Antimicrobial Stewardship and Infection Prevention
CENTER OF EXCELLENCE

From Defeating CAUTI to Preventing Urinary Catheter Harm

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Ascension

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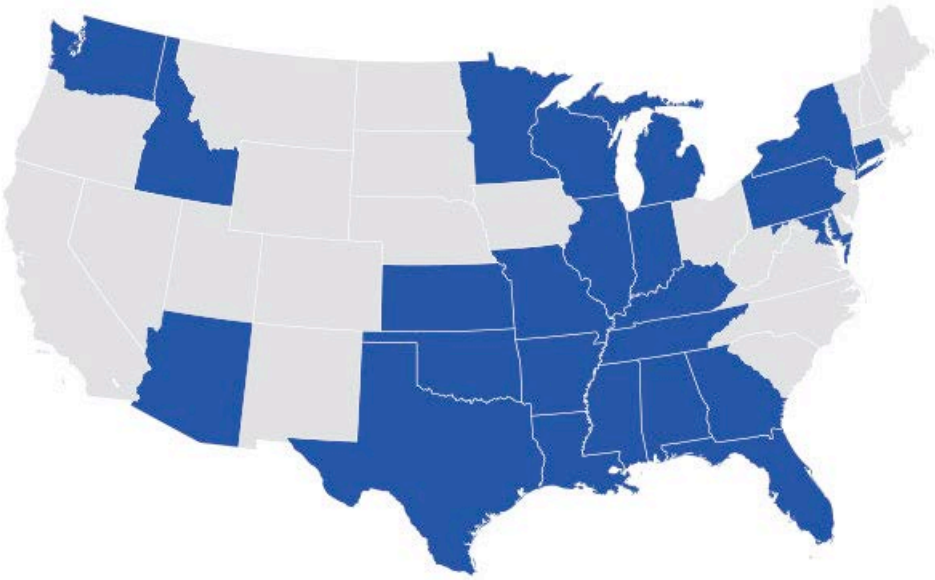
ASCENSION

Where I Come from: Ascension

- Largest non-profit health system in USA
- 24 states and DC
- 141 hospitals (from very small to tertiary care)
- 37 senior care facilities
- >150,000 associates
- 2,500 sites of care



We Will Discuss

- How to reduce urinary catheter risk
- How different disciplines collaborate to make it happen
- Why culturing stewardship is important as a part of CAUTI reduction efforts
- Key elements to successful efforts

Could this happen at your hospital? The Story of Mr. Smith (1)

Mr. Smith is 82 year old and gets admitted because of mild congestive heart failure. In the Emergency Department, a urinary catheter is placed (although he can use the urinal), and he is transferred to the medical ward but could not sleep. He is prescribed a sleeping pill. He gets more restless, gets out of bed, trips on the catheter and falls. He is found to have a left hip fracture, and undergoes surgery. Post-operatively, the staff notes that his left leg is swollen and he is diagnosed with deep venous thrombosis. He is started on blood thinners.

The Story of Mr. Smith (2)

Because of his immobility, he develops a pressure ulcer on his sacrum. His physician removes the catheter, but now he is having urinary retention related to pain medications. The urinary catheter is placed again. The procedure results in hematuria with the difficulty in insertion and being on blood thinners. Few days later, he develops fever and his blood pressure drops. Blood cultures and urine cultures grow *Escherichia coli* and he is diagnosed with CAUTI and septicemia. After 6 weeks in the hospital and many complications, Mr. Smith is no longer the same.

Urinary Catheter Utilization

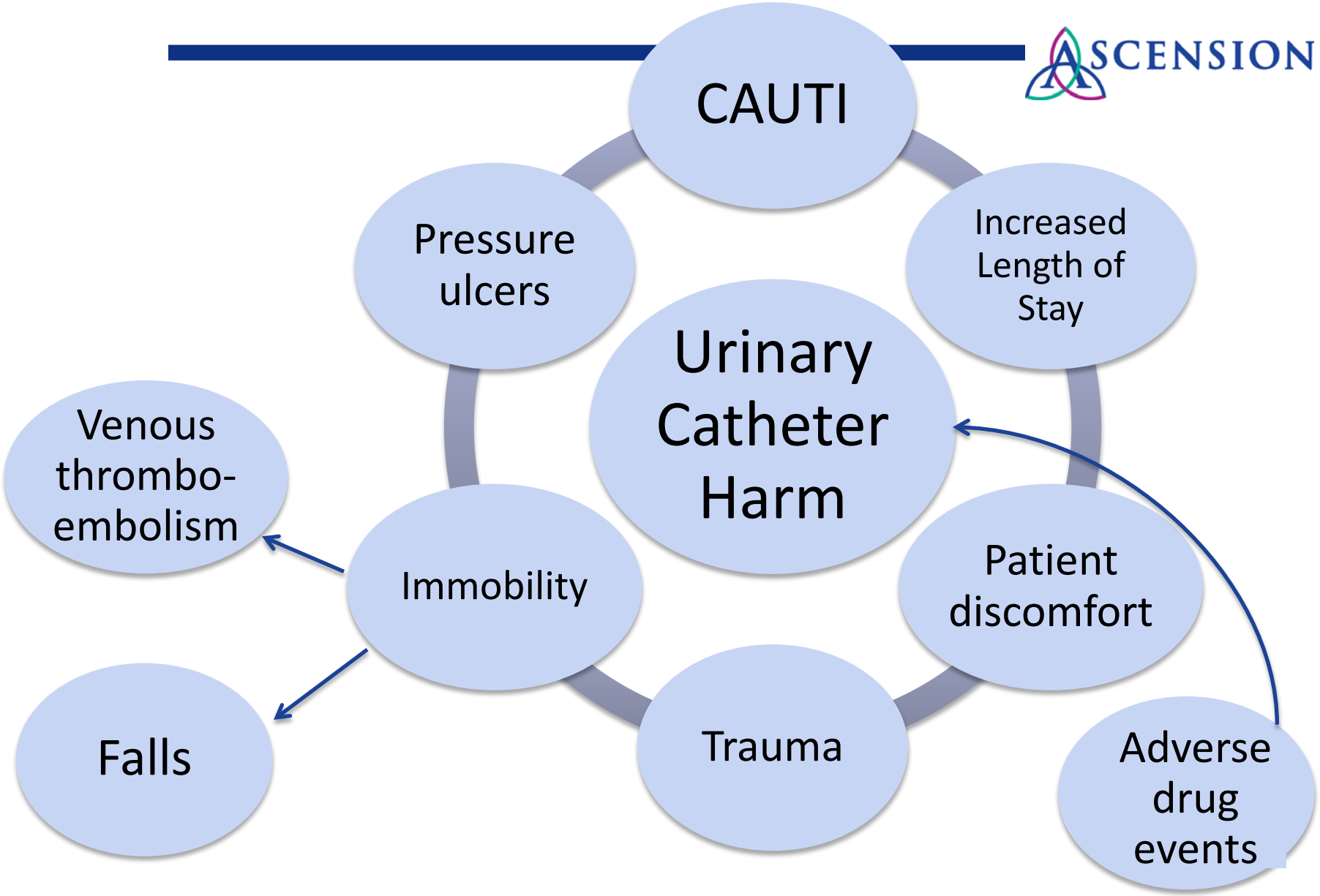
- About 20% of patients will have a urinary catheter placed during their hospitalization.
- Many are placed either in the intensive care unit, emergency department or the operating room.
- The presence of the indwelling urinary catheter increases the risk of infectious and mechanical complications.
- No catheter = no risk for device harm

Most Vulnerable: High Risk for Unnecessary Use

(Fakih et al, Am J Infect Control 2010;38:683-8)

- Evaluated urinary catheter (UC) placement for all admissions from ED for 12 weeks.
- 532/4521 (11.8%) patients had a UC placed, 69.7% indicated.
- Women ≥80 years: half had a UC placed without indication.
- UC without appropriate indication:

1. **Women**: twice more likely than men
2. **Very elderly** (≥80 years): 3 times more likely than those 50 or younger



It is a patient safety issue, not just CAUTI

Mean UC Use: Change over 7 Years?

(Edwards, AJIC 2009;37:783-805; Dudeck, AJIC 2011;39:349-67; Dudeck, AJIC 2011;39:798-816; Dudeck, AJIC 2013; 41: 1148-66; Dudeck, AJIC 2015; 43: 206-21)

	2006-8	2009	2010	2012	2013
Med-surg ≤15 beds (ICU)	0.64	0.67	0.63	0.53	0.54
Med-surg >15 beds (ICU)	0.79	0.72	0.71	0.64	0.63
Med-surg major teaching (ICU)	0.78	0.73	0.73	0.68	0.65
Neurosurgical	0.76	0.77	0.74	0.69	0.65
Trauma (ICU)	0.89	0.83	0.80	0.78	0.75
Med-surg (non-ICU)	0.22	0.19	0.19	0.18	0.17

Not adjusted to new units reporting to NHSN…

Some reduction in use

Know when you need it (indications)

Know how to place it (insertion technique)

Know your ~~catheter~~ device

Know how to care for it (maintenance)

Know when it is no longer needed (appropriate continued use)

Know when You Need it

(Appropriate Indication)

- **Clearly identify** what the **indications** are and what they mean
- Have **agreement** of key leaders on the indications (i.e., institutional guidelines)
- Incorporate appropriate indications into policies, and competencies
- Provide support to prevent unnecessary placement (**bladder scans**, urinals, condom catheters), and skin care

Indications: CDC 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** [1-4]
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: • 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
B. Examples of *Inappropriate* Uses of Indwelling Catheters
As a substitute for nursing care of the patient or resident with incontinence
As a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void
For prolonged postoperative duration without appropriate indications (e.g., structural repair of urethra or contiguous structures, prolonged effect of epidural anaesthesia, etc.)

Note: These indications are based primarily on expert consensus.

What is Accurate Measurement in Critically Ill?

- SHEA 2014 update: **hourly** assessment of urine output (Lo, Infect Control Hosp Epidemiol 2014; 35 (5): 464-479)
- Accurate measurement in critically ill: 82% of labeled indications in the ICU (Greene, Infect Control Hosp Epidemiol 2014; 35(S3): S99-S106)
- Urinary catheter labeled appropriate: >95% in ICU

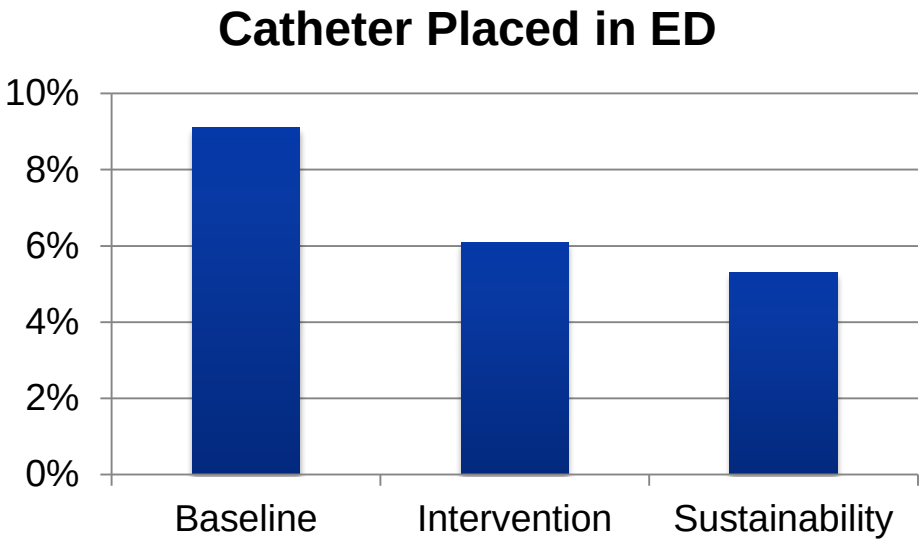
Improving Appropriate Placement: ED

- Establish clear guidelines for UC insertion in the ED.
- Engage physicians (**significant** role in UC use).
- Engage nurses (**significant** role in UC use).
- Pilot: 18 EDs Ascension Health

1. Placement reduced by a third
2. High baseline hospitals benefited more

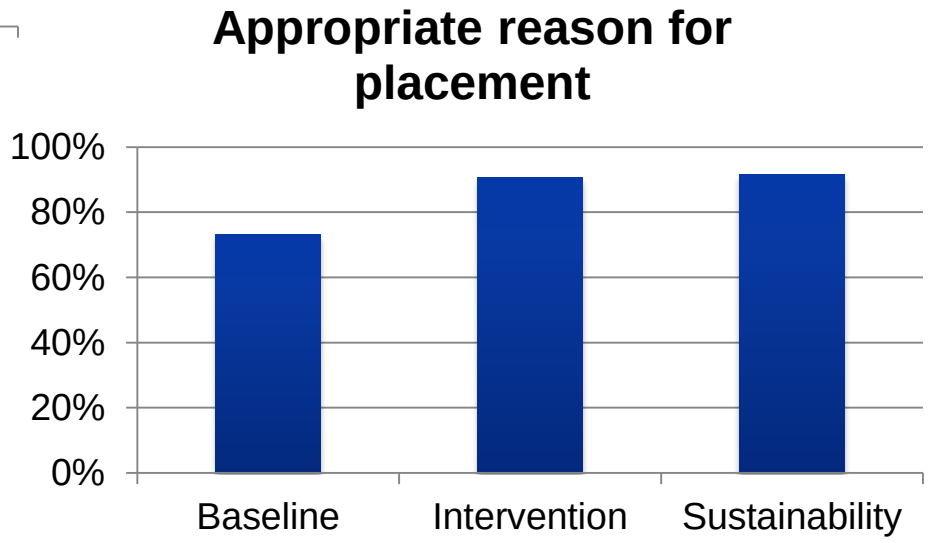
Ascension Pilot of 18 EDs

(Fakih et al, Ann Emerg Med 2014; 63: 761-8)



- Reduction in catheter use by a third!
- The results were sustained for more than 6 months

- Catheter avoidance translates into preventing exposure to the catheter for thousands of patients



Intervening in the OR

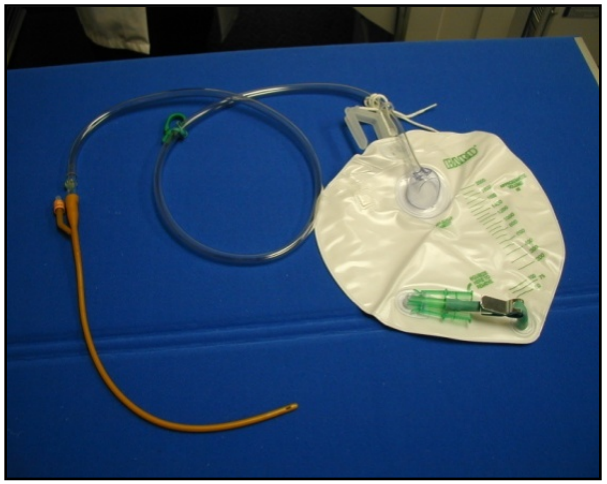
- Engage the **surgeons** at your facility
- Clearly identify for which surgeries it is appropriate to use
- Promote prompt removal in OR or PACU postoperatively
- Less catheters, less complications

Know how to Place it
(Proper Insertion Technique)

- Perform hand hygiene before and after placement.
- Maintain aseptic technique and use of sterile equipment.
- Use sterile gloves, drape, an antiseptic solution for periurethral cleaning, and a single packet of lubricant for insertion.
- Use the appropriate catheter size.
- Have all the elements needed for procedure in one kit

Know how to Care for it
(Maintenance of Urinary Catheters)

- Closed urinary drainage system
- Unobstructed urinary flow (no kinks, urinary bag below bladder, regular emptying of bag)
- Device secured
- Seal not broken



Know when it is no Longer Needed

- Nurse-driven removal:

1. Pilot study: 45% reduction in unnecessary catheter utilization (Fakih et al, Infect Control Hosp Epidemiol 2008; 29: 815-9)
2. Michigan collaborative: 25% reduction in use for 163 units (Fakih et al, Arch Intern Med 2012;172:255-260)

- Integrate **daily** evaluation for need
- Provide feedback on performance

Michigan Experience (163 units)

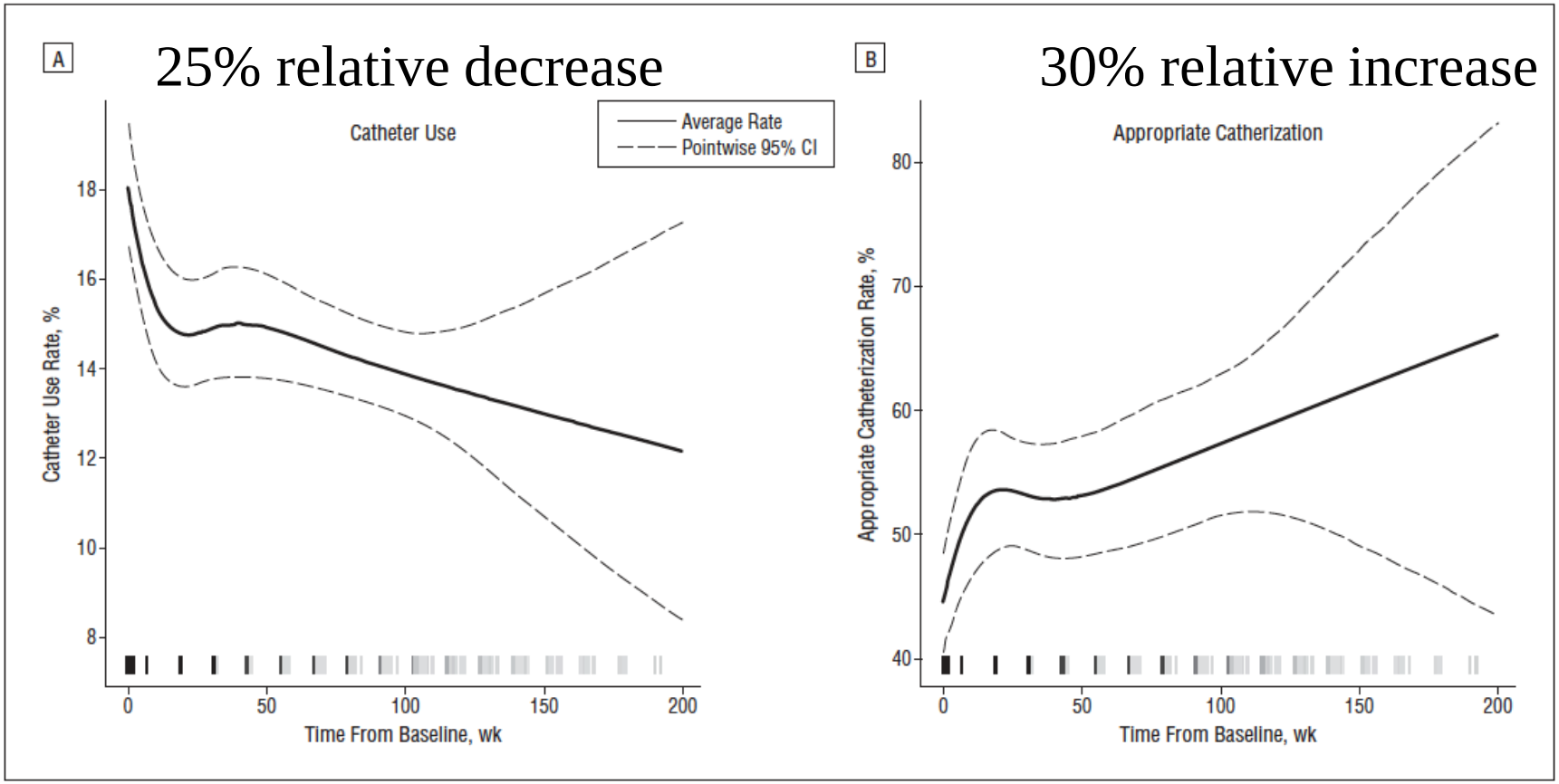


Figure 2. Rates of catheter use (A) and appropriate catheterization (B) across time. The tick marks at the x-axes indicate times at which data were collected. The darkness of the tick marks reflects the number of units contributing data (darker marks indicating more units and lighter marks, fewer units); black represents all units, and white represents no units.

(Fakih et al, Arch Intern Med 2012;172:255-260)

On the CUSP Stop CAUTI

- USA: 50 States Effort, 1,266 hospitals over 4 years
- Cohorts 1-4: 926 units (Saint et al, N Engl J Med 2016;374:2111-9)

1. Non-ICU: urinary catheter 7% reduction, 32% CAUTI reduction
2. ICU: no change

- Cohorts 1-9: NHSN CAUTI rate decreased by 30% among non-ICU. The population-based CAUTI rate decreased by 36%. Catheter utilization decreased by 8%. No change for ICU.

Table 1. Program Recommendations and Examples of Interventions.*

Recommendation	Example of Intervention
Primary	
Conducting daily assessment of the presence of and need for an indwelling urinary catheter	Conducting daily nursing rounds to review urine-collection strategies, including indications for continued urinary-catheter use
Avoiding use of an indwelling urinary catheter by considering alternative urine-collection methods	Promoting the use of condom catheters, bladder scanners, intermittent straight catheterization, and accurate measurement of daily weight (all in lieu of indwelling urinary catheters)
Emphasizing the importance of aseptic technique during catheter insertion and proper maintenance after insertion	Developing or updating the catheter-insertion policy to include all the proper steps, developing competencies for health care workers who insert catheters, and considering periodic audits of catheter placement
Additional	
Providing feedback to the units regarding urinary-catheter use and catheter-associated UTI rates	Providing nurses and physicians with data on urinary-catheter use, with monthly feedback on use and catheter-associated UTIs
Addressing any identified gaps in knowledge of urinary management processes†	Conducting an evaluation for gaps in knowledge of infectious and noninfectious consequences of urinary-catheter use; developing tailored educational materials to fill identified gaps; using multiple venues for education, including bedside and electronic; incorporating education into annual competency testing for nurses; and using multiple venues for physicians (formal presentations and meetings, with one-to-one discussions for physicians with high use)

(Saint et al, N Engl J Med 2016;374:2111-9)

* UTI denotes urinary tract infection.

† Urinary management processes include proper insertion and maintenance of indwelling urinary catheters, use of alternative urine-collection methods, and prevention of infectious and noninfectious consequences of urinary-catheter use.

Table 4. Multivariable-Regression Estimates of Changes in Catheter Use, According to Unit Type.*

Variable	Non-ICU (N=553)		ICU (N=373)	
	IRR (95% CI)	P Value	IRR (95% CI)	P Value
Time†	0.93 (0.90–0.96)	<0.001	0.98 (0.96–1.01)	0.15
Teaching hospital	0.96 (0.73–1.26)	0.77	0.96 (0.88–1.06)	0.45
Rural hospital	0.89 (0.78–1.01)	0.07	0.85 (0.78–0.91)	<0.001
Critical-access hospital	0.95 (0.82–1.10)	0.47	0.81 (0.67–0.98)	0.03
Hospital size (per 100-bed increase)‡	0.98 (0.95–1.02)	0.38	1.02 (1.01–1.04)	0.01

* IRRs are shown for changes from baseline in catheter use, which was calculated as the number of catheter-days per number of patient-days. Negative binomial models were fit, with random intercepts for hospital and unit.
† Time was defined as the number of days from the end of the baseline period (day 0) to the end of the sustainability period (day 427). Thus, the IRR indicates the percentage change from the end of baseline to the end of the study period. P=0.004 for the comparison between non-ICUs and ICUs.
‡ P=0.001 for the comparison between non-ICUs and ICUs.

(Saint et al, N Engl J Med 2016;374:2111-9)

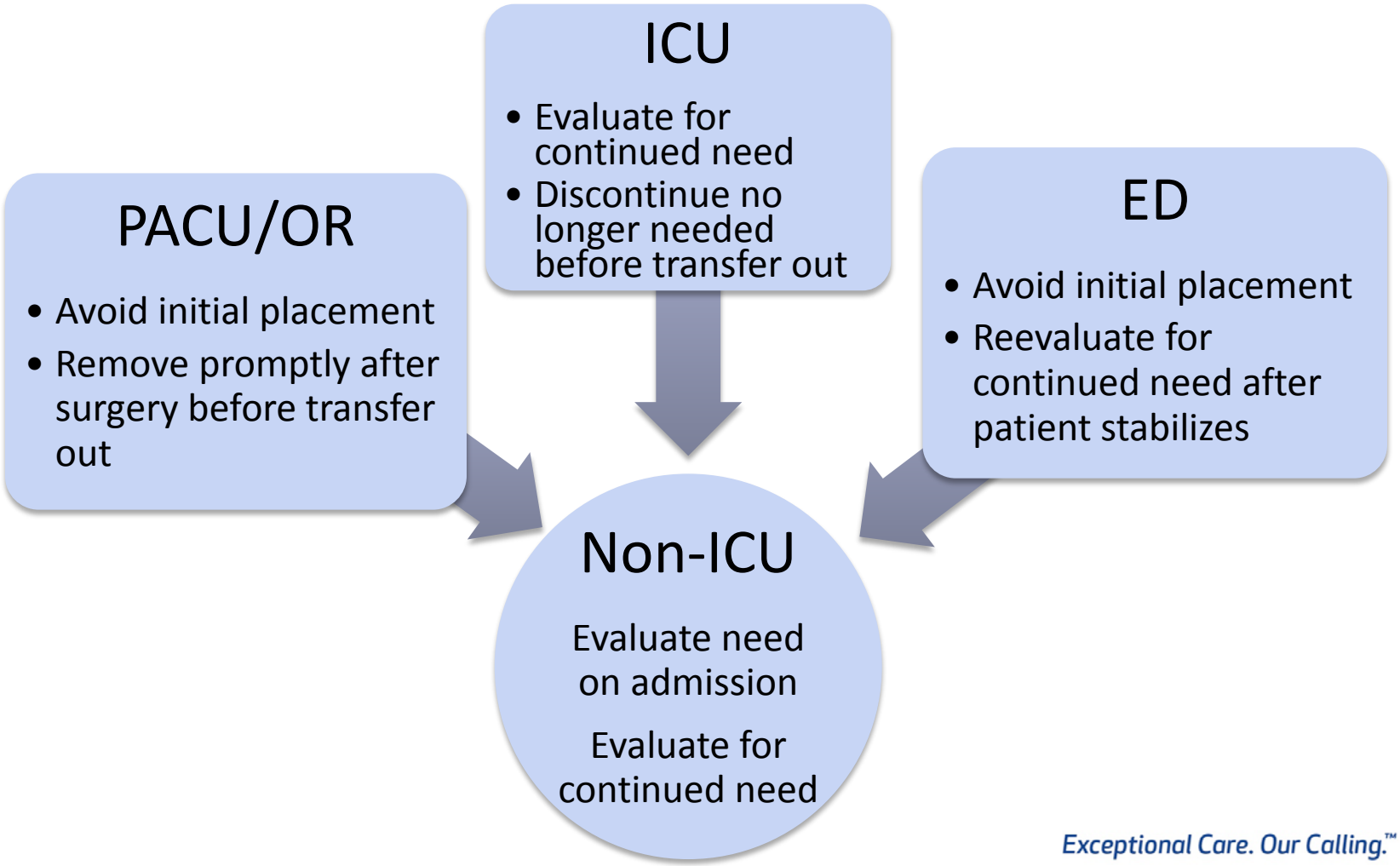
Why the Partial Success?

- Adoption of best practices may vary by site
- Leadership support and priorities locally
- Champions and accountability
- Engagement of the stakeholders
- Factors in the ICU: perceptions of indications?

Impact of “On the CUSP Stop CAUTI”

2010 and before	2015 and beyond
What catheter???! I do not remember	Patient does not need it; lets pull that foley out
What indications?? I just think patient needs it	Clear indications (CDC adopted)- with future enhancements (Ann Arbor criteria)
I have better things to do other than checking on the catheter	Urinary catheters harm our patients

Effort Should be Hospital Wide: Multidisciplinary and Multi-departmental

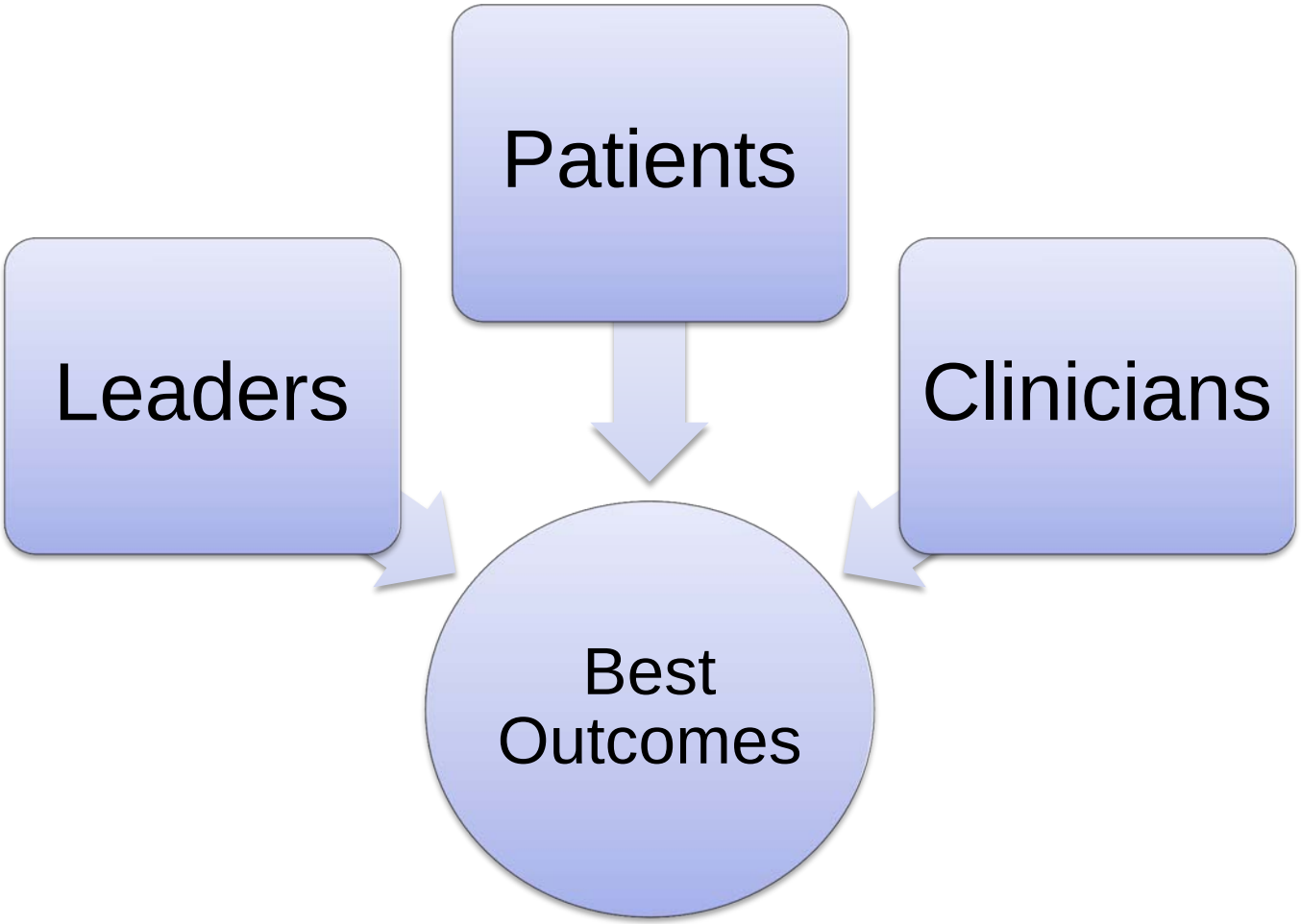


Engaging Healthcare Workers

(Fakih, Am J Infect Control 2014; 42: S223-S229)

1. Champion(s): advocate best practices, provide performance feedback, promote **accountability**
2. Supporting disciplines: facilitate the champion's work, help build capacity to sustain effort

The Supporters (or Stakeholders)



Leaders

- Prioritize safety
- Understand the importance for both patients and hospital image
- Clearly message the importance to associates
- Provide resources and support to the champions doing the work

Clinicians: Supporters of the Champion(s)

- Help facilitate the champion's work
- Point out any barriers or concerns: important to address to keep process successful
- Help build capacity to sustain effort

Goal alignment is critical for support

Supporters: Reasons to Be on Board

Infect Dis Specialists/ Infect Preventionists	Urologists
• Reduce CAUTI and bacteriuria. • Reduce antibiotic use. • Reduce potential of increased resistant organisms and *Clostridium difficile* infection.	• Reduce trauma with UC (mechanical complications): 1. Meatal and urethral injury 2. Hematuria
Hospitalists	**Geriatricians**
• Infectious and mechanical complications. • Device complications prolong length of stay. • Hospitalists care for a large number of patients. Their support may help significantly improve the appropriate use of the urinary catheter.	• Elderly are frail. • Urinary catheters often placed in elderly inappropriately. • Urinary catheters increase immobility and deconditioning risk, in addition to infection and trauma. • Any infection is detrimental to elderly

(Fakih, Am J Infect Control 2014; 42: S223-S229)

Supporters: Reasons to Be on Board

Rehab Specialists/ Physical Therapists	Surgeons
• The urinary catheter reduces patient mobility: one point restraint. • Rapid recovery (improvement in ambulation) may be hampered by the catheter (in addition to the other associated risks).	• Inappropriate urinary catheter use postoperatively may limit ambulation and increase risk of infectious and non-infectious harms. • Risk of infection and trauma related to the devices, which may seed the surgical site or implant.
Intensivists/ ICU Nurses	**Emergency Medicine Physicians / Nurses**
• Opportunity upon transfer from the ICU to discontinue no longer needed devices, including urinary catheters. • Intensivists and ICU nurses can support the evaluation of **daily** device need and before transfer out of the unit. (Fakih, Am J Infect Control 2014; 42: S223-S229)	• Up to half of the patients are admitted through the emergency department (ED). • Inappropriate device use and noncompliance with aseptic insertion increases infection risk. • Promoting appropriate device placement in the ED reduces inappropriate use hospital-wide.

Supporters: Reasons to Be on Board

Wound Care Nurses	Case Managers (Discharge Planners)
• Urinary catheter use increases immobility, and pressure ulcers. • Wound care nurses help advise the bedside nurse on methods to reduce skin breakdown in patients with incontinence	• Less complications (mechanical or infectious)= lower cost • Early device removal may reduce length of stay
Nurse manager (Unit Leader)	**Post-Operative Recovery Nurses**
• Leader and supporter to the bedside nurse (empowers the nurse) • Makes the appropriate device use a priority and a safety issue • Should be aware of performance (process and outcomes) • Addresses any barriers encountered by the bedside nurse	• Devices are commonly placed preoperatively for fluid management during the surgery. • Post-operative recovery nurses evaluate devices for continued need and promptly remove no longer catheters.

(Fakih, Am J Infect Control 2014; 42: S223-S229)

Multidisciplinary-Multidepartmental Efforts

(St John Hospital, Detroit, MI)

1. Pilot for nurse driven multidisciplinary rounds to assess urinary catheter need
2. Educated nurses on risks of the catheter and appropriate indications
3. Updated hospital policies for urinary catheter placement and maintenance
4. Involved all stakeholders: nurses, physicians, midlevel providers, ancillary services
5. Involved multiple departments: non-ICU, ED, and ICU

Multidisciplinary-Multidepartmental Efforts

(St John Hospital, Detroit, MI)

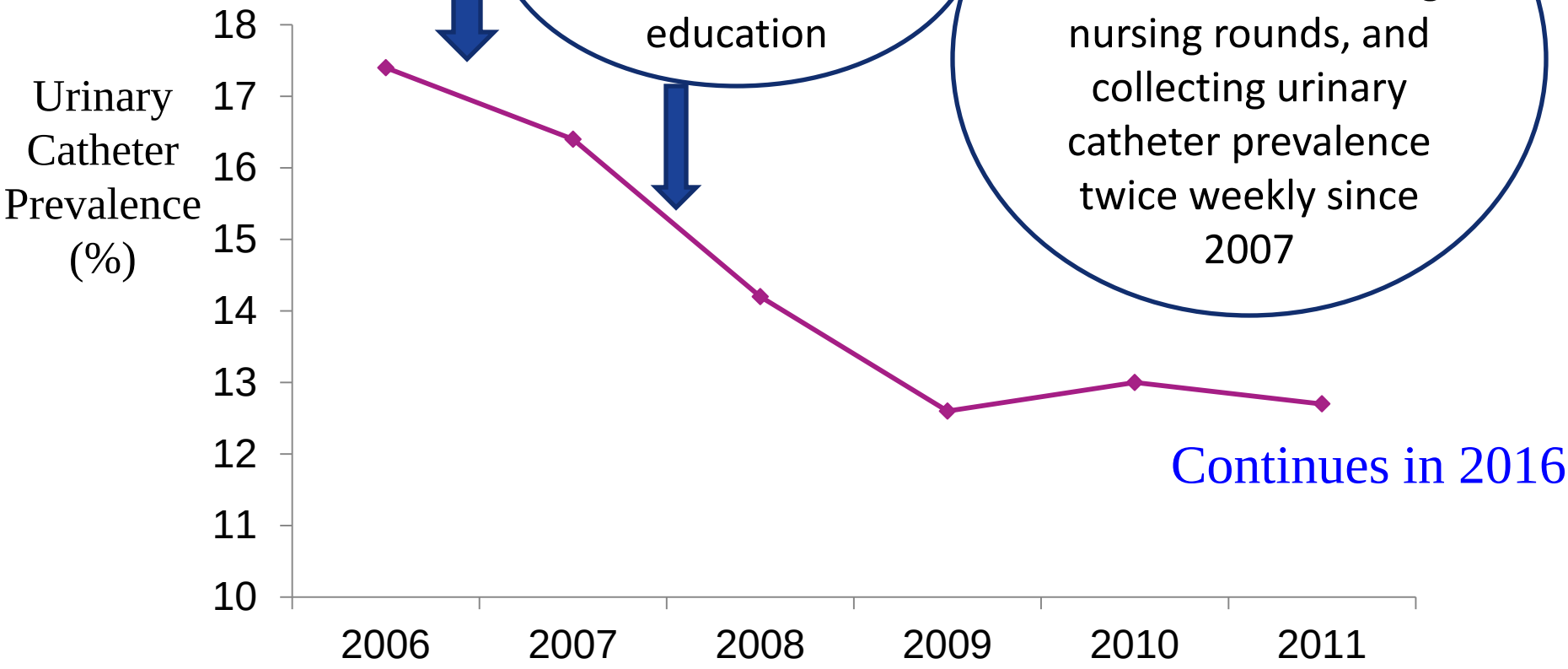
6. Incorporated daily assessment of the urinary catheter as part of the nurses daily work.
7. Operationalized the evaluation of need by having twice weekly urinary catheter use fed back from non-ICU to Infection Prevention
8. Linked the work to other safety efforts: surgical improvement project, pressure ulcers, and immobility/ falls.

Sustaining Gains with Interventions

Nurse-driven removal of unnecessary catheters

Establishing institutional guidelines for the ED and education

Incorporating the evaluation of catheter need during nursing rounds, and collecting urinary catheter prevalence twice weekly since 2007



Continues in 2016

SJHMC, Detroit, MI

(Fakih, Am J Infect Control, 2013; 41: 236-239)

And the Nurses Own the Catheter…

	Bedside nurses (n = 229)
Who on unit is responsible to verify if a urinary catheter is needed?	
Nurse caring for patient	78/227 (34.4)
Case manager	4/227 (1.8)
Nurse manager	1/227 (0.4)
Nurse caring for patient and case manager	36/227 (15.9)
Nurse caring for patient, case manager, and nurse manager	108/227 (47.6)
How often does the nursing unit evaluate urinary catheter presence and appropriate need?	
Once per week	2/227 (0.9)
Tuesday and Thursday only	19/227 (8.4)
3 times per week	0/227
4 times a week	1/227 (0.4)
Daily	205/227 (90.3)
Evaluating the urinary catheter presence and need is usually done during…	
Morning shift	38/228 (16.7)
Night shift	0/228
All shifts	190/228 (83.3)

Fakih, Am J Infect Control 2013; 41: 236-239

And the Nurses Own the Catheter…

Multidisciplinary rounds help identify and remove no longer needed urinary catheters	
Strongly agree and agree	190/228 (83.3)
Neutral	28/228 (12.3)
Disagree and strongly disagree	10/228 (4.4)
Doing urinary catheter prevalence evaluations on Tuesdays and Thursdays helps our unit focus on removal of unnecessary catheters	
Strongly agree and agree	151/225 (67.1)
Neutral	56/225 (24.9)
Disagree and strongly disagree	18/225 (8)
I am confident in my knowledge of urinary catheter indications and nonindications	
Strongly agree and agree	223/229 (97.4)
Neutral	4/229 (1.7)
Disagree and strongly disagree	2/229 (0.9)

Fakih, Am J Infect Control 2013; 41: 236-239

The Patient

- Patients are the most important stakeholders in their care
- They should be informed about the risk of devices and engaged in their care
- It is important to bring their voice to whether a device is to be used

Patient as his/her Own Advocate

- Ask WHY the device is being used
- Ask about the RISK of the device
- Understand the RISKs associated and the alternatives
- Be empowered to voice any concerns

REDUCE YOUR RISK OF INFECTION

How you can help your care team

DON'T BE AFRAID TO ASK QUESTIONS

We want you to be safe while you are in our hospital. This brochure goes over some things you can do to help your caregivers keep you safe. **Don't be afraid to speak up and ask questions – that's why we're here!** You can play an important role in your own safety by working with your care team.

Do you still need your urinary catheter?

If you are not able to empty your bladder, we may have placed a urinary catheter, also called a Foley.

Your urinary catheter should be taken out as soon as you don't need it anymore:

- Urinary catheters can injure the bladder or cause urine infections. If this happens, you may have to spend more days in the hospital.
- A urinary catheter also makes it harder for you to move around. This can make you weaker.

You don't need a urinary catheter if your problem is that you can't get out of bed or that you leak urine. We have safer ways to help you with those concerns.

Your nurse or doctor should be checking every day to see if you still need your urinary catheter.

WHAT YOU CAN DO:

Ask your nurse or doctor **today** if you still need your urinary catheter.

Sustainability

- Process should be effective and perceived to be by healthcare workers (**accepted**)
- Process **integrated** into routine daily work (e.g., part of nursing activities, part of electronic medical records)
- Continued collaboration between different stakeholders and disciplines
- Continued feedback on performance and accountability

What About Reducing CAUTI?

- Different from CLABSI
- Some patients are colonized in urine before catheter placement
- No evidence that we can completely eradicate bacteriuria even if we comply with all measures

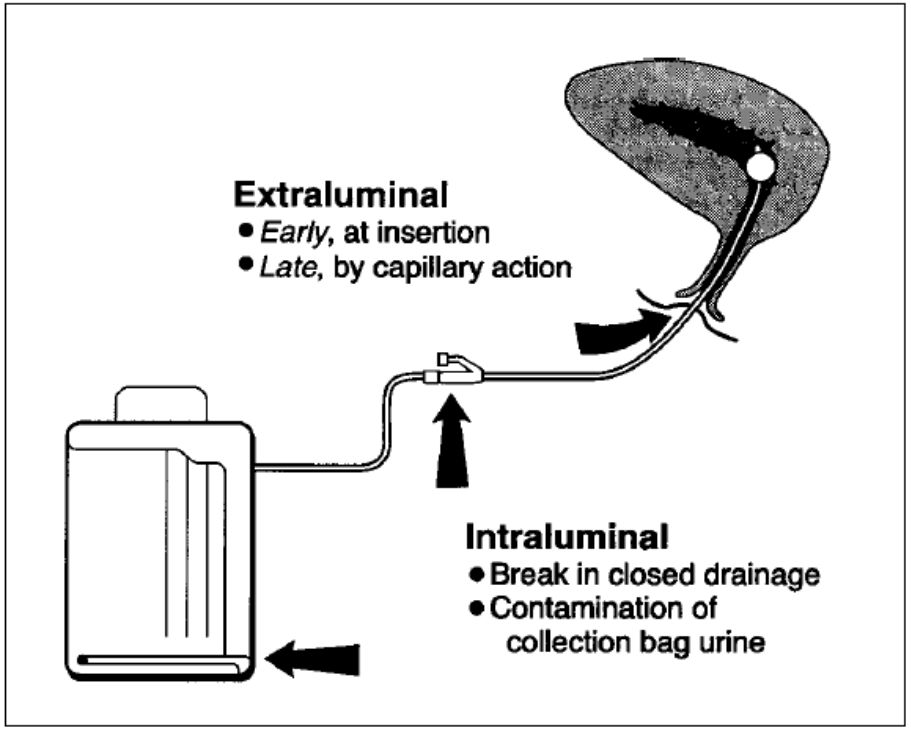


Figure 1. Routes of entry of uropathogens to catheterized urinary tract.

Maki and Tambyah, *Emerg Infect Dis* 2001; 7: 1-6

What About Reducing CAUTI?

- Multiple definitions: clinical, surveillance, coding
  (Fakih at al, Infect Control Hosp Epidemiol. 2016;37(3):327–333)
- Often changed, may underestimate the infectious risks
- What is infection: Is it bacteriuria? symptomatic infection?

Mean **ICU** CAUTI Rates/1000 Catheter-Days: 7 Yrs

(Edwards, et al. *AJIC* 2009;37:783-805. Dudeck, et al. *AJIC* 2011;39:349-67. Dudeck, et al. *AJIC* 2011;39:798-816; Dudeck, et al. *AJIC* 2013; 41:1148-66. Dudeck, et al. *AJIC* 2015; 43:206-21)

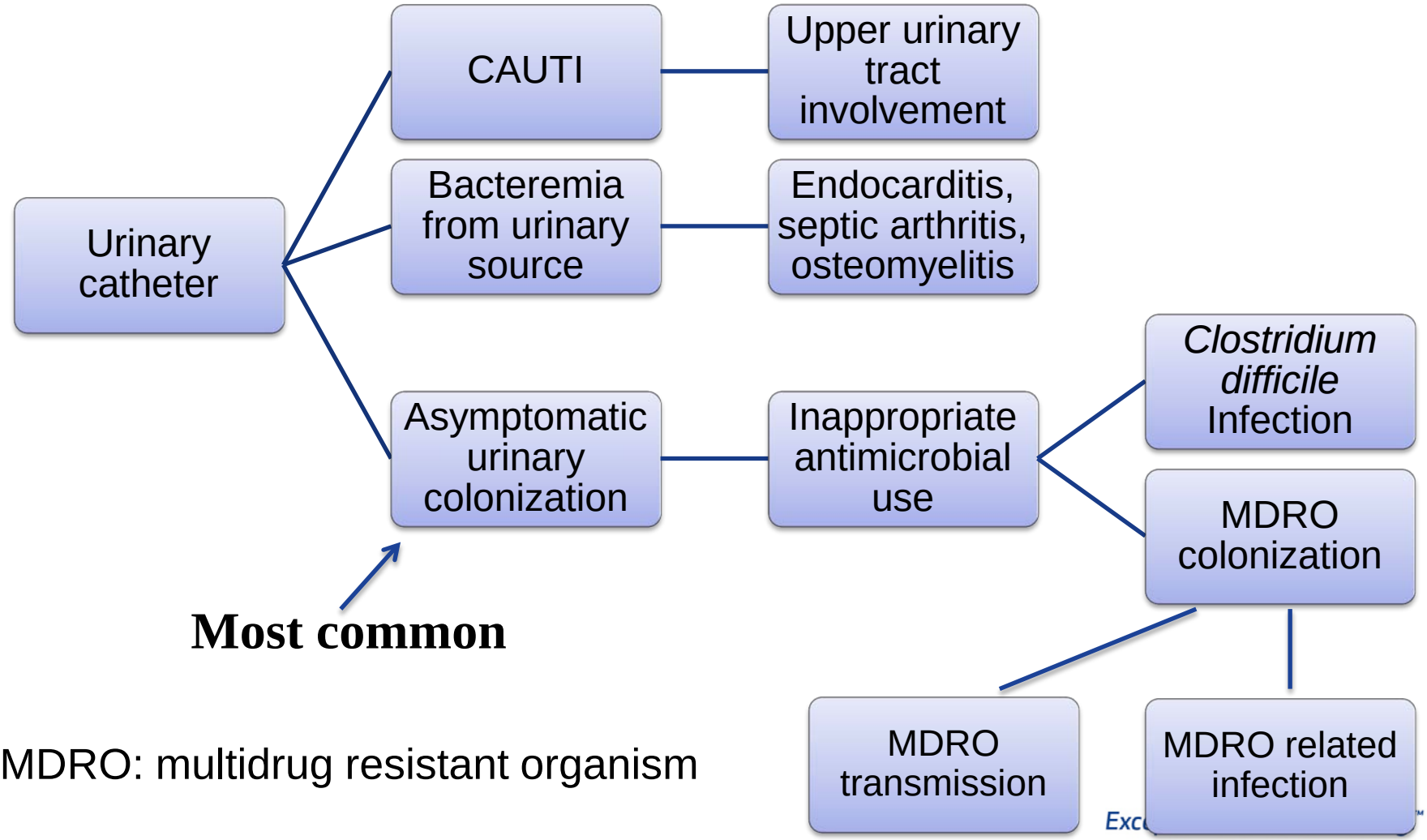
CAUTI rates per 1,000 catheter days	2006-8	2009	2010	2012	2013
Med-surg ≤15 beds	3.4	1.3	1.3	1.2	1.3
Med-surg >15 beds	3.1	1.2	1.3	1.6	1.7
Med-surg major teaching	3.4	2.3	2.2	2.4	2.7
Neurosurgical unit	6.9	4.4	4.0	5.0	5.3
Trauma unit	5.4	3.4	3.2	4.1	4.3

NHSN definition change (2009) resulted in >50% drop in CAUTI …
No change in CAUTI in ICU; some increase in 2013.

2015: Definitional Change drops CAUTI by Half!!!

- New CDC NHSN definition excludes candiduria and low colony-forming units
- Universal improvement in CAUTIs
- Definitional, not reflecting true improvement
- **Problem:** narrow outcome assessment, susceptible to culturing practices and fever prevalence; does not account for other related infectious and noninfectious events (e.g., trauma related to the catheter, pressure ulcers)
- Another reason to focus on **device risk**

Infectious Complications + Catheter: more than CAUTI



MDRO: multidrug resistant organism

Improving the Culture of Culturing (Testing Stewardship)

Know the Prevalence of Asymptomatic Bacteriuria (ASB)…

Table 2. Prevalence of asymptomatic bacteriuria in selected populations.

Population	Prevalence, %	Reference
Healthy, premenopausal women	1.0–5.0	[31]
Pregnant women	1.9–9.5	[31]
Postmenopausal women aged 50–70 years	2.8–8.6	[31]
Diabetic patients		
Women	9.0–27	[32]
Men	0.7–11	[32]
Elderly persons in the community[a]		
Women	10.8–16	[31]
Men	3.6–19	[31]
Elderly persons in a long-term care facility		
Women	25–50	[27]
Men	15–40	[27]
Patients with spinal cord injuries		
Intermittent catheter use	23–89	[33]
Sphincterotomy and condom catheter in place	57	[34]
Patients undergoing hemodialysis	28	[28]
Patients with indwelling catheter use		
Short-term	9–23	[35]
Long-term	100	[22]

[a] Age, ⩾70 years.

Nicolle et al, Clin Infect Dis 2005; 40:643–54

IDSA Guidelines ASB

(Nicolle et al, *Clin Infect Dis* 2005; 40:643–54)

- Screening and treatment of bacteriuria recommended for:

1. Pregnancy
2. Before transurethral resection of the prostate
3. Urologic procedures for which mucosal bleeding is anticipated

The Bad…

- Clinician inappropriately triggers urine cultures in catheterized patients based on

1. Urine color, consistency and smell
2. Pyuria
3. Fever (without evaluating potential source)

Color or Odor

(Hooton, *Clin Infect Dis* 2010; 50:625–663)

IDSA guidelines:

"In the catheterized patient, the presence or absence of odorous or cloudy urine alone should not be used to differentiate CA-ASB from CA-UTI or as an indication for urine culture or antimicrobial therapy."

Absence of Pyuria

(Hooton, *Clin Infect Dis* 2010; 50:625–663)

- IDSA guidelines: “The absence of pyuria in a symptomatic patient suggests a diagnosis other than CA-UTI”

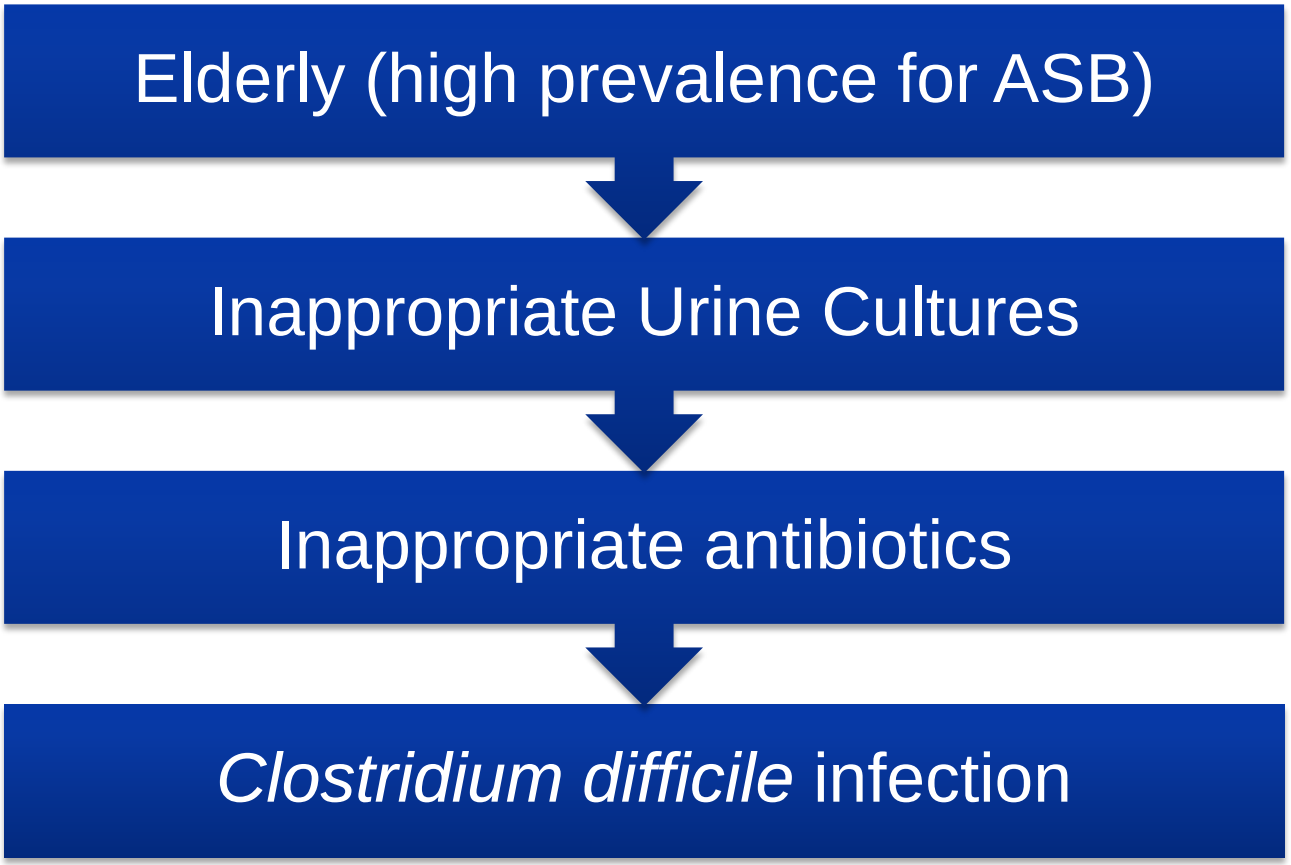
…the Worse…

- Screening urine cultures before **non**-urologic surgeries

…and the Ugly…

- Incorporating urinalysis or urine cultures in admission orders, ordersets, and reflex cultures based on “abnormal urinalysis” WITHOUT SYMPTOMS

Risk is Worse for the Most Vulnerable…



Improving the Culture of Culturing

(Fakih & Khatib, Infect Control Hosp Epidemiol, Epub Dec 29, 2016)

- Address clinician practice
- Address process for testing

TABLE 1. When to Obtain or Not Obtain a Urine Culture in a Patient With an Indwelling Urinary Catheter

Appropriate Urine Culture Use

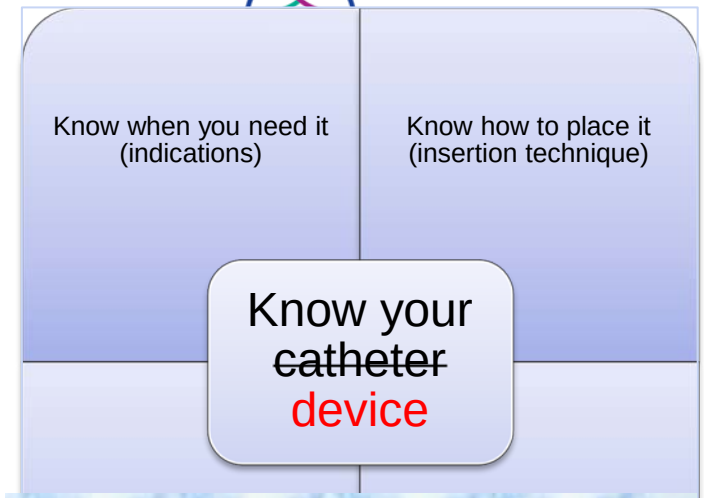
- Part of an evaluation of sepsis without a clear source (ie, CAUTI is often a diagnosis by exclusion)
- Based on local findings suggestive of CAUTI (eg, pelvic discomfort or flank pain)
- Prior to urologic surgeries where mucosal bleeding anticipated or transurethral resection of prostate
- Early pregnancy (ie, avoid urinary catheters if possible)

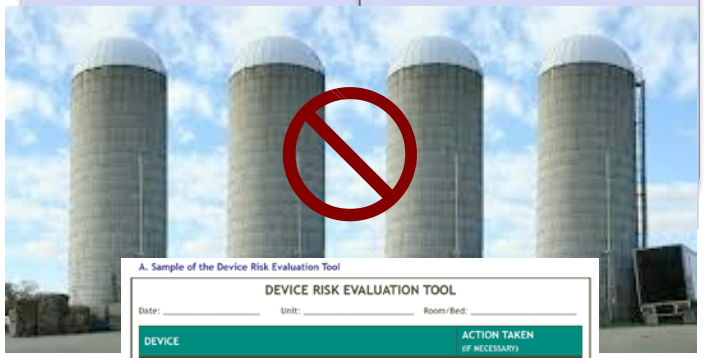
Inappropriate Urine Culture Use

- Urine quality: color, smell, sediments, turbidity (ie, they do not constitute signs of infection)
- Screening urine cultures, whether on admission or before nonurologic surgeries
- Standing orders for urinalysis or urine cultures without an appropriate indication
- "PAN" culturing (ie, mindfulness in evaluating the site of infection is key)
- Obtaining urine cultures based on pyuria in an *asymptomatic* patient
- *Asymptomatic* elderly and diabetics (cf, high prevalence of asymptomatic bacteriuria)
- Repeat urine culture to document clearing of bacteriuria after treatment (cf, no clinical benefit to patients)

Steps to Success

- Know your catheter (4 elements)
- Collaborate between disciplines (avoid silos)
- Have champions for accountability
- Use the data to help you focus on areas that require attention
- Incorporate catheter evaluation into work routine (sustainability)





A. Sample of the Device Risk Evaluation Tool

DEVICE RISK EVALUATION TOOL

Date: _____ Unit: _____ Room/Bed: _____

DEVICE			ACTION TAKEN (IF NECESSARY)
Urinary Catheter			
If "no," describe action taken.			
Catheter secured?	Yes	No	
Bag below bladder?	Yes	No	
Appropriately indicated?†	Yes	No	
Mechanical Ventilation			
If "no," describe action taken.			
Head of bed elevated ≥ 30°?	Yes	No	
Evaluated for a weaning trial today?	Yes	No	
Peripheral Venous Catheter			
If "no," describe action taken.			
Dressing intact?	Yes	No	
Site: no redness or drainage?	Yes	No	
Need: line still necessary?	Yes	No	
Central Venous Catheter (CVC)			
If "no," describe action taken.			
Dressing intact?	Yes	No	
Site: dry and no erythema?	Yes	No	
Need: line still necessary?	Yes	No	
Special attention required for the following CVCs. If "yes," describe action taken.			
Emergently-placed line?*	Yes	No	
Femoral line?*	Yes	No	

*Femoral lines or emergently-placed (not essentially) lines need to be promptly removed to reduce infection risk.

†The appropriate indications for urinary catheter include: urinary flow obstruction or retention, perioperative use in selected surgeries, need for prolonged immobilization, monitoring fluids in critically ill patients, social healing of sacral and perineal wounds in those with incontinence, or improve comfort at end of life care.

Beyond Infection: Focus on Device Harm

(Fakih at al, Infect. Control Hosp. Epidemiol. 2016;37(3):327–333)

TABLE 2. Infectious and Noninfectious Harms Associated with Urinary Catheters

Immediate Complications	Downstream Consequences
Infectious Complications	
Catheter-associated urinary tract infections (lower urinary tract involvement)	Complicated infection (upper urinary tract involvement, bacteremia)
Asymptomatic bacteriuria associated with inappropriate antimicrobial use	Multidrug-resistant organisms (infection, reservoir, and transmission)
	Clostridium difficile infection
	Antimicrobial side effects
Non-infectious Complications	
Trauma	Urethral trauma with insertion or manipulation
	Hematuria
	Bladder injury including perforation
	Pressure ulcers, device related
Immobility (1-point restraint)	Pressure ulcers related to immobility
	Deconditioning, frailty
	Venous thromboembolism
	Falls
Patient suffering	Discomfort, pain
	Loss of dignity
Societal loss	Increased length of stay
	Unnecessary resource use

We are what we repeatedly do. Excellence, then, is not an act, but habit

Aristotle

Quality is everyone's responsibility

W. Edwards Deming

Make doing the right thing a habit, and involve everyone!

Questions?