



LINKS OF INTEREST DISCLOSURE

Name of the speaker: Sarah L. Krein

I have no link of interest.



And what about getting rid of catheter-associated urinary tract infections?

Sarah L. Krein



Strategies to Prevent Catheter-Associated Urinary Tract Infection

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- The views expressed are those of the presenter and do not necessarily reflect the position or policy of the Department of Veterans Affairs or University of Michigan

Overview

- Catheter-Associated Urinary Tract Infection (CAUTI) and indwelling catheter use
- Technical components of a CAUTI prevention bundle
- Common socio-adaptive (behavioral) challenges when implementing prevention practices

Catheter-Associated Urinary Tract Infection (CAUTI)



- UTI is a common hospital-acquired infection
- Most due to indwelling urethral catheters
- Up to 20 percent of inpatients are catheterized
- Leads to increased morbidity and health care costs

Magill, NEJM, 2014; Weber, ICHE, 2011; Umscheid, ICHE, 2011, Rosenthal, Journal Infect, 2011; Ling, CID, 2015; Rosenthal, Infection, 2012; Tao, Int J of Infect Dis, 2011

Annals of Internal Medicine

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SEPTEMBER 17, 2013

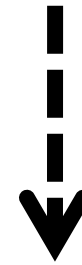
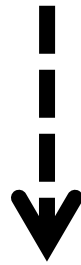
Determining the Noninfectious Complications of Indwelling Urethral Catheters

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.”

CAUTI Prevention Bundle



Technical

Socio-adaptive

Technical Elements of the CAUTI Bundle



1. Reducing indwelling urethral catheter use



2. Aseptic insertion technique and proper maintenance



3. Daily assessment and timely removal

Technical Elements of the CAUTI Bundle



1. Reducing indwelling urethral catheter use
 - Preventing unnecessary placement
2. Aseptic insertion technique and proper maintenance
3. Daily assessment and timely removal

2009 HICPAC Urinary Catheter Indication

A. Examples of Appropriate Indications for Indwelling Urethral Catheters

Patient has acute urinary retention or obstruction

Need for accurate measurements of urinary output in critically ill patients

Perioperative use for selected procedures:

- urologic surgery or other surgery on contiguous structures of genitourinary tract
 - anticipated prolonged surgery duration (removed in post-anesthesia unit)
 - anticipated to receive large-volume infusions or diuretics in surgery
 - operative patients with urinary incontinence
 - need for intraoperative monitoring of urinary output
-

To assist in healing of open sacral or perineal wounds in incontinent patients

Requires prolonged immobilization (e.g., potentially unstable spine)

To improve comfort for end of life care if needed

Ann Arbor Appropriateness Criteria (Meddings, Annals of Internal Medicine, May 2015)

Annals of Internal Medicine[®]

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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 Gales, 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



Table 2. Guide for Foley Catheter Use in Hospitalized Medical Patients*

Appropriate indications

Acute urinary retention without bladder outlet obstruction

Example: medication-related urinary retention

Acute urinary retention with bladder outlet obstruction due to noninfectious, nontraumatic diagnosis

Example: exacerbation of benign prostatic hyperplasia

Caution: consider urology consultation for catheter type and/or placement for conditions, such as acute prostatitis and urethral trauma

Chronic urinary retention with bladder outlet obstruction†

Stage III or IV or unstageable pressure ulcers or similarly severe wounds of other types that cannot be kept clear of urinary incontinence despite wound care and other urinary management strategies‡

Urinary incontinence in patients for whom nurses find it difficult to provide skin care despite other urinary management strategies‡ and available resources, such as lift teams and mechanical lift devices

Examples: turning causes hemodynamic or respiratory instability, strict prolonged immobility (such as in unstable spine or pelvic fractures), strict temporary immobility after a procedure (such as after vascular catheterization), or excess weight (>300 lb) from severe edema or obesity

Hourly measurement of urine volume required to provide treatment

Examples: management of hemodynamic instability, hourly titration of fluids, drips (e.g., vasopressors, inotropes), or life-supportive therapy

Daily (not hourly) measurement of urine volume that is required to provide treatment and cannot be assessed by other volume§ and urine collection strategies|

Examples: acute renal failure work-up, or acute IV or oral diuretic management, IV fluid management in respiratory or heart failure

Single 24-h urine sample for diagnostic test that cannot be obtained by other urine collection strategies|

Reduce acute, severe pain with movement when other urine management strategies are difficult‡

Example: acute unrepai red fracture

Improvement in comfort when urine collection by catheter addresses patient and family goals in a dying patient

Management of gross hematuria with blood clots in urine

Clinical condition for which ISC or external catheter would be appropriate but placement by experienced nurse or physician was difficult or patient for whom bladder emptying was inadequate with nonindwelling strategies during this admission

Inappropriate uses

Urinary incontinence when nurses can turn/provide skin care with available resources, including patients with intact skin, incontinence-associated dermatitis, pressure ulcers stages I and II, and closed deep-tissue injury

Routine use of Foley catheter in ICU without an appropriate indication

Foley placement to reduce risk for falls by minimizing the need to get up to urinate

Post-void residual urine volume assessment

Random or 24-h urine sample collection for sterile or nonsterile specimens if possible by other collection strategies|

Patient¶ or family request when no expected difficulties managing urine otherwise in nondying patient, including during patient transport

Patient ordered for "bed rest" without strict immobility requirement

Example: lower-extremity cellulitis

Preventing urinary tract infection in patient with fecal incontinence or diarrhea or management of frequent, painful urination in patients with urinary tract infection

Just because a patient is in the ICU does NOT mean that the patient needs an indwelling catheter...

A Key Question is this:

Are hourly assessments of urine output required?

Consider Alternatives

- Accurate daily weights
- Urinal/commode/bedpan
- External catheters
- Intermittent catheterization with bladder scanning

If the patient really, really
needs an indwelling
catheter...

Technical Elements of the CAUTI Bundle



1. Reducing indwelling urethral catheter use
2. Aseptic insertion technique and proper maintenance
3. Daily assessment and timely removal

Example Insertion Checklist

Procedural Steps	Yes	No	NA
Place patient in supine position			
Inspect the sterile catheterization kit and remove it from its outer packaging			
Open the inner paper wrapping to form a sterile field			
Form sterile field on bedside table or other flat surface but not patient bed			
With washed hands carefully retrieve the absorbent pad from the top of the kit			
Place absorbent pad beneath patient's buttocks, with plastic side down			
Don sterile gloves			
Cover patient's abdomen and superior pubic region with fenestrated drape			
Organize contents of the tray on the sterile field			
Pour antiseptic solution over the preparation swabs in the tray compartment			
Squeeze some sterile catheter lubricant onto the tray to lubricate the catheter tip			
* Test balloon prior to insertion			
Using gloved non-dominant hand, identify the urethra by spreading labia majora & minora			
Use the thumb and index finger to spread the inner labia with gentle traction and pulling upward towards patient's head			
Non-dominant hand is not removed from this position			
Use an expanding circular motion to clean the opening with remaining swabs			
Lubricate distal end of the catheter with the sterile jelly			
Holding the catheter in the dominant hand, gently introduce the catheter tip into meatus			
Slowly advance catheter through the urethra into the bladder			
If catheter is accidentally contaminated, it is discarded, and a new sterile catheter is obtained			
* If catheter is accidentally inserted into the vagina, it is left in place until a new sterile catheter is obtained and inserted correctly			
Once urine is observed in tubing, the catheter is advanced another 3 – 5 cm.			
Balloon is inflated with entire contents of 10cc. syringe of sterile water only after urine is observed in tubing			

Category	Frequency as a proportion of major breaches (%)	Frequency as a proportion of all insertions (%)	Examples
At least one major breach		48/81 (59%)	
Contamination of sterile field	22/48 (46%)	22/81 (27%)	<ul style="list-style-type: none"> Nurse touched items on sterile field with bare non-sterile hands. Stethoscope/garment/torso touched sterile field.
Contamination of the catheter	25/48 (52%)	25/81 (31%)	<ul style="list-style-type: none"> Patient's labia closed over the catheter during insertion and contaminated the catheter; nurse did not get a new one. Catheter tip touched genitalia before being introduced into urethra.
Breach of sterile barrier	31/48 (65%)	31/81 (38%)	<ul style="list-style-type: none"> Sterile gloved hand used to swab genitalia (without tongs); same hand used to insert catheter. Nurse inserting catheter ripped her sterile gloves, did not get new ones.

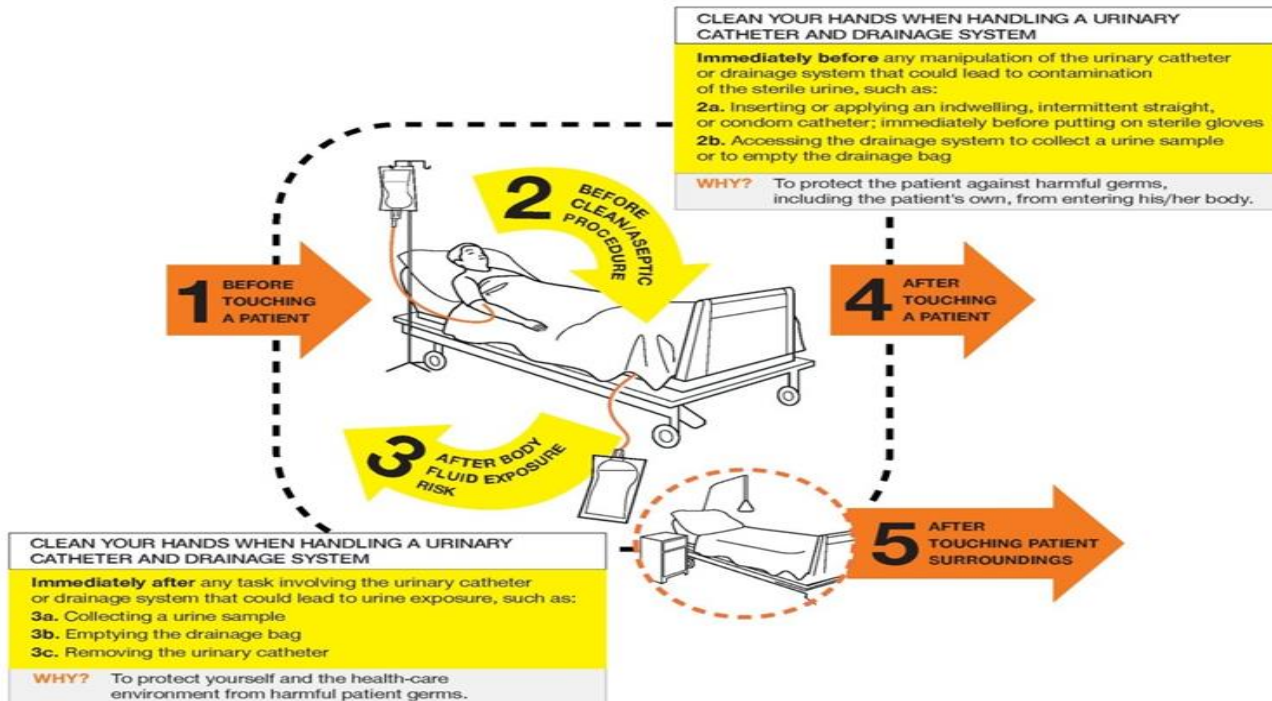
Manojlovich, ICHE, 2016

- Maintain a closed drainage system
- Maintain unobstructed urine flow
 - Free of kinks
 - Collecting bag below the bladder
 - Empty the bag regularly
- Use routine hygiene, i.e., do not clean the periurethral area with antiseptics



My 5 Moments for Hand Hygiene

Focus on caring for a patient with a Urinary Catheter



5 KEY ADDITIONAL CONSIDERATIONS FOR A PATIENT WITH A URINARY CATHETER

- Make sure that there is an appropriate indication for the indwelling urinary catheter.
- Use a closed urinary drainage system, and keep it closed.
- Insert the catheter aseptically using sterile gloves.
- Assess the patient at least daily to determine whether the catheter is still necessary.
- Patients with indwelling urinary catheters do not need antibiotics (including for asymptomatic bacteriuria), unless they have a documented infection.



World Health
Organization

SAVE LIVES
Clean Your Hands

No Action Today
No Cure Tomorrow

Technical Elements of the CAUTI Bundle

1. Reducing indwelling urethral catheter use
2. Aseptic insertion technique and proper maintenance



3. Daily assessment and timely removal

Indwelling Catheters: Lost in Place

Training Level	Proportion Unaware
Medical Student	18%
Intern	22%
Resident	28%
Attending	38%

Saint, Am J Med, 2000

Timely Removal of Indwelling Catheters

- 30 studies evaluating catheter reminders and stop-orders
 - Significant reduction in catheter-associated urinary tract infection (53%)
 - No evidence of harm

******* URINARY CATHETER REMINDER *******

Date: _____

This patient has had an indwelling urethral catheter since _____.

Please indicate below either your 1) approval to remove the catheter **OR** 2) state the reason for continued indwelling urethral catheterization.

Please discontinue indwelling urethral catheter; **OR**

Please continue indwelling urethral catheter because patient requires indwelling catheterization for the following reasons (please check **all** that apply):

- Patient has acute urinary retention or bladder outlet obstruction
- Need for accurate measurements of urinary output in critically ill patients wound
- 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
- Other - please specify: _____

Physician's Signature

Doctor Number

Meddings, BMJ Qual Saf, 2013

Primary Technical Components



1. Reducing indwelling urethral catheter use

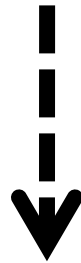


2. Aseptic insertion technique and proper maintenance

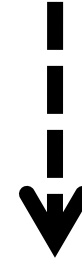


3. Daily assessment and timely removal

CAUTI Prevention Bundle



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

Lack of Physician Engagement

- Often physicians are unaware or only passively involved in CAUTI prevention efforts

As a charge nurse explained: “If you don’t have the doctors on board you’re just going to be beating your head against the wall. . . .”

Use of data to engage physicians

Director of an intensive care unit:

“Data seems to be the best motivation for physicians... [they] compare rates it is sort of an incentive . . .”

Reasons for physicians to be engaged or to care about CAUTI prevention and catheter use

Infectious Disease Specialists	Urologists
<ul style="list-style-type: none">• Reduce CAUTI• Reduce antibiotic use• Reduce potential of increased resistance and <i>Clostridium difficile</i> disease	<ul style="list-style-type: none">• Reduce trauma (mechanical complications):<ol style="list-style-type: none">1. Meatal and urethral injury2. Hematuria
Hospitalists	Geriatricians
<ul style="list-style-type: none">• Infectious and mechanical complications• Potential catheter complications prolonging length of stay• Often salaried physicians with incentives based on hospital-based quality and efficiency	<ul style="list-style-type: none">• Many elderly are frail• Indwelling urethral catheters are placed more commonly in elderly inappropriately• Indwelling urethral catheters increase immobility and deconditioning

Fakih, AJIC, 2014

Lack of Nursing Engagement

Concerns about nursing workload/convenience are common

Clinical Nurse Specialist “I think nurses are so busy . . . They have a lot of things they’re dealing with and trying to keep track of and if a patient has a catheter, it’s almost easier for them.”

BUT that may not be the only issue

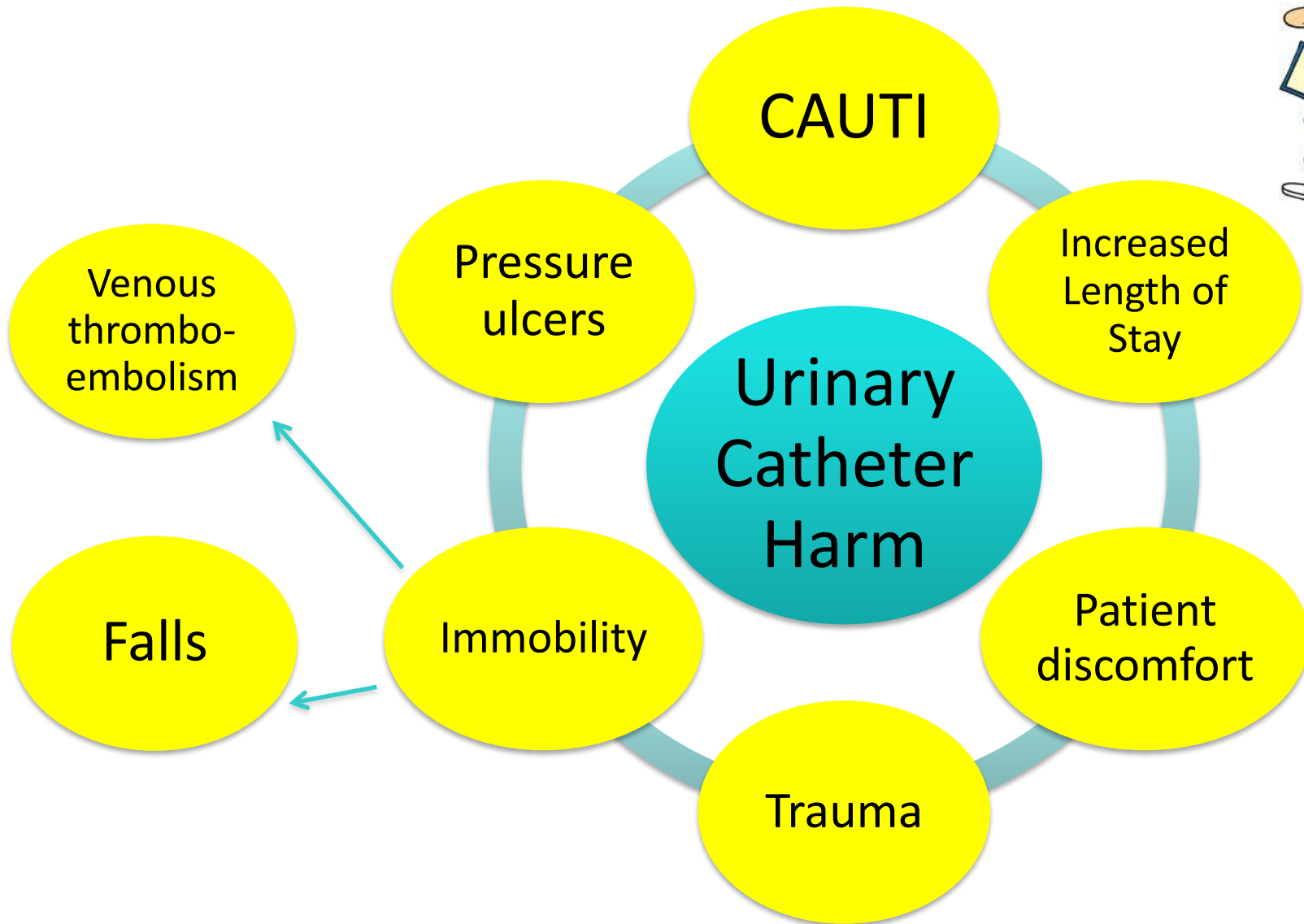
Infection Preventionist “I think it’s not just that it’s easier. It’s that nurses are worried, ‘Well do I really want this person hopping out of bed and can I really be sure that they’re going to call me to help them?’ We don’t want there to be any falls. That’s considered to be a never-event in a hospital”

Krein, JAMA Intern Med, 2013

Capitalizing on Nurses Priorities

- A physician administrator: “Because the nurses on the geriatrics unit wanted to have their patients regain mobility...they viewed mobility as very important ...versus the other units where the nurses didn’t necessarily feel that was a real goal..”

Addressing CAUTI Prevention within the Broader Patient Safety Context



Champions

- True champions tend to be intrinsically motivated and passionate about the practices they promote

- Keep the effort a priority
- Provide expertise
- Serve as liaison with their peers

But, also remember



Preventing CAUTI is a team sport

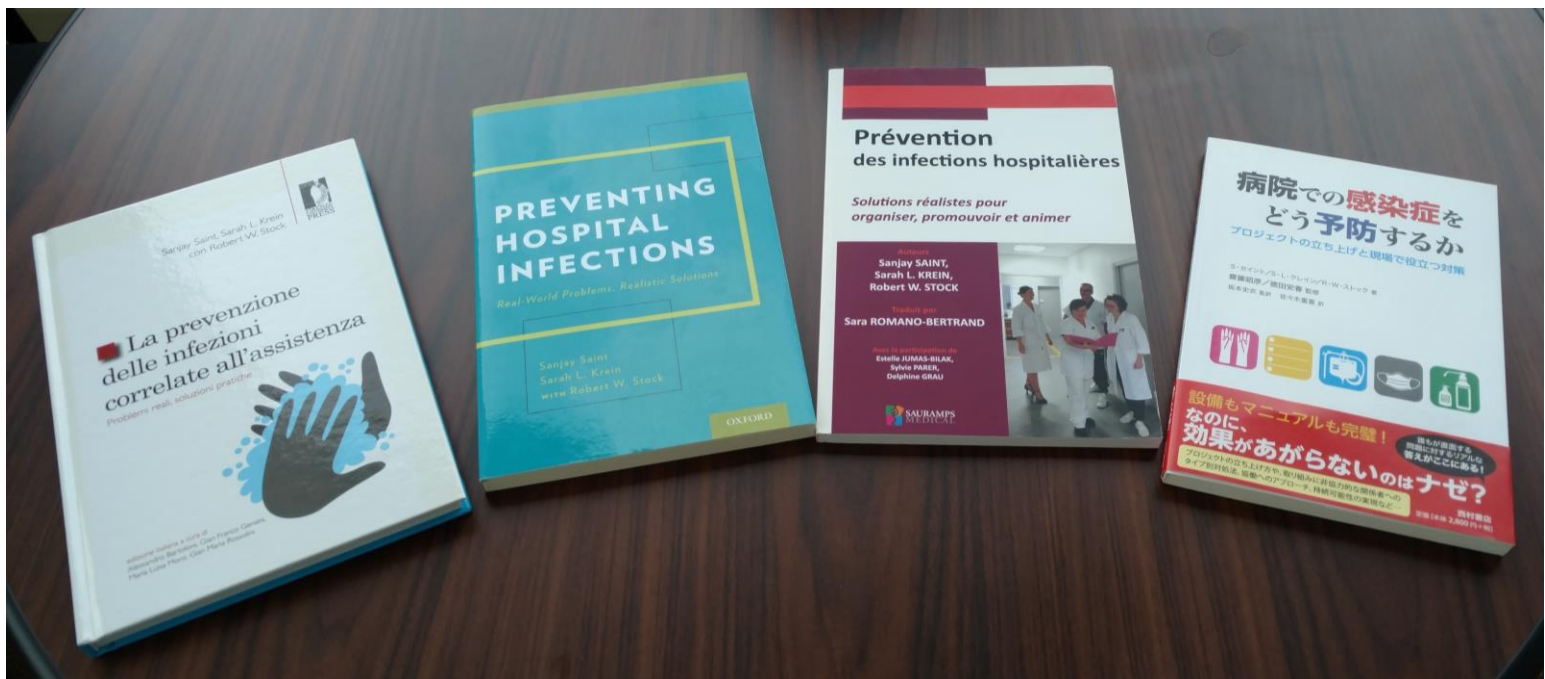
CAUTI Prevention Team: Key Roles and Responsibilities

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

(Modified from www.catheterout.org)

Conclusions

- CAUTI and indwelling catheter use are important patient safety issues
- Proven approaches to reduce catheter use and prevent CAUTI but implementation requires attention to technical and socio-adaptive issues
- Preventing CAUTI is everyone's responsibility but takes courage, compassion and conviction



Thank You!

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www.catheterout.org