Appropriate Use and Prompt Removal of Indwelling Urinary Catheters

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

HRET
HEALTH RESEARCH & EDUCATIONAL TRUST

STRIVE
States Targeting Reduction in Infections via Engagement

Presenter

Jennifer Meddings, MD, MSc
Associate Professor, Internal Medicine and Pediatrics
University of Michigan

Contributions by

Kristi Felix, RN, CRRN, CIC, FAPIC
Madonna Rehabilitation Hospital

Linda Greene, RN, MPS, CIC, FAPIC
University of Rochester, Highland Hospital

Milisa Manojlovich, PhD, RN, CCRN
University of Michigan

Sanjay Saint, MD, MPH
University of Michigan

Barbara W. Trautner, MD, PhD
Baylor College of Medicine

Karen Fowler, MPH
University of Michigan

Learning Objectives

- Describe when it is appropriate to use indwelling urinary catheters for common clinical scenarios
- Use a daily checklist to reduce use of inappropriate indwelling urinary catheters in your unit
- Describe at least one reminder or stop order strategy for removing an unnecessary indwelling urinary catheter
- Describe at least two strategies to engage your staff in these CAUTI-prevention practices

CDC
Centers for Disease Control and Prevention

Tiers of CAUTI Prevention Practices

Tier 1 Standardize Supplies, Procedures and Process

(complete all interventions: review and audit compliance with Tier 1 measures prior to moving to Tier 2)

Place indwelling urinary catheter only for appropriate reasons	Encourage use of alternatives to indwelling urinary catheters	Ensure proper aseptic insertion technique and maintenance procedures	Optimize prompt removal of unneeded catheters	Urine culture stewardship: culture only if symptoms of UTI are present

(If CAUTI rates remain elevated, start with CAUTI Guide to Patient Safety (GPS) and Target Assessment for Prevention (TAP) Strategy and then proceed with additional interventions)

Perform needs assessment with CAUTI GPS and TAP Strategy

Tier 2 Enhanced Practices

Conduct catheter rounds with targeted education to optimize appropriate use	Feed back infection and catheter use to frontline staff in "real time"	Observe and document competency of catheter insertion: education and observed behavior	Perform root-cause analysis or focused review of infections

CDC
Centers for Disease Control and Prevention

Criteria for Appropriate Urinary Catheter Use

	2009 criteria from HICPAC Guidelines and American Nurses Association's Streamlined Evidence-Based RN Tool: CAUTI Prevention	2015 Ann Arbor Criteria for Appropriate Urinary Catheter Use in Hospitalized Medical Patients

Example Indications	• 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 and O (e.g., hourly monitoring)
		• Criteria for 3 catheter types: indwelling, external and intermittent use catheters
		• Includes 5-item Daily Checklist for reviewing indwelling catheter use
		• Refined clinical criteria accounting for pragmatic bedside challenges and optimizing use of alternatives
		• Example:
		  • 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

(Gould CV, Infect Control Hosp Epidemiol, 2010; ANA CAUTI Prevention Tool, ANA, Accessed 2016; Meddings J, Ann Intern Med, 2015)

CDC
Centers for Disease Control and Prevention

Should Your Patient Still Have an Indwelling Urinary Catheter?

Daily Checklist for Indwelling Urinary Catheter Appropriateness

Figure 4. ICU daily checklist for appropriateness of Foley catheter.

Is the Foley catheter still appropriate for your ICU patient? If your patient does not have one of the following criteria, remove Foley catheter.

1. Urine volume measurement:
   a. Is HOURLY urine volume measurement being used to inform and provide treatment?
      Examples: Hemodynamic instability requiring hourly or multiple daily titrations per day of ongoing bolus fluid resuscitation, vasopressors, inotropes, or diuretics
      Acute respiratory failure requiring invasive ventilation with hourly titrations of diuretics
      Hourly measurement of urine studies or urine volumes to manage life-threatening laboratory abnormalities
   b. Is DAILY urine volume measurement being used to provide treatment AND volume status CANNOT be adequately or reliably assessed without a Foley catheter, such as by daily weight or urine collection by urinal, commode, bedpan, or external catheter?
      Examples: Management of acute renal failure, IV fluids, or IV or oral bolus diuretics
      Fluid management in acute respiratory failure requiring large volumes of oxygen (≥5 L/min or >50%)

2. Does patient have a urologic problem that is being treated with a Foley catheter?
   Examples: Urinary retention that cannot be adequately monitored or addressed by bladder scanner or ISC
   Urinary retention anticipated because of treatment with paralytic medications
   Recent urologic or gynecologic evaluation or procedure with Foley catheter not recommended to be removed yet, such as:
   – Acute urinary retention with bladder outlet obstruction due to acute prostatitis or urethral edema
   – Gross hematuria with blood clots in the urine
   – Hematuria suspected to be prostatic or urethral bleeding being managed with Foley catheter

3. Urine sample collection for a laboratory test when CANNOT be collected by non catheter method

What type of sample is needed?	Use Foley Catheter?	Use ISC?	Use External Catheter?
Sterile sample for urine culture	No	Yes	Yes, if staff trained for sterile application
Nonsterile random urine sample	No	Yes	Yes
24-hour urine sample	Yes	If all urine can be collected by ISC	Yes, preferred option in cooperative males

4. Does the patient have urinary incontinence that cannot be addressed by noncatheter methods (barrier creams, incontinence garments and absorbent pads, prompted toileting, straight catheterization if overflow incontinence) because nurses cannot turn and provide skin care with specialty resources (such as lift teams and lift machines) or transition to external catheter (for cooperative males)?
   Examples: Turning causes hemodynamic or respiratory instability
   Strict temporary immobility postprocedure, such as from a vascular procedure if patient cannot manage urine otherwise
   Incontinence with open pressure ulcers (stage III or IV) or "unstageable" ulcers

5. Foley catheter is providing comfort from severe distress related to urinary management that cannot be addressed by noncatheter options, ISC, or external catheter.
   Examples: Difficulty voiding due to severe dyspnea with position changes required for managing urine without an indwelling catheter
   Address patient and family goals in a dying patient
   Acute, severe pain upon movement (e.g., unrepaired fracture) WITH demonstrated difficulties using noncatheter options or external catheter

(Meddings J, Ann Intern Med, 2015)

Checklist Question 1

1. What is the urine volume measurement need?

A. Is HOURLY urine volume measurement being used to inform and provide treatment?

B. Is DAILY urine volume measurement being used to provide treatment AND volume status CANNOT be adequately assessed by daily weight or urine collection by urinal, commode, bedpan or external catheter?

(Meddings J, Ann Intern Med, 2015)

Checklist Question 2

2. **Does the patient have a urologic problem that is being treated by an indwelling urinary catheter?**

   Examples:

   - Urinary retention that cannot be monitored or addressed by bladder scanner/intermittent straight catheter (ISC) e.g. spinal cord injury
   - Anticipated urinary retention due to paralytic medications
   - Recent urologic or gynecologic diagnosis or procedure for which catheter removal is not yet recommended

(Meddings J, Ann Intern Med, 2015)

Bladder Outlet Obstruction Decision Tree

Does patient with acute retention have bladder outlet obstruction?

YES

Catheter	Appropriate?
Indwelling urinary	Appropriateness varies by reason for obstruction. Consider urology consultation for prostatitis and urethral trauma, because may be better managed with suprapubic, or expert placement of catheter.
Intermittent Straight Catheter	

NO

Catheter	Appropriate?
Indwelling urinary	**Yes**
Intermittent Straight Catheter	**Yes,** if bladder can be emptied adequately by intermittent straight catheter every 4-6 hours

Note:

- External catheters are NOT appropriate in either case because they cannot address urinary retention
- Use a bladder scanner to reduce number of catheterizations when no or little urine is seen in bladder

(Meddings J, Ann Intern Med, 2015)

Checklist Question 3

3. Is a urine sample needed that CANNOT be collected by other method such as urinal, external catheter or intermittent straight catheter (ISC)?

Sample type?	Use Indwelling Urinary Catheter?	Use ISC?	Use External Catheter?
Sterile sample for urine culture	**No**	**Yes**	**Yes**, if staff trained for sterile application
Non-sterile urine sample	**No**	**Yes**	**Yes**
24-hour sample	**Yes**	**Yes**, if all urine can be collected by ISC	**Yes**, preferred option in cooperative men
Post-void residual measurement	**No**	**No**, unless cannot be assessed by bladder scanner	**No**

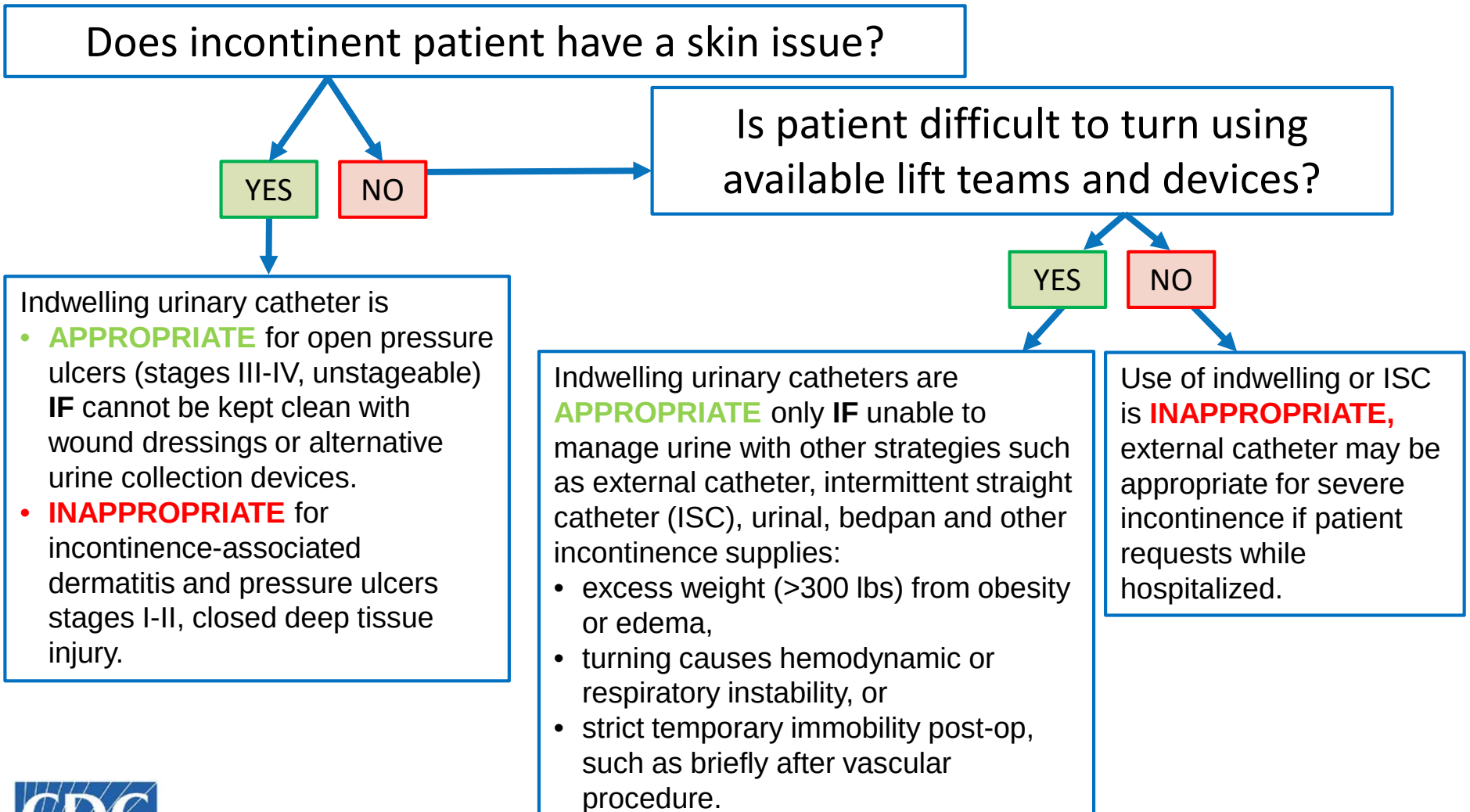
(Meddings J, Ann Intern Med, 2015)

Checklist Questions 4

4. **Does the patient have urinary incontinence that cannot be addressed by:**
   - **Non-catheter methods** (e.g., barrier creams, incontinence absorbent products) **because nurses CANNOT turn and provide skin care with available resources** (e.g., lift teams, lift machines) **or**
   - **Transition to external catheter for cooperative men?**

(Meddings J, Ann Intern Med, 2015)

Incontinence Decision Tree



(Meddings J, Ann Intern Med, 2015)

Checklist Questions 5

5. **Is the indwelling urinary catheter providing comfort from severe distress related to urinary management that cannot be addressed by non-catheter options, intermittent straight catheter (ISC) or external catheter?**

Examples:

- Difficulty voiding due to severe dyspnea with position changes needed to manage urine without catheter
- Address patient and family goals for a dying patient
- Acute/severe pain upon movement with demonstrated difficulties using other urinary management strategies

(Meddings J, Ann Intern Med, 2015)

Clinical Case 1 for Discussion

Ms. Johnson is a 45-year-old previously healthy woman who was admitted to the ICU with severe sepsis, requiring aggressive IV fluid resuscitation and vasopressor therapy. Does she need an indwelling urinary catheter (commonly known as a Foley)?

A. Yes, indwelling urinary catheter because admitted to the ICU

B. Yes, because hourly urine output is being used to guide fluid resuscitation and vasopressor dose

C. No, because has no history of incontinence

D. No, as long as is able to urinate by other means

Disclaimer: All case studies are hypothetical and not based on any actual patient information. Any similarity between a case study and actual patient experience is purely coincidental.

CDC
Centers for Disease Control and Prevention

Clinical Case 2 for Discussion

Mr. Grant is a 66-year-old man who was admitted from the ED to the medical floor with a severe COPD exacerbation requiring BiPAP. Does he need an indwelling urinary catheter?

A. Yes, indwelling urinary catheter because using BiPAP

B. Yes, because hourly urine output is being used to guide fluid resuscitation and vasopressor dose

C. No, because has no history of incontinence

D. No, as long as is able to urinate by other means

Disclaimer: All case studies are hypothetical and not based on any actual patient information. Any similarity between a case study and actual patient experience is purely coincidental.

CDC
Centers for Disease Control and Prevention

Clinical Case 3 for Discussion

Mr. Knight is a 25-year-old man with spinal cord injury who is currently admitted to a long-term acute-care hospital's spinal cord unit with urinary retention.

Which urinary catheter strategies are appropriate?

A. Indwelling urinary catheter

B. Intermittent straight catheter (ISC), "In and Out"

C. External catheter

D. Urinal or incontinence garments

Disclaimer: All case studies are hypothetical and not based on any actual patient information. Any similarity between a case study and actual patient experience is purely coincidental.

Clinical Case 4 for Discussion

Mrs. Davies is an 80-year-old woman, admitted with syncope and awaiting pacemaker placement, who is admitted to a cardiac care unit, for a higher level of monitoring and nursing care than available on the standard medical unit. She has chronic urinary incontinence and is a high fall risk.

True or **False:**

The nurse should insert an indwelling urinary catheter for Mrs. Davies because it will prevent skin breakdown and reduce her risk of falling

Disclaimer: All case studies are hypothetical and not based on any actual patient information. Any similarity between a case study and actual patient experience is purely coincidental.

CDC
Centers for Disease Control and Prevention

Unnecessary Prolonged Catheter Use

- Urinary catheters are often in place without physician awareness, and not removed promptly when needed
- 30%-50% of continued catheterization days found to be unnecessary
- Prolonged catheterization is the number one risk factor for CAUTI

Traditional Steps to Catheter Removal:

1. Physician recognizes catheter is present
2. Physician recognizes catheter is no longer needed
3. Physician writes order to remove catheter
4. Nurse sees order and plans to remove the catheter
5. Urinary catheter is removed

(Saint S, Am J Med, 2000; Hooton TM, Clin Infect Dis 2010; Foxman B, Am J Med, 2002)

CDC
Centers for Disease Control and Prevention

Strategies to Prompt Catheter Removal

Strategy Type	Examples
1. **Reminders**: Reminds that a urinary catheter is still in use; may also remind of appropriate indication to continue catheterization	• Daily checklist for evaluating urinary catheters • Sticker reminder on patient chart, catheter bag or electronic medical record (EMR)
2. **Stop Orders**: Prompts removal of urinary catheter based upon specified time after placement (e.g., 24 hours), based upon clinical criteria	• Remove in operating room (OR) before leaving/Routine post-op order • Pre-op written or electronic order to remove urinary catheter on post-op day 1-2 • Nurse-empowered removal protocol

- In a review of 30 studies, these interventions reduced CAUTI significantly—**by 53%**
- However, catheter reminders or stop orders were only used **in about 50% of hospitals**

(Meddings J, BMJ Qual Saf, 2014; Krein SL, BMJ Qual Saf 2015)

Nurse, Physician, Team-Driven Strategies

	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 >48 hours
Nurses	• Nurse-led protocol to remove urinary catheters that do not meet criteria daily review by nurses for catheter indication • 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?"
Team	• Multi-disciplinary rounds at the bedside • Peri-procedural checklist and protocols for catheter insertion that include routine removal in the OR and post-op

Example of a Nurse-Driven Protocol for Catheter Removal

(Appendix M. Example of Nurse-Driven Protocol for Catheter Removal, AHRQ, 2015)

Removing Urinary Catheters in Surgical Patients

- Standardizing post-op catheter removal is **critical** to reduce use
  - Surgical checklists include a "Procedure Time-Out" of tasks for before the patient leaves the operating room (OR)
  - For example:

Can invasive lines or catheters (including urinary) be removed?
☐ Yes ☐ No

If No, when? ☐ PACU ☐ Post-op Day ☐ Other: _____

  - Catheters for OR procedures (such as laparoscopic with suprapubic port) can be removed before leaving the OR
  - Patients with thoracic epidural catheters can have urinary catheters removed, often within 48 hours after surgery

- Replace or remove urinary catheters within 24 hours of placement if inserted emergently with suspected poor sterility

WHO Surgical Safety Checklist

(Wald HL, Arch Surg 2008; Glavind K, Acta Obstet Gynecol Scand, 2007; Robertson N, HPB (Oxford), 2012; Prasad SM, J Urol, 2014; Phipps S, Cochrane Database Syst Rev 2006; Tang KK, Aust N Z J Obstet Gynaecol, 2005; Minig L, Int J Gynaecol Obstet. 2015; Khoury W, SLS. 2014; Obeid F, Arch Surg. 1995; Zaouter C, J Cardiothorac Vasc Anesth, 2015; WHO Surgical Safety Checklist, WHO, 2009; The best catheter is one that's out, AHC Media, 2015)

CDC
Centers for Disease Control and Prevention

Factors that Affect Success of Reminders and Stop Orders

- Team not recognizing hazard of urinary catheters
- Communication and unit habits about urinary catheters
- Nurse comfort with urinary catheter removal protocols
- Staff knowledge and skills about catheter alternatives
- Dedicated personnel to review, remind and reinforce
  - For example, dedicated ”catheter rounds”
- Feedback in “real time” of CAUTI rates and catheter use
- Information technology support for data collection – to reduce burden of manual data collection of catheter use

(Meddings J, BMJ Quality Saf, 2014)

Critical Strategies to Engage Your Staff

- Develop a 'shared mental model' between nurses and physicians
  - Which types of patients do nurses and physicians in your unit agree do NOT require an indwelling urinary catheter?
- Recruit (not assign) a nurse and physician as bedside champions to lead the project
- Develop a communication workflow for prompting catheter removal by default in your unit when no longer appropriate – optimize use of pre-existing communication streams when possible

CDC
Centers for Disease Control and Prevention

Take Home Points

- ICU bed assignment alone is insufficient for indwelling urinary catheter use
- Use alternatives to indwelling catheters when appropriate – staff may need education and encouragement to use if have not used successfully in past
- Reminders and stop orders can improve catheter and prompt removal of unnecessary urinary catheters – but most successful when intergrated carefully into workflow
- Nurse and physician buy-in and routine daily nurse-physician discussions about catheters is critical

References

- Adams D, Bucior H, Day G, et al. HOUDINI: make that urinary catheter disappear – nurse-led protocol. *J Infect Prev.* 2012; 13: 44-46.
- Akhtar MS, Beere DM, Wright JT, et al. Is bladder catheterization really necessary before laparoscopy? *Br J Obstet Gynaecol.* 1985; 92(11): 1176-1178.
- Apisarnthanarak A, Thongphubeth K, Sirinvaravong S, et al. Effectiveness of multifaceted hospital wide quality improvement programs featuring an intervention to remove unnecessary urinary catheters at a tertiary care center in Thailand. *Infect Control Hosp Epidemiol.* 2007; 28: 791-798.
- Appendix M. Example of a Nurse-Driven Protocol for Catheter Removal. Content last reviewed October 2015. Agency for Healthcare Research and Quality, AHRQ, Rockville, MD. Available at http://www.ahrq.gov/professionals/quality-patient-safety/hais/cauti-tools/impl-guide/implementation-guide-appendix-m.html
- Foxman B. Epidemiology of urinary tract infections: incidence, morbidity, and economic costs. *Am J Med.* 2002; 113 Suppl 1A: 5S-13S.
- Glavind K, Merup L, Madsen H, et al. A prospective, randomised, controlled trial comparing 3 hour and 24 hour postoperative removal of bladder catheter and vaginal pack following vaginal prolapse surgery. *Acta Obstet Gynecol Scand*. 2007; 86(9): 1122-5.
- Gould CV, Umscheid CA, Agarwal RK, et al. Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol.* 2010; 31(4): 319-326
- Hooton TM, Bradley SF, Cardenas DD, et al. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clin Infect Dis.* 2010; 50: 625-663.
- Khoury W, Dakwar, A, Sivkovits K, et al. Fast-track rehabilitation accelerates recovery after laparoscopic colorectal surgery. *SLS.* 2014; 18(4).
- Krein SL, Fowler KE, Ratz D, et al. Preventing device-associated infections in US hospitals: national surveys from 2005 to 2013. *BMJ Qual Saf.* 2015; 24: 385-392.
- Meddings J, Rogers MA, Krein SL, et al. Reducing unnecessary urinary catheter use and other strategies to prevent catheter-associated urinary tract infection: an integrative review. *BMJ Qual Saf.* 2014; 23: 277-289.
- Meddings J, Saint S, Fowler K, et al. The Ann Arbor Criteria for Appropriate Urinary Catheter Use in Hospitalized Medical Patients: Results Obtained by Using the RAND/UCLA Appropriateness Method. *Ann Intern Med*. 2015; 162: S1-S34.

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

References (Continued)

- Minig L, Chuang L, Patrono M, et al. Clinical outcomes after fast-track care in women undergoing laparoscopic hysterectomy. *Int J Gynaecol Obstet.* 2015; 131(3): 301-4.
- Obeid F, Saba A, Fath J, et al. Increases in intra-abdominal pressure affect pulmonary compliance. *Arch Surg.* 1995; 130(5):
- Phipps S, Lim YN, McClinton S, Barry C, Rane A, N'Dow J. Short term urinary catheter policies following urogenital surgery in adults. *Cochrane Database Syst Rev.* 2006; (2): Cd004374.
- Prasad SM, Large MC, Patel AR, et al. Early removal of urethral catheter with suprapubic tube drainage versus urethral catheter drainage alone after robot-assisted laparoscopic radical prostatectomy. *J Urol*. 2014; 192(1): 89-95.
- Robertson N, Gallacher P, Peel N, et al. Implementation of an enhanced recovery programme following pancreaticoduodenectomy. *HPB (Oxford)*. 2012; 14(10): 700-8.
- Rothfeld AF, Stickley A. A program to limit urinary catheter use at an acute care hospital. *Am J Infect Control.* 2010; 38: 568-571.
- Saint, S. et al. Are physicians aware of which of their patients have indwelling urinary catheters? *Am J Med*. 2000; 109(6): 476-480.
- Streamlined Evidence-Based RN Tool: Catheter Associated Urinary Tract Infection (CAUTI) Prevention. American Nurses Association. Available at http://nursingworld.org/MainMenuCategories/ThePracticeofProfessionalNursing/Improving-Your-Practice/ANA-CAUTI-Prevention-Tool. Accessed May 18, 2016.
- Tang KK, Wong CK, Lo SF, et al. Is it necessary to catheterise the bladder routinely before gynaecological laparoscopic surgery? *Aust N Z J Obstet Gynaecol.* 2005; 45(5): 380-383.
- The best catheter is one that's out. Protocol sets first call for removal in OR. (2015). *Hosp Peer Rev.* 40(9), 91-92. http://www.ahcmedia.com/articles/136091-the-best-catheter-is-one-thats-out. Accessed August 18, 2016.
- Wald HL, Ma A, Bratzler DW, et al. Analysis of the National Surgical Infection Prevention Project Data. *Arch Surg*. 2008; 143(6): 551-557.
- WHO Surgical Safety Checklist. 2009. World Health Organization. http://www.who.int/patientsafety/safesurgery/checklist/en/index.html Accessed on 8/17/16.
- Zaouter C, Quattara A; How long is a transurethral catheter necessary in patients undergoing thoracotomy and receiving thoracic epidural analgesia? Literature review. *J Cardiothorac Vasc Anesth*. 2015; 29(2): 496-501.

Speaker Notes

Speaker Notes: Slide 1

Welcome to the second module of the Catheter-Associated Urinary Tract Infection, or CAUTI, Prevention course. This module, titled “Appropriate Use and Prompt Removal of Indwelling Urinary Catheters” will review when indwelling urinary catheters are appropriate by reviewing guidelines on indications, and strategies to improve prompt removal of unnecessary indwelling urinary catheters.

Speaker Notes: Slide 2

This module was developed by national infection prevention experts devoted to improving patient safety and infection prevention efforts.

Speaker Notes: Slide 3

This module will describe when it is appropriate to use indwelling urinary catheters for common clinical scenarios; use a daily checklist to reduce use of inappropriate indwelling urinary catheters in your unit; describe at least one reminder or stop order strategy for removing an unnecessary indwelling urinary catheter and; describe at least two strategies to engage your staff in these CAUTI-prevention practices.

Speaker Notes: Slide 4

This module will start with a review of how improving appropriate indwelling urinary catheter use fits into the two tiered approach to CAUTI reduction, discussed in the "Overview" CAUTI module. Tier 1 involves standardizing of supplies, procedures and processes and as highlighted by the red boxes, includes three key steps that require knowledge and application of appropriate urinary catheter use.

- First, place indwelling urinary catheters only for APPROPRIATE reasons.
- Second, encourage use of alternatives to indwelling urinary catheters when appropriate. This is so important there is a separate module dedicated to this topic.
- And third, optimize prompt removal of unneeded catheters.

Speaker Notes: Slide 4 Continued

This module will review specific technical and socio-adaptive strategies to target optimal catheter use and removal.

Speaker Notes: Slide 5

Deciding when an indwelling urinary catheter is appropriate is a complex decision and a number of resources have been developed to assist clinicians in this process. In 2009, the Centers for Disease Control and prevention, or CDC, and the Healthcare Infection Control Practices Advisory Committee, or HICPAC, published one of the first guidelines on uses of urinary catheters based on expert opinion. While it provided important guidance and highlighted examples of appropriate and inappropriate indications, certain indications, such as use of an indwelling urinary catheter to measure urinary output in critically ill patients was ambiguous and had varying interpretations.

Speaker Notes: Slide 5 Continued

Many clinicians interpreted this to mean that ALL patients in an intensive care unit should have a urinary catheter, which is not appropriate. This indication is also used inappropriately outside of the ICU. Additionally, special populations such as spinal cord injury patients might need an indwelling catheter to avoid dys-autonomic reactions.

In 2015, the American Nurses Association, or ANA, developed a streamlined tool to help identify appropriate uses of indwelling urinary catheters. The tool provides an algorithm that is very helpful in deciding when to insert an indwelling urinary catheter based on the 2009 HICPAC Guidelines.

Speaker Notes: Slide 5 Continued

The tool does suggest the use of indwelling urinary catheters for HOURLY monitoring of critically ill patients as a clarification, but is still open to interpretation on many common clinical scenarios.

Finally, in 2015, the Ann Arbor Criteria were developed using the RAND/UCLA appropriateness method. In this method, an expert panel reviews the literature available on the topic and formally rates appropriateness of indwelling urinary catheters for common clinical scenarios as appropriate, inappropriate, or of uncertain appropriateness by a multi-round rating process.

Speaker Notes: Slide 5 Continued

These clinical scenarios were based on challenges that nurses and physicians have expressed when applying the CDC criteria, such as difficulty turning, patient requests for catheters, and weighing risks and benefits for patients with multiple medical problems.

In brief, the panel determined that indwelling urinary catheters are appropriate for measuring urine only when fluid status or urine output cannot be assessed by other means. Even patients in an ICU need a specific medical indication for catheter use.

Speaker Notes: Slide 5 Continued

This resource also provides and compares appropriate and inappropriate uses for three urinary catheter types: indwelling urinary catheters (commonly known as Foley catheters), external catheters (commonly known as condom catheters), and intermittent straight catheters or ISCs. This criteria also provides a daily checklist for indwelling urinary catheter use, which this module reviews in more detail.

These resources are available to assist hospitals in the decision making process and are highlighted on this slide. The hyperlinks in the top row of the table will guide you directly to these resources, which will provide you with more details and information about catheter appropriateness

Speaker Notes: Slide 6

The Daily Checklist for Indwelling Urinary Catheter Appropriateness helps answer the question: Is the indwelling urinary catheter STILL appropriate for your patient?

- A patient's indwelling urinary catheter should be removed if they do not meet one of the following five criteria:
- Urine volume measurement to inform and provide treatment
- A urologic problem that is being treated with the indwelling urinary catheter
- Urine sample collection for a laboratory test that cannot be collected by non-catheter methods
- Urinary incontinence and retention that cannot be addressed by non-catheter methods
- Catheter is providing comfort from severe distress related to urinary management.

Speaker Notes: Slide 6 Continued

These criteria can be found in more detail on the single page Daily Checklist for Indwelling Urinary Catheter Use, which is with the publication of these criteria in the Annals of Internal Medicine and pictured and linked on this slide. While this checklist was published with examples for the ICU, it is applicable for all units.

The following slides will review these criteria in a bit more detail.

Speaker Notes: Slide 7

To determine if an indwelling urinary catheter is appropriate for a patient, first determine what is needed for their urine volume measurement.

A. Is hourly urine volume measurement being used to inform and provide treatment? or

B. Is daily urine volume measurement being used to provide treatment and volume status cannot be adequately assessed by other methods?

If the answer is yes to either of these questions, then an indwelling urinary catheter would be appropriate.

Speaker Notes: Slide 8

The next question to ask is, does the patient have a urologic problem that is being treated by an indwelling urinary catheter?

If the answer is yes, then an indwelling urinary catheter would be appropriate.

Some examples of these types of urologic problems include:

Urinary retention that cannot be monitored or addressed by bladder scanner or intermittent straight catheter (ISC),

Anticipated urinary retention due to paralytic medications,

Or a recent urologic or gynecologic diagnosis or procedure for which catheter removal is not yet recommended.

Speaker Notes: Slide 9

However, not all acute urinary retention is the same. For example, spinal cord injury is a type of acute retention without bladder obstruction.

If a case involves bladder outlet obstruction (described in the table on the left), urology consultation should be considered for cases of prostatitis and urethral trauma, because the patient may be better managed with a suprapubic catheter or expert placement of catheter.

.

Speaker Notes: Slide 9 Continued

If the patient with acute retention does not have bladder outlet obstruction, use of an indwelling urinary catheter is appropriate. An intermittent straight catheter, or ISC, is also appropriate if the patient's bladder can be emptied adequately by ISC every four to six hours

In either case, external catheters should not be used because they cannot address urinary retention. Use a bladder scanner to reduce the number of catheterizations when no or little urine is seen in the bladder.

Speaker Notes: Slide 10

Question three asks what type of urine sample is needed and how it is collected. This table provides guidance on whether an indwelling urinary catheter, intermittent straight catheter (ISC) or external catheter is appropriate for collecting urine samples when the sample cannot be collected by other methods.

For example, external catheters and ISCs are often appropriate for collecting most urine samples. On the other hand, indwelling urinary catheters are appropriate for 24 hour samples only if they cannot be collected by other means. And no catheter is appropriate for assessing a post-void residual volume that could be assessed by bladder scanner.

Speaker Notes: Slide 11

The fourth question is: Does the patient have urinary incontinence that cannot be addressed by non-catheter methods (e.g., barrier creams, incontinence absorbent products, etc.) because nurses cannot turn and provide skin care with available resources (such as lift teams or lift machines) or transition to external catheter for cooperative men?

If yes, then an indwelling urinary catheter would be appropriate.

Examples of conditions that would meet this criteria are hemodynamic/respiratory instability, strict immobility post-procedure, and urinary incontinence contaminating open (stage 3 or 4) pressure wounds.

Speaker Notes: Slide 12

The decision tree summarizes the recommendations for incontinent patients, with specific instructions for patients with and without skin issues and with and without difficulty turning.

For incontinent patients with skin issues (outlined in the bottom, left hand box), catheters are appropriate in the case of open wounds if the urine cannot be kept from the wounds using other strategies. External catheters are an important option to consider for men with severe dermatitis and stage three or four pressure ulcers. If an incontinent patient without skin issues is reported as being difficult to turn by nurses using their available resources such as lift teams and lift devices, urinary catheters may be an appropriate option.

Speaker Notes: Slide 12 Continued

Examples include if the patient is very heavy from obesity or edema (and nurses do NOT have the resources to turn the patient as needed), if turning causes medical instability, or if there is a very strict but temporary medical need for immobility and urine cannot be managed otherwise.

If there is no skin issue and no report of difficulty turning the patient to provide incontinence care, guidance about catheter selection is provided in the bottom, right hand box.

Speaker Notes: Slide 12 Continued

In this case, non-catheter options are best because skin issues from urinary incontinence often can be prevented or managed without catheters, such as by using barrier creams, prompted toileting, incontinence pads and garments. Of note, even when a patient requests a urinary catheter for incontinence, non-catheter options are usually the most appropriate.

Speaker Notes: Slide 13

And the final question - Is the indwelling urinary catheter providing comfort from severe distress related to urinary management that cannot be addressed by non-catheter options, intermittent straight catheter or external catheter?

If yes, then an indwelling urinary catheter would be appropriate.

Examples that would meet this criteria include:

- Difficulty voiding due to severe dyspnea with position changes needed to manage urine without an indwelling catheter,
- To address patient and family goals for a dying patient,
- And acute or severe pain upon movement with demonstrated difficulties using other urinary management strategies

Speaker Notes: Slide 14

The next slides review a few case studies addressing the criteria we just discussed.

In this first clinical scenario, Ms. Johnson is a 45-year-old previously healthy woman who was admitted to the ICU with severe sepsis, requiring aggressive intravenous (IV) fluid resuscitation and vasopressor therapy. Does she need an indwelling urinary catheter?

A. Yes, indwelling urinary catheter because admitted to the ICU
B. Yes, because hourly urine output is being used to guide fluid resuscitation and vasopressor does.
C. No, because has no history of incontinence
D. No, as long as is able to urinate by other means

Speaker Notes: Slide 14 Continued

What do you think is the appropriate answer?

As stated earlier, being admitted to the ICU alone is not reason enough for using an indwelling urinary catheter. However, Ms. Johnson does have a medical indication for using a catheter. The answer is B. Yes, because hourly urine output is being used to guide fluid resuscitation and vasopressor dose.

Speaker Notes: Slide 15

Here is another clinical scenario.

Mr. Grant is a 66-year-old man who was admitted from the emergency department with a severe COPD (chronic obstructive pulmonary disease) exacerbation also known as emphysema requiring BiPAP (bilevel positive airway pressure). Does he need an indwelling urinary catheter?

A. Yes, indwelling urinary catheter if using BiPAP required an ICU transfer

B. Yes, because hourly urine output is being used to guide fluid resuscitation and vasopressor dose

C. No, because has no history of incontinence

D. No, as long as is able to urinate by other means

Speaker Notes: Slide 15 Continued

The answer is D. No, as long as Mr. Grant is able to urinate by other means he would not need an indwelling urinary catheter. It is best to use alternatives to an indwelling urinary catheter whenever possible, such as using a urinal, commode, bedpan or external catheter.

Speaker Notes: Slide 16

Here is another clinical scenario:

Mr. Knight is a 25-year-old man who was admitted to a long-term acute care hospital's (LTACH) spinal cord unit with acute urinary retention due to spinal injury. Which urinary management strategies are appropriate?

Options are:

A. Indwelling urinary catheter

B. ISC

C. External catheter

D. Urinal or incontinence garments

Speaker Notes: Slide 16 Continued

More than one option may be appropriate. What do you think is the right answer?

The answer is either A or B. An indwelling urinary catheter or ISC would be appropriate to address this type of acute urinary retention. External catheters will not ease urinary retention and a suprapubic catheter would be considered in cases with bladder outlet obstruction. However, note that many patients with spinal cord injury and choric urinary retention can be adequately managed using ISC, alone without indwelling urinary catheters as the preferred strategy. Consult a rehabilitation medical specialist to avoid complications of catheter removal in spinal cord injury patients.

Speaker Notes: Slide 17

In the final clinical case, Mrs. Davies is an 80-year-old woman, admitted with syncope and awaiting pacemaker placement, who is admitted to ICU for a higher level of monitoring and nursing care than available outside the ICU. However, she might be a floor patient at your hospital. She has chronic urinary incontinence and is a high fall risk.

True or False: The ICU nurse should insert an indwelling urinary catheter for Mrs. Davies because it will prevent skin breakdown and reduce her risk of falling.

Speaker Notes: Slide 17 Continued

The answer is False, because the catheter actually does not decrease fall risk. In fact, it could increase the risk as a tripping hazard: the catheter acts as a 'one-point restraint' which increases complications associated with immobility (such as pressure ulcers and weakness from less walking), and the catheter increases infection risk (which could be very hazardous in a patient getting an implanted device such as a pace maker).

Speaker Notes: Slide 18

Even after following all appropriateness criteria, we still need strategies to remove catheters that are no longer indicated. This is because we've learned that catheters are often in place without physician awareness and not removed promptly when no longer needed. In fact, 30 to 50 percent of Continued catheterization days have been found to be unnecessary and prolonged catheterization is the number one risk factor for CAUTI.

Speaker Notes: Slide 18 Continued

So why does this happen? Well, let's review the traditional steps for getting a catheter removed. First, the physician needs to recognize that the catheter is present...and studies show that this is a big challenge because often physicians aren't aware a catheter is being used. Next, the physician recognizes the catheter is no longer needed. Third, an order is written to remove the catheter. Fourth, the nurse sees the order and plans to remove the catheter, based upon the patient's and nurse's schedule for the day. And fifth, the urinary catheter is finally removed.

Speaker Notes: Slide 18 Continued

So, as you may expect, many hours, and sometimes days pass between when the catheter is recognized as present and when it is actually removed. The default state is the urinary catheter remains in place unless all the steps are performed. So, an intervention should be focused on facilitating all these steps and making catheter removal the default rather than the exception.

Speaker Notes: Slide 19

There are two main interventions to prompt catheter removal.

- First, reminders are interventions that remind staff and physicians that a urinary catheter is still in place. These reminders may also remind of appropriate indications to continue catheterization so it can have an educational role as well. Examples of reminders include a daily checklist for evaluating whether urinary catheters are still needed or reminders on a patient chart, catheter bag or electronic medical record (EMR).
- Stop orders go a step further. Stop orders prompt removal of urinary catheters based on a specific time after placement, such as 24 hours. Stop orders are based on agreed upon clinical criteria. Stop order examples include removing the catheter in the operating room before the patient leaves, a pre-op written order to remove urinary catheter on post-op day one or two, depending on the surgery, and empowering nurses to remove urinary catheters not meeting criteria by default, as part of the initial catheter order.

Speaker Notes: Slide 19 Continued

Both reminders and stop orders can be implemented using a range of resources, ranging from verbal orders, which are essentially free of cost and technology, to written and electronic or "smart" computer orders, which have the expense of programming and tech support, but are low cost interventions after they are developed.

A few things to keep in mind when considering urinary catheter reminders and stop orders:

Recognize that reminders may be ignored, particularly ill-timed electronic medical record alerts that for example, pop up on the screen of your physician when they are not in the patient's room or thinking about a different patient.

Speaker Notes: Slide 19 Continued

Also, some EMRs may make it difficult to order catheter alternatives. Try to make sure that your catheter alternatives are just as easy or easier to order than indwelling urinary catheters.

Last, it is important to employ strategies that combine the use of electronic reminders and socio-adaptive strategies to improve buy-in and implementation.

So the next question is, how effective are reminders and stop orders to decrease CAUTI rates? Very effective! In a review of 30 studies, these interventions reduced CAUTI significantly—by 53 percent. So, since these seem like simple and effective interventions, how often are reminders and stop orders being used? According to a large national survey of hospital practices published in 2015, catheter reminders or stop orders were only used in about 50 percent of hospitals. So, there is plenty room for improvement!

Speaker Notes: Slide 20

Both reminders and stop orders can be directed at the physician or the nursing staff or the whole care team. Additional examples of physician targeted strategies include:
Daily physician assessment of catheter need, and
Computerized order entry system to prompt physicians to remove or reorder catheter if placed in the emergency department or if they are in place longer than 48 hours.

Speaker Notes: Slide 20 Continued

Examples of nurse-driven strategies include:

- Nurse-led protocols to remove all urinary catheters that do not meet criteria,
- Nurse-generated daily bedside reminders to encourage physicians to remove unnecessary urinary catheters,
- And nurse-to-nurse communication during transitions. For example, the nurse could ask “Does this patient have a urinary catheter? Why?” If not indicated, ask for catheter to be removed before transfer.

Speaker Notes: Slide 20 Continued

Examples of team strategies include:

- Multidisciplinary rounds at the bedside,
- Peri-procedural checklist and protocols for catheter insertion that include routine removal in the operating room and post-op.

Nurse-driven protocols that empower nurses to remove unnecessary urinary catheters are highly recommended. An example of a nurse-driven protocol is available for you to download through the hyperlink on the bottom of the slide.

Speaker Notes: Slide 21

Standardizing removal of catheters post-op is critical to reducing catheter use. Most catheters can be removed in the operating room or in under 48 hours post-operatively.
The World Health Organization has a Surgical Safety Checklist that you can download through the hyperlink on the bottom of your screen. It has been used by many operating rooms (ORs) to prompt the surgical team to verify key components of the case before and after surgery. This list can include a "Procedure Time-Out" of tasks to perform before the patient leaves the OR. One organization shared that they adapted the checklist to include discussing if invasive lines or catheters, including urinary catheters, can be removed prior to a patient leaving the operating room.

Speaker Notes: Slide 21 Continued

Discussing and removing unnecessary urinary catheters before the patient leaves the operating room is a significant step in decreasing utilization of indwelling urinary catheters.

The majority of catheters needed for an OR procedure, such as laparoscopic procedures with a suprapubic port, can be removed before the patient leaves the operating room. Even patients with thoracic epidural catheters can have urinary catheters removed, often within 48 hours after surgery. Consider using mobilization and sedation vacation to help prevent urinary retention while epidurals are in place and once epidurals are removed. Also consider replacing or removing urinary catheters within 24 hours of placement if the catheter was inserted emergently with suspected poor sterility.

Speaker Notes: Slide 22

There are other factors that may affect the success of reminders and stop orders. They include:

- Your team's recognition of the hazard of urinary catheters and communication patterns and unit culture relative to urinary catheter use. For example, if the clinicians' routine already includes daily face-to-face nurse-to-physician communication about patient needs, then incorporating a reminder about urinary catheter use into this communication has a higher chance of success than a strategy that reminds either the nurse or physician when they are not discussing face-to-face.

Speaker Notes: Slide 22 Continued

- Nurse comfort with urinary catheter removal protocols also impacts success, and it is difficult to implement nurse-driven protocols without first engaging staff in discussing how they can be more comfortable in developing, implementing and evaluating the use of this approach.
- Staff knowledge and skills of best practices and the use of alternatives to urinary catheters can impact whether or not they consistently follow best practices.
- Having dedicated personnel to review, remind and reinforce indications for urinary catheters and early removal is helpful.
- And finally, information technology support for data collection is important and can either help or hinder efforts depending on complexity and how easily these reports can be generated to provide feedback about catheter use to bedside clinicians.

Speaker Notes: Slide 23

While this module focused on the appropriate clinical indications for placing an indwelling urinary catheter, it is important to recognize that providing information to staff alone will not solve the problem of inappropriate catheter use. To engage your staff in reducing inappropriate catheter use, here are a few strategies to consider:

- First, develop a 'shared mental model' between nurses and physician for when indwelling urinary catheters are appropriate for patients in your unit or facility.
- Second, recruit –not assign- a nurse and physician as bedside champions to lead the project for reducing urinary catheter use.
- And third, develop a communication workflow for prompting removal of indwelling urinary catheters by default when no longer meeting appropriateness criteria. This could include checklists to prompt discussion regarding catheter necessity in rounds, empowering nurses across all shifts to remove catheters when no longer needed and using criteria-informed catheter stop-orders.

Speaker Notes: Slide 24

This module will end with a few key take home points.

- First, ICU bed assignment is not a sufficient appropriate indication for an indwelling urinary catheter. The ICU patient still needs a specific medical indication to justify the risk of the indwelling urinary catheter.
- Alternatives to indwelling urinary catheters should be used whenever appropriate instead of an indwelling urinary catheter. Patients cannot develop a CAUTI if they don't have an indwelling urinary catheter, particularly for measurement by the NHSN surveillance system.
- Reminders and stop orders can improve awareness of urinary catheters and prompt removal of unnecessary urinary catheters. This module has provided a number of low-tech and high-tech strategies your unit or hospital can use to implement removal protocols and stop orders.

Speaker Notes: Slide 24 Continued

- Finally, nurse and physician “buy-in” is extremely important in overcoming barriers to removing unnecessary indwelling urinary catheters especially since so many of the strategies to enhances removal of unnecessary urinary catheters depends on open, timely and evidence-based communication among nurses and physicians. Sustaining improvements in CAUTI prevention requires monitoring and feedback of catheter use and CAUTI rates. The socio-adaptive strategies, such as including catheter removal in routine clinical nurse-to-physician discussions such as rounds and time outs can improve and sustain implementation.

Speaker Notes: Slide 25

No notes.

Speaker Notes: Slide 26

No notes.