit Care*, 2009;18(1):31-38, 41
Marchaim D, et al. *Am J Infect Control*. 2012;40(6):562-564.
Shannon RJ, et al. J Health Care Safety Compliance Infect Control. 1999;3:180-184

Biofilms are Ubiquitous








Water Source

Hospital Tap Water

- Bacterial biofilm
- Most overlooked source for pathogens
- 29 studies demonstrate an association with HAIs and outbreaks
- Transmission:
  - Drinking
  - Bathing
  - Rinsing items
  - Contaminated environmental surfaces
- Immunocompromised patients at greatest risk

Anaissie EJ, et al. *Arch Intern Med*. 2002;162(13):1483-1492.,
Cervia JS, et al. Arch Intern Med, 2007;167:92-93,
Trautmann M, et al. Am J of Infect Control, 2005;33(5):S41-S49,

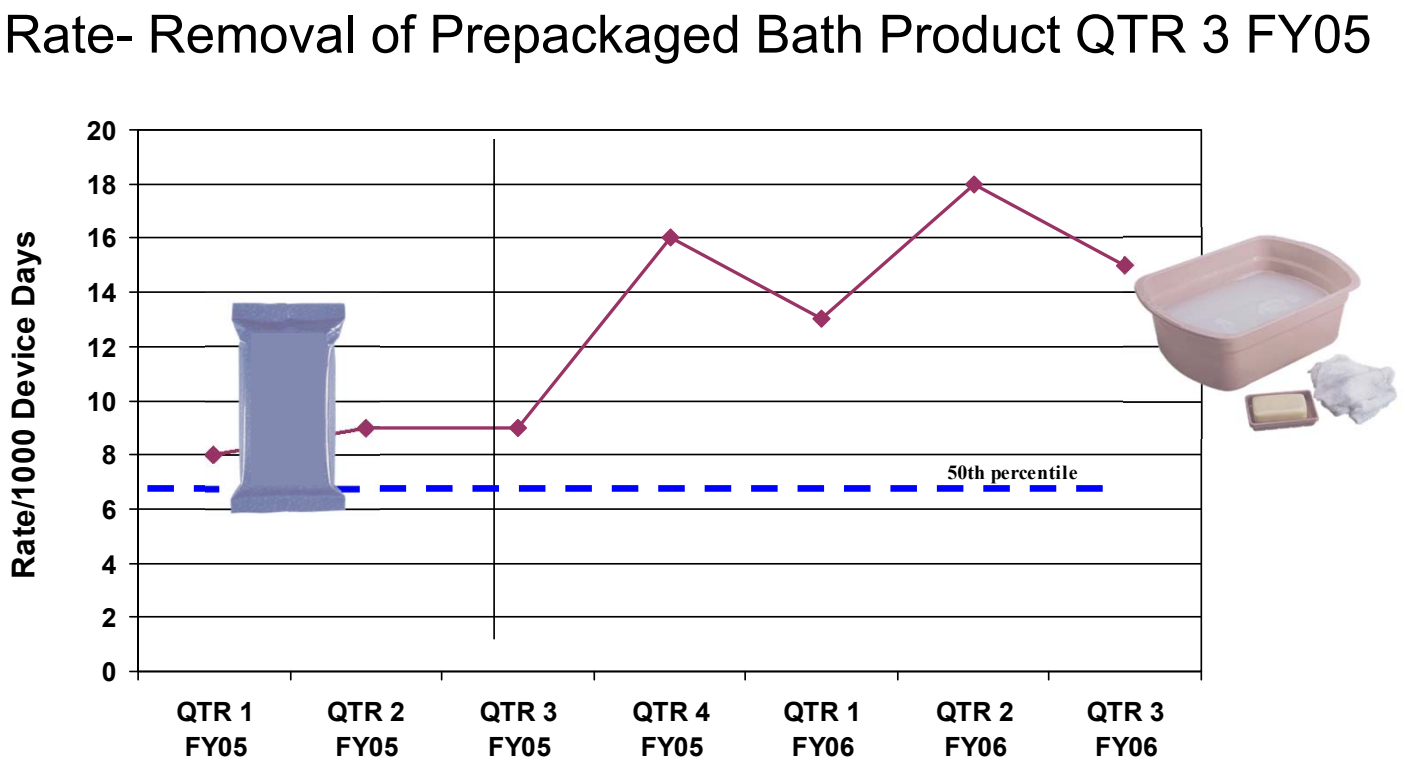
Understanding Water

- All water except for sterile water and filtered water is contaminated with microbes (e.g., potable water, tap water, showers, and ice)
- In healthy persons, contact or ingestion of such water rarely leads to infection
- However, contact or ingestion of such water may cause infection in immunocompromised persons or when applied to non-intact skin
- Transmission of these pathogens from a water reservoir may occur by direct and indirect contact, ingestion and aspiration of contaminated water, or inhalation of aerosols*

Presented at MSIPC October 6th, 2016, Lansing MI by Dorine Berriel-Cass

*Decker BK, et al. Opin Infect Dis 2013; 26:345–51.

Impact on UTI with Basin Bathing



McGuckin M, et al. AJIC, 2008;36:59-62

The Effect of Bathing with Basin and Water and UTI Rate, LOS and Costs

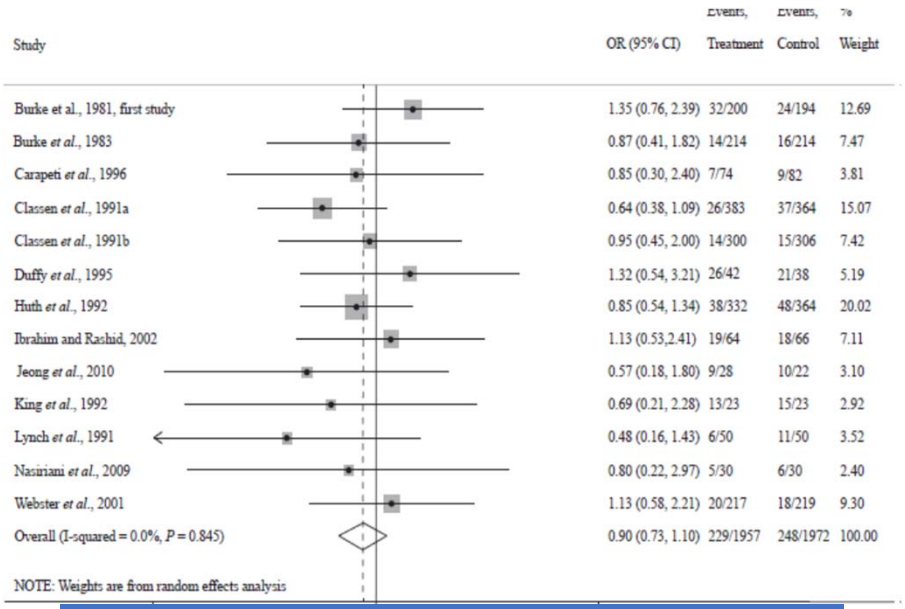
Unit Census: 14				
Phases	**Product Cost**	**No. of UTI**	**Median[4] LOS 17 Days**	**Median[4] Cost (4857.00)**
I- Pre-Packaged Bathing Washcloths (9 months)	$10,530[1] ($3.00)	25	175	$117,175
II- Basin/Water (9 months)	$3,510[2] ($1.00)	48	336	$224,916
III- Additional Product Cost, UTI, LOS, COSTS	$7,020	23[3]	151	$107,741

[1]Based on 3 packages of 8 towels each [2]Based on product cost of towels, soap, and basin[3] Difference between phase I pre-package/phase II basin water[4]

McGuckin M, et al. AJIC, 2008;36:59-62

Cleansing of Patients with Indwelling Catheter

- Antiseptic cleaning of the meatal area before and during catheter use may reduce the risk of CAUTIs.
- Indwelling catheter care should occur with the daily bath (basinless bathing), as a separate procedure using clean technique
- There is no evidence to support 2x a day indwelling catheter care
- If a large liquid stool occurs, bathe the patient with basinless bathing
- Apply barrier cloth to area of skin requiring protection



Comparison of antibacterial agent for routine care vs soap and water trended towards significance

Fasugba O, et al. J of Hosp Infection, 2017;95:233-242

For Successful Banning of Basins for Patient Care

- We need to provide alternatives for the other functions:

Current	New
Emesis	Emebags being installed in every adult and ped pt. room, ACU, PACU
Storage of patient items	Clear plastic “baggies” Trial of “Concierge List” to decrease waste of unused/unneeded products
Foot soaks	Shampoo caps, prepackaged
Shampoo patient’s hair	Shampoo caps par’d on all units
24 hour urine, ice	Store some basins in lab to be dispensed with each 24 hour jug.
Bath cloths with no insulation, cold halfway through bath.	Bath cloths with insulation to stay warm longer

Quinn B, et al. Presented at NACNS National Conference, March5-7th, 2015, San Diego Ca

Things to Consider

Cost-Benefit Ratio

CAUTI vs. IAD & Pressure Ulcer

Moisture Injury:
Incontinence Associated Dermatitis

- Inflammatory response to the injury of the water-protein-lipid matrix of the skin
  - Caused from prolonged exposure to urinary and fecal incontinence
- Top down injury
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling

Brown DS & Sears M, OWM 1993;39:2-26
Gray M et al OWN 2007;34(1):45-53.

IAD: Multisite Epidemiological Study

- 5,342 patients in 189 acute care facilities in 36 states
- Prevalence study
  - To measure the prevalence of IAD, describe clinical characteristics of IAD, and analyze the relationship between IAD and prevalence of sacral/coccygeal pressure ulcers
- Results: 2492 patients incontinent (46.6%)
  - 57% both FI and UI, 27% FI, 15% UI
  - 21.3% IAD rate overall/14% also had fungal rash
  - 45.7% in incontinent patients
    - 52.3% mild
    - 27.9% moderate
    - 9.2% severe
  - 73% was facility-acquired
  - ICU a 36% rate
  - IAD alone and in combination with immobility statistically associated with FAPI

Gray M. Giuliana K. JWOCN. 2018;45(1):63-67

WOC

- Incontinence associated dermatitis (IAD)
- Bathing strategies to maximize the barrier function of the skin
- Do no harm: process variation reduction

Infection Preventionist

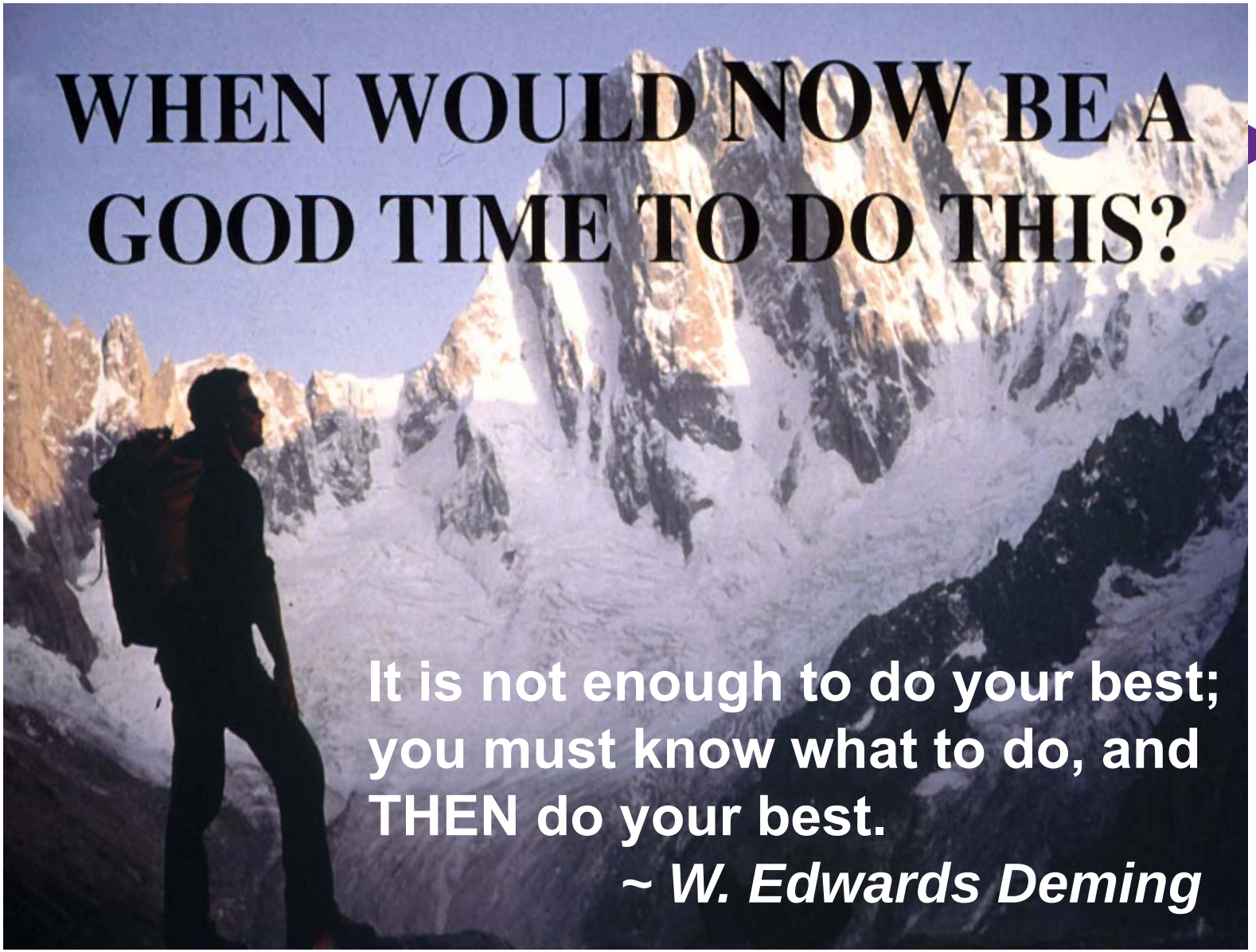
- Nurse catheter removal program
- Basin less bathing to address the risk factors with basins and tap water
- Do no harm: process variation reduction

Marchaim D, et al. *Am J Infect Control*. 2012;40(6):562-564,
Trautmann M, et al. Am J of Infect Control, 2005;33(5):S41-S49,
McGuckin M, et al. AJIC, 2008;36:59-62,
Parry MF, et al. AM J Of Infect Control. 2013;41:1178-81

Engage the Patient & Family

- Educate patients and families about the steps that are being taken to minimize the risk of CAUTI.
- Education: purpose, current indications for use, expected duration of the catheter, why it is important to remove as soon as possible & catheter alternatives
- Catheter removal goal on whiteboard & include in rounds

Health Research & Educational Trust (2017). : 2017. Chicago, IL: Health Research & Educational Trust. Accessed at www.hret-hiin.org

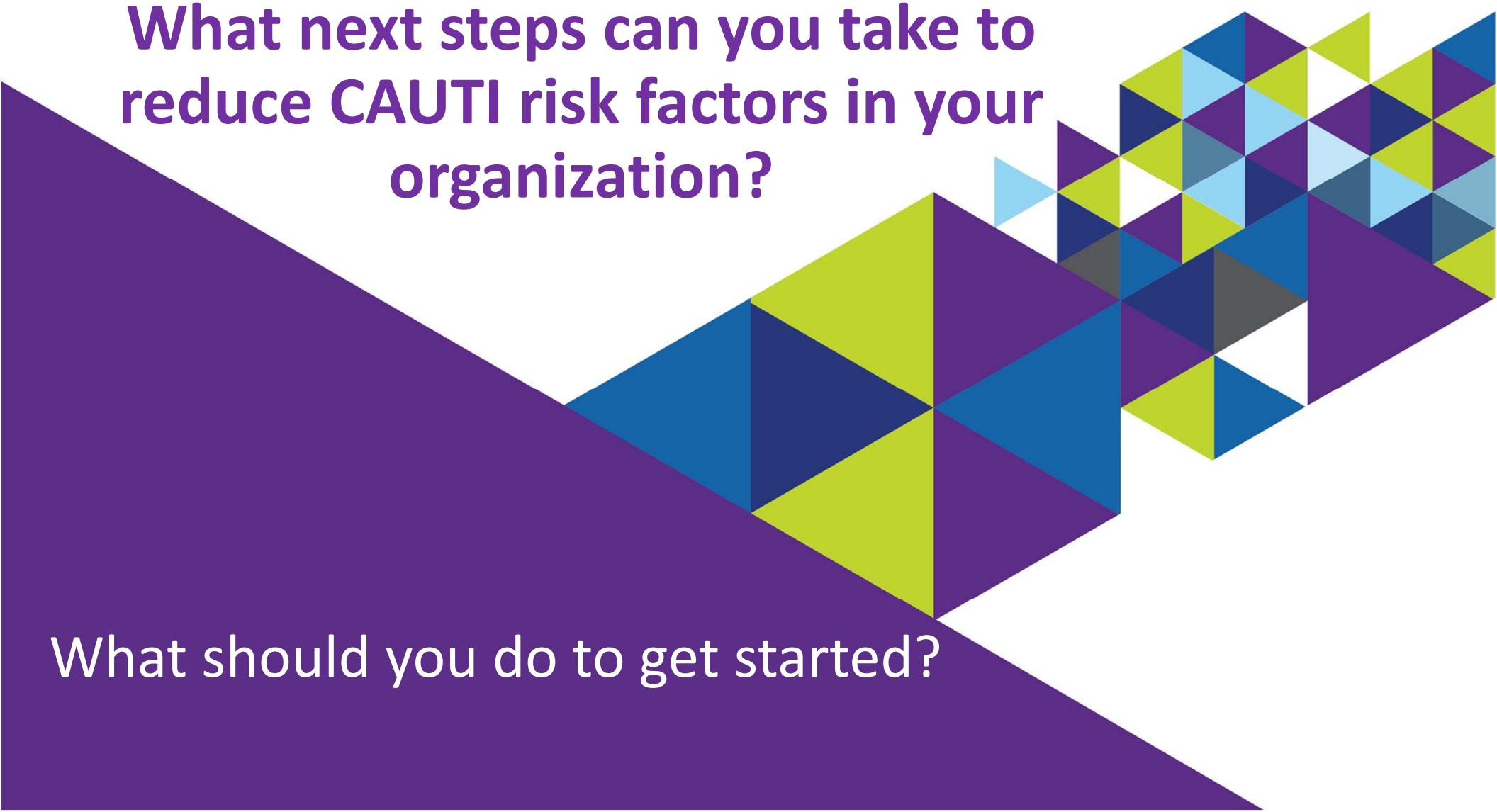

WHEN WOULD NOW BE A GOOD TIME TO DO THIS?
It is not enough to do your best; you must know what to do, and THEN do your best.
~ W. Edwards Deming

Summary of Strategies

NO CATHETER, NO CAUTI…

- Comprehensive interdisciplinary team approach
- Implement best practice bundles
- Consider use of alternatives
- Examine culturing practices
- Monitor metrics/performance

What next steps can you take to reduce CAUTI risk factors in your organization?



What should you do to get started?

Learn more

Please visit the Stryker virtual booth to learn more about options for external urine management for males and females.

Carmen Davis will be available in-booth following this presentation from 10:00 am-10:30 am CT to answer your questions.

Female
Anatomy

Male
Anatomy

Please visit the Stryker virtual booth to learn more about alternative options for external urine management for males and females

Carmen will be available in the booth from 10am-1030am to answer your questions

Questions

crdavis2017@gmail.com
kvollman@comcast.net