Catheter-associated urinary tract infection prevention in the continuum of acute care

An initiative of the
NSW CLINICAL EXCELLENCE COMMISSION

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Disclosure

- No longer with the CEC
- Direct questions: CEC-HAI@health.nsw.gov.au

Acknowledgements

- Dr Paul Curtis, Director of Clinical Governance (CEC)
- 2013/14 and 2014/2015 CAUTI project reference groups
- NSW pilot sites
- NSW Pathology
- Health Education Training Institute
- eHealth
- State Forms Committee

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The NSW situation

NSW

Population: 7.64 million

Capital: Sydney

Land size: 809,444 km²

(3x UK)

19 Local Health Districts/ Networks

220 facilities

1.84M admissions/year

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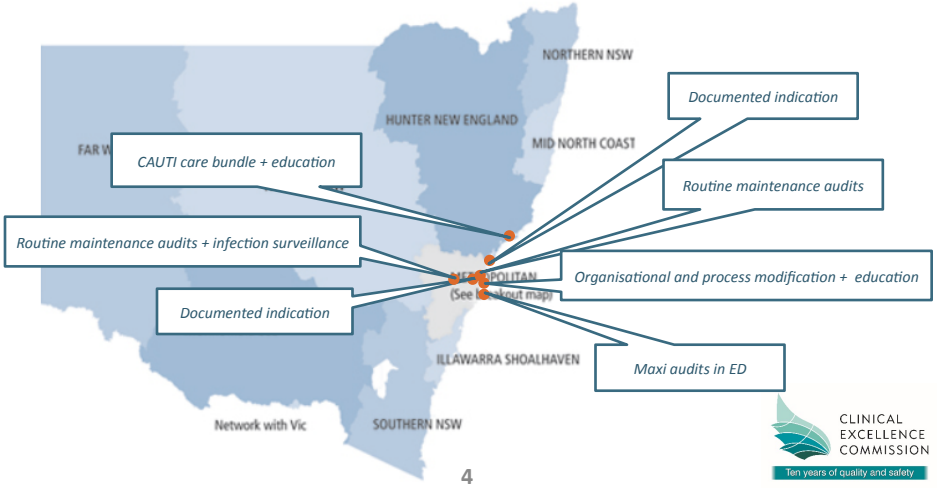
The NSW situation

Pre 2014

8/220 hospitals with dedicated acute care CAUTIs projects



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But is CAUTIs even a problem in acute care?

- Mitchell et al, 2016:
  - Prevalence of HAUTIs in Australia is 1.73%
  - Increased LOS by 4 days
  - Reduced rate of discharge

- 0.9% of all acute admissions are affected by a CAUTI
  - 66.7% of HAUTIs are CAUTIs

Types of HAUTIs	Prevalence
Asymptomatic bacteriuria	29%
Cystitis	26%
Pyelonephritis	21%
Urosepsis	12%

References:
Mitchell BG, Ferguson JK, Anderson M, Sear J, Barnett A. Length of stay and mortality associated with healthcare-associated urinary tract infections: a multi-state model. Journal of Hospital Infection. 2016;93(1):92-9.
Bjerklund Johansen, T. E., M. Cek, K. Naber, L. Stratchounski, M. V. Svendsen and P. Tenke. "*Prevalence of Hospital-Acquired Urinary Tract Infections in Urology Departments*." European Urology **51**(4).(2007): 1100-1112.

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What does that mean in terms of patient numbers?

Breakdown	%	Number
Number of acute admissions in NSW 2014/15		1, 840, 632
Estimated number of HAUTIs	1.73	31, 843
Estimated number of HAUTIs that are CAUTIs	66.7	**21, 239**
Estimated number of CAUTIs progressing to urosepsis	12	**2,549**

2, 549 NSW patients get a CAUTI that leads to urosepsis
=
49 patients a week
=
7 patients per day

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The NSW situation

- Unknown burden
  - Not a clinical indicator
  - Clinical coding unreliable
  - IMS data, not reported
- Impetus to improve
  - National Safety and Quality Health Service Standards:
    - 3.9: *Implement protocols for invasive device procedures regularly performed with the organisation*
    - 3.10: *Developing and implementing protocols for aseptic technique*
  - Anecdotal evidence from scoping visits

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What the literature says ….

- Unnecessary catheterisation
- Extraluminal contamination - breaches in asepsis
  - ➥ Insertion
  - ➥ Maintenance
  - ➥ Specimen collection
- Intraluminal contamination - unnecessary dwell time
  - ➥ Catheter biofilm 48 hrs post insertion

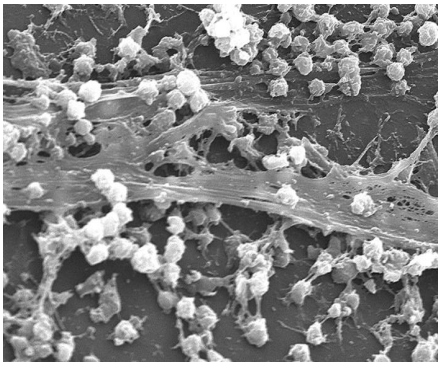

Photo: Janice Carr, CDC (Public Health Image Library)

Reference: Jacobsen, S. M., D. J. Stickler, H. L. T. Mobley, et al. (2008). "Complicated Catheter-Associated Urinary Tract Infections Due to *Escherichia coli* and *Proteus mirabilis*." Clinical Microbiology Reviews **21**(1): 26-59.

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What we were told ….

- **"If a patient has incontinence, you catheterise."**
  - convenience
  - unsure of appropriate indications for catheterisation and alternatives -
  bladder scanning is not undertaken to confirm retention
- **"We only have Foleys in stock."**
  - unsure of catheterisation alternatives
  - systemic lack of support for best practice
- **"I didn't know how long it had been in for."**
  - not prioritised in clinical communication
  - lack of awareness of insertion date and indication for insertion
  - medical orders direct removal
- **"Do I take off my gloves first ?"**
  - sequencing of aseptic technique
  - inappropriate specimen collection and poor collection technique
  - placement of drainage device

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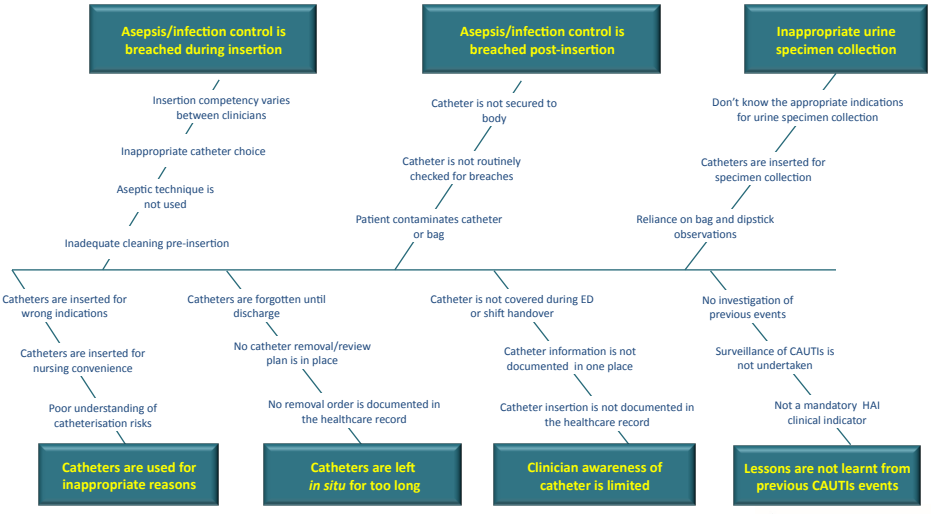
Why do patients get CAUTIs in acute care?



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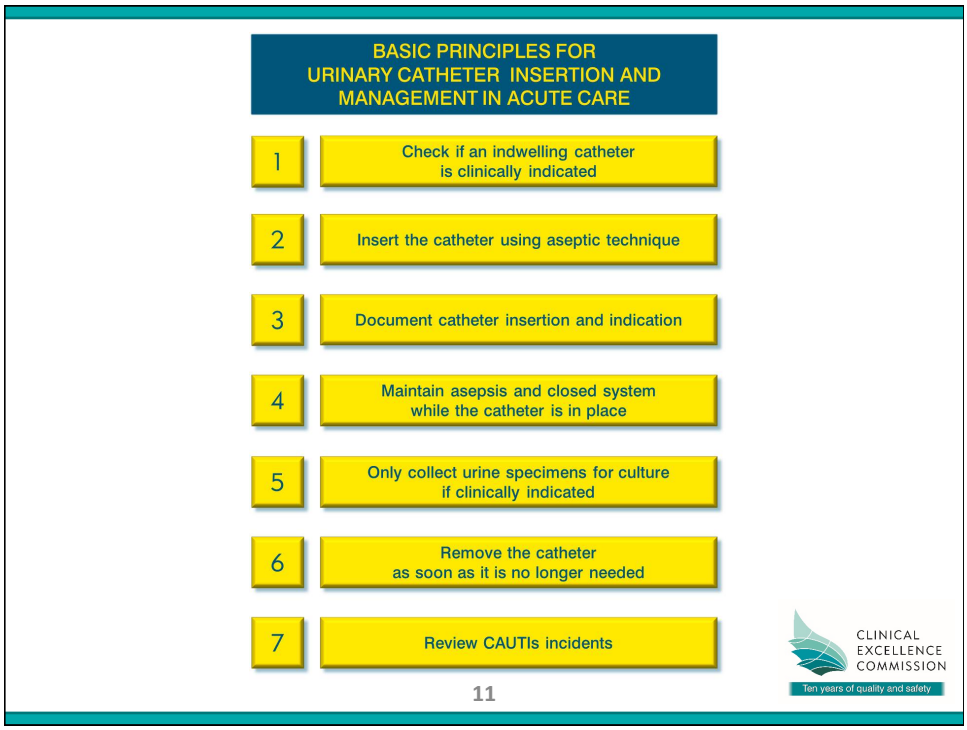
BASIC PRINCIPLES FOR
URINARY CATHETER INSERTION AND
MANAGEMENT IN ACUTE CARE
1
Check if an indwelling catheter is clinically indicated
2
Insert the catheter using aseptic technique
3
Document catheter insertion and indication
4
Maintain asepsis and closed system while the catheter is in place
5
Only collect urine specimens for culture if clinically indicated
6
Remove the catheter as soon as it is no longer needed
7
Review CAUTIs incidents
11
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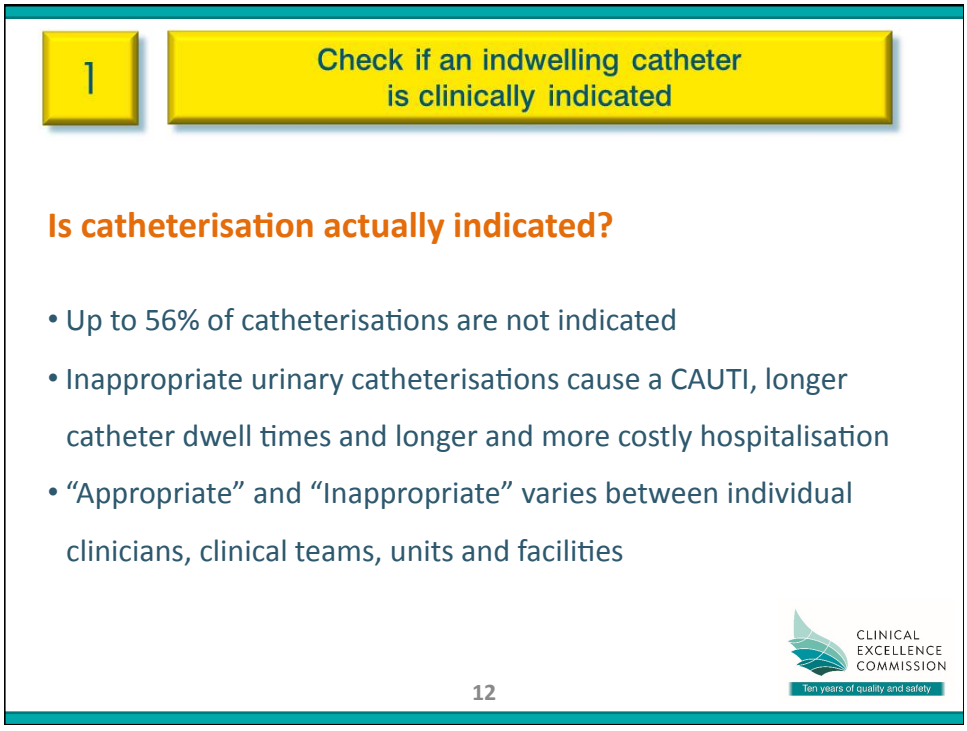
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Check if an indwelling catheter is clinically indicated
Is catheterisation actually indicated?
• Up to 56% of catheterisations are not indicated
• Inappropriate urinary catheterisations cause a CAUTI, longer catheter dwell times and longer and more costly hospitalisation
• "Appropriate" and "Inappropriate" varies between individual clinicians, clinical teams, units and facilities
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1 Check if an indwelling catheter is clinically indicated

What are the right indications for catheterisation?

- Until recently, no universal list of indications
- CDC and EAUN guidelines → lack widespread adoption
- Other guidelines also available → inconsistent recommendations

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1 Check if an indwelling catheter is clinically indicated

4 STEPS OF DECISION MAKING FOR APPROPRIATE URINARY CATHETER INSERTION
- ADULT ACUTE CARE SETTINGS -

STEP 1. CHECK FOR AN APPROPRIATE INDICATION FOR CATHETERISATION*	STEP 2. CHOOSE MOST APPROPRIATE CATHETER OPTION: Sterile intermittent 'in/out'	Sterile short term indwelling 'IDC'	Suprapubic 'SPC'	STEP 3. CONFIRM CHOICE USING ADDITIONAL GUIDANCE
A. Urinary retention or obstruction (pre insertion bladder scan is recommended) • Neurogenic or mechanical retention • Medication associated retention • Urinary obstruction • Failed trial of void	√√√	√√	√	• If medication-related retention is identified, review medications. • If an in/out catheter is inserted, ensure patient review prior to discharge. • Consider an IDC if urine volume> 500mL is observed on bladder scan or if patient has lower abdominal pain. • If urine volume >1L is observed on bladder scan, seek further advice from a senior clinician.
B. Clot retention		√√√		• Consider using a 3-way IDC
C. Monitoring for: • Sepsis • Trauma • Electrolytes • Renal function		√√√	√√	• If unable to insert an IDC, consider a SPC.
D. Acute injury or surgery management • Localised injury or surgery (e.g. bladder, pelvis, lower abdomen, genitourinary tract) • Non-localised injury or surgery (e.g. cerebral, orthopaedic or spinal associated immobility) • Pre or perioperative bladder emptying		√√√	√√	• If unable to insert an IDC, consider a SPC. • For post-surgery management, consider early IDC removal or using an in/out catheter. • Do not insert catheter if bleeding from the urethral meatus is observed or pelvic fractures is suspected. Seek further advice from a senior clinician.
E. Treatment & investigation • Diagnostic investigations • Instillation of intravesical medications • Urine specimen collection for culture • Post-void residual urine volume assessment if bladder scanner is unavailable or inadequate and more detail than suprapubic fullness is required	√√√	√√		• If patient becomes distressed, cease procedure and seek further advice from a senior clinician. • Catheterisation for urine specimen collection only should be considered if a clean mid-stream urine (MSU) specimen cannot be obtained.
F. Management of urinary incontinence • Perineal, sacral or inguinal wound care • End-of-life comfort • If patient is also receiving chemotherapy		√√√	√√	• Catheterisation only should be considered if there is no other option available. • Consider an external sheath/condom catheter for male patients. • Consider using incontinence pads or external sheath/urodome to contain cytotoxic waste. Refer to local waste management policy for guidance.
G. Urogenital or bladder management • Fistula • Haematuria		√√√	√√	• If unable to insert an IDC, consider a SPC.
H. Labour & delivery management • Forcep or vacuum assisted delivery • Epidural block • Labour/post labour retention or obstruction • Caesarean delivery • Management and prevention of postpartum haemorrhage • Birth-related injury		√√√		• For forcep or vacuum assisted delivery, consider an in/out catheter.

* If indication is not listed, catheter insertion is not appropriate.
** Due to injury, obstruction or urogenital atrophy

STEP 4. RETURN TO STEP 1 IF CONTRAINDICATION FOR OPTION IS LISTED BELOW: Sterile intermittent 'in/out'	Sterile short term indwelling 'IDC'	Suprapubic 'SPC'
• Urethral stricture • Urethral orifice cannot be identified or accessed** • Renal impairment where continuous drainage is required • Known or suspected urethral trauma • Bleeding from the urethral meatus • Thrombolytic therapy for stroke	• Urethral stricture • Urethral orifice cannot be identified or accessed** • Urethral reconstruction • Known or suspected urethral trauma • Bleeding from the urethral meatus • Acute prostatitis	• Unable to distend bladder • Unable to identify bladder location • Known/suspected bladder carcinoma • Ascites • Pelvic or lower abdominal surgery • Coagulopathy • Morbid obesity

√√√ BEST CHOICE
√√ SECOND CHOICE
√ THIRD CHOICE
IDC: Indwelling urinary catheter, also known as an IUC
SPC: Suprapubic catheter

SEEK FURTHER ADVICE FROM A SENIOR CLINICIAN BEFORE INSERTION IF YOU ARE UNSURE OF WHICH CATHETER TO USE

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Appropriate indications for insertion

Pilot testing @ 7 sites

Finding 1: Inappropriate catheter insertions are occurring less frequently

Catheter use significantly decreased (2 sites)

Number of catheterised patients did not increase, despite significant increases in patient numbers (2 sites)

Finding 2: Documentation of catheter insertion is getting better

Catheter use significantly increased (2 sites)

Number of catheterised patients increased significantly (1 site)

Finding 3: Nothing changed

2 sites

Validated that catheter insertion was not a problem

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1 Check if an indwelling catheter is clinically indicated

Formal reliability testing

- 3 emergency departments, n= 50
- Staff who used the tool made more appropriate catheter selections
- Staff who used the tool made more appropriate catheter choices in scenarios that required more complex, multi-step decision making processes (Cohen's d = 0.88)
- Less variation in the catheter selections if using the tool.

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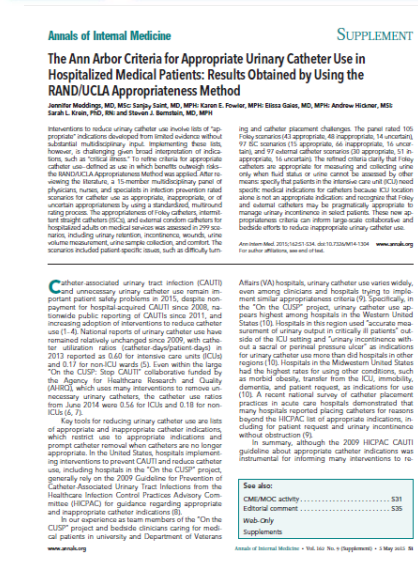
1 Check if an indwelling catheter is clinically indicated



Annals of Internal Medicine SUPPLEMENT

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

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

Intervention to reduce urinary catheter use involve lists of "appropriate" indications developed from limited evidence without substantial multidisciplinary input. Implementing these lists, however, is challenging given broad interpretation of indications, such as "critical illness." To refine criteria for appropriate catheter use—defined as use in which benefits outweigh risks—the RAND/UCLA Appropriateness Method was applied. After reviewing the literature, a 15-member multidisciplinary panel of physicians, nurses, and specialists in infection prevention rated scenarios for catheter use as appropriate, inappropriate, or of uncertain appropriateness by using a standardized, multiround rating process. The appropriateness of Foley catheters, intermittent straight catheters (ISCs), and external condom catheters for hospitalized adults on medical services was assessed in 299 scenarios, including urinary retention, incontinence, wounds, urine volume measurement, urine sample collection, and comfort. The scenarios included patient-specific issues, such as difficulty turning and catheter placement challenges. The panel rated 105 Foley scenarios (43 appropriate, 48 inappropriate, 14 uncertain), 97 ISC scenarios (15 appropriate, 66 inappropriate, 16 uncertain), and 97 external catheter scenarios (30 appropriate, 51 inappropriate, 16 uncertain). The refined criteria clarify that Foley catheters are appropriate for measuring and collecting urine only when fluid status or urine cannot be assessed by other means; specify that patients in the intensive care unit (ICU) need specific medical indications for catheters because ICU location alone is not an appropriate indication; and recognize that Foley and external catheters may be pragmatically appropriate to manage urinary incontinence in select patients. These new appropriateness criteria can inform large-scale collaborative and bedside efforts to reduce inappropriate urinary catheter use.

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For author affiliations, see end of text.

Catheter-associated urinary tract infection (CAUTI) and unnecessary urinary catheter use remain important patient safety problems in 2015, despite nonpayment for hospital-acquired CAUTI since 2008, nationwide public reporting of CAUTIs since 2011, and increasing adoption of interventions to reduce catheter use (1–4). National reports of urinary catheter use have remained relatively unchanged since 2009, with catheter utilization ratios (catheter-days/patient-days) in 2013 reported as 0.60 for intensive care units (ICUs) and 0.17 for non-ICU wards (5). Even within the large "On the CUSP: Stop CAUTI" collaborative funded by the Agency for Healthcare Research and Quality (AHRQ), which uses many interventions to remove unnecessary urinary catheters, the catheter use ratios from June 2014 were 0.56 for ICUs and 0.18 for non-ICUs (6, 7).

Key tools for reducing urinary catheter use are lists of appropriate and inappropriate catheter indications, which restrict use to appropriate indications and prompt catheter removal when catheters are no longer appropriate. In the United States, hospitals implementing interventions to prevent CAUTI and reduce catheter use, including hospitals in the "On the CUSP" project, generally rely on the 2009 Guideline for Prevention of Catheter-Associated Urinary Tract Infections from the Healthcare Infection Control Practices Advisory Committee (HICPAC) for guidance regarding appropriate and inappropriate catheter indications (8).

In our experience as team members of the "On the CUSP" project and bedside clinicians caring for medical patients in university and Department of Veterans Affairs (VA) hospitals, urinary catheter use varies widely, even among clinicians and hospitals trying to implement similar appropriateness criteria (9). Specifically, in the "On the CUSP" project, urinary catheter use appears highest among hospitals in the Western United States (10). Hospitals in this region used "accurate measurement of urinary output in critically ill patients" outside of the ICU setting and "urinary incontinence without a sacral or perineal pressure ulcer" as indications for urinary catheter use more than did hospitals in other regions (10). Hospitals in the Midwestern United States had the highest rates for using other conditions, such as morbid obesity, transfer from the ICU, immobility, dementia, and patient request, as indications for use (10). A recent national survey of catheter placement practices in acute care hospitals demonstrated that many hospitals reported placing catheters for reasons beyond the HICPAC list of appropriate indications, including for patient request and urinary incontinence without obstruction (9).

In summary, although the 2009 HICPAC CAUTI guideline about appropriate catheter indications was instrumental for informing many interventions to re-

See also:
CME/MOC activity S31
Editorial comment S35
Web-Only
Supplements

www.annals.org Annals of Internal Medicine • Vol. 162 No. 9 (Supplement) • 5 May 2015 S1

The Ann Arbor Criteria

Meddings J, Saint S, Fowler KE, Gaies E, Hickner A, Krein SL, et al. The Ann Arbor Criteria for Appropriate Urinary Catheter Use in Hospitalized Medical Patients: Results Obtained by Using the RAND/UCLA Appropriateness Method. 162. 2015;9 Suppl(S1-S34). https://www.ncbi.nlm.nih.gov/pubmed/25938928

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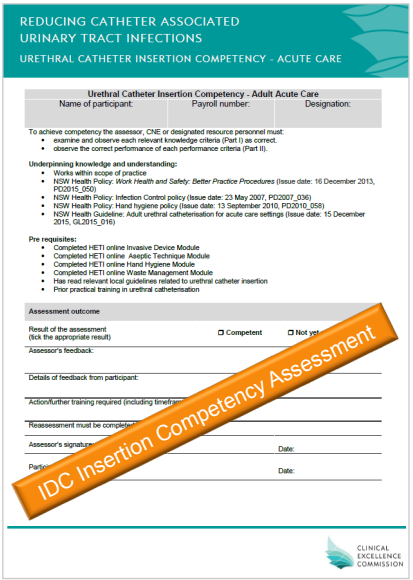
2 Insert the catheter using aseptic technique



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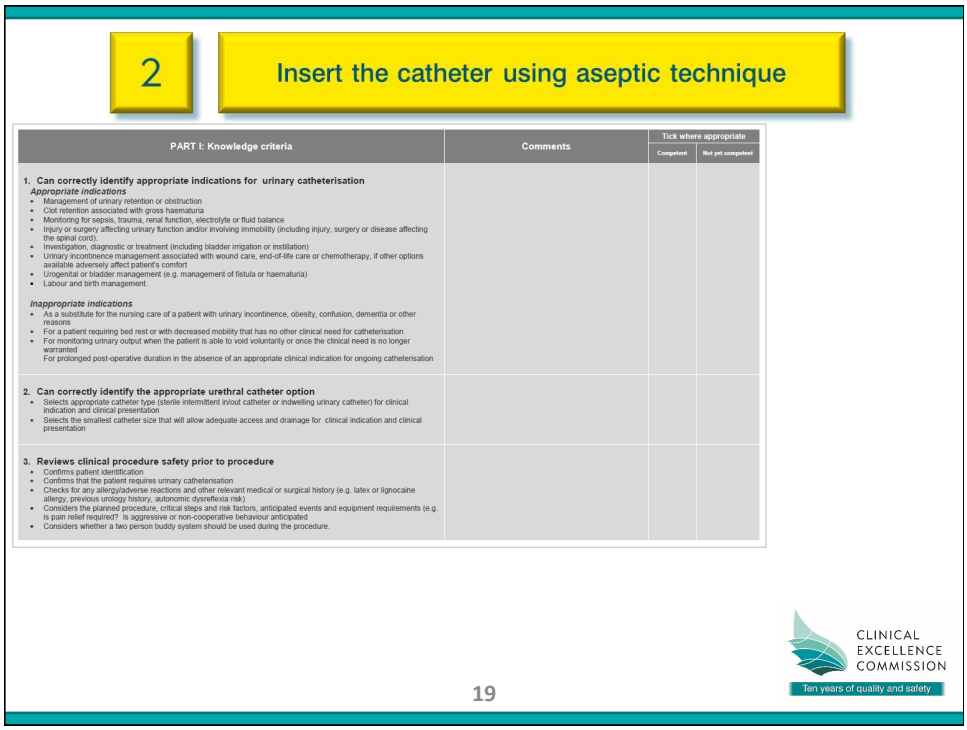

2 Insert the catheter using aseptic technique

PART I: Knowledge criteria	Comments	Tick where appropriate	
		Competent	Not yet competent
1. Can correctly identify appropriate indications for urinary catheterisation ***Appropriate indications*** • Management of urinary retention or obstruction • Clot retention associated with gross haematuria • Monitoring for sepsis, trauma, renal function, electrolyte or fluid balance • Injury or surgery affecting urinary function and/or involving immobility (including injury, surgery or disease affecting the spinal cord). • Investigation, diagnostic or treatment (including bladder irrigation or instillation) • Urinary incontinence management associated with wound care, end-of-life care or chemotherapy, if other options available adversely affect patient's comfort • Urogenital or bladder management (e.g. management of fistula or haematuria) • Labour and birth management. ***Inappropriate indications*** • As a substitute for the nursing care of a patient with urinary incontinence, obesity, confusion, dementia or other reasons • For a patient requiring bed rest or with decreased mobility that has no other clinical need for catheterisation • For monitoring urinary output when the patient is able to void voluntarily or once the clinical need is no longer warranted For prolonged post-operative duration in the absence of an appropriate clinical indication for ongoing catheterisation			
2. Can correctly identify the appropriate urethral catheter option • Selects appropriate catheter type (sterile intermittent in/out catheter or indwelling urinary catheter) for clinical indication and clinical presentation • Selects the smallest catheter size that will allow adequate access and drainage for clinical indication and clinical presentation			
3. Reviews clinical procedure safety prior to procedure • Confirms patient identification • Confirms that the patient requires urinary catheterisation • Checks for any allergy/adverse reactions and other relevant medical or surgical history (e.g. latex or lignocaine allergy, previous urology history, autonomic dysreflexia risk) • Considers the planned procedure, critical steps and risk factors, anticipated events and equipment requirements (e.g. Is pain relief required? Is aggressive or non-cooperative behaviour anticipated • Considers whether a two person buddy system should be used during the procedure.			

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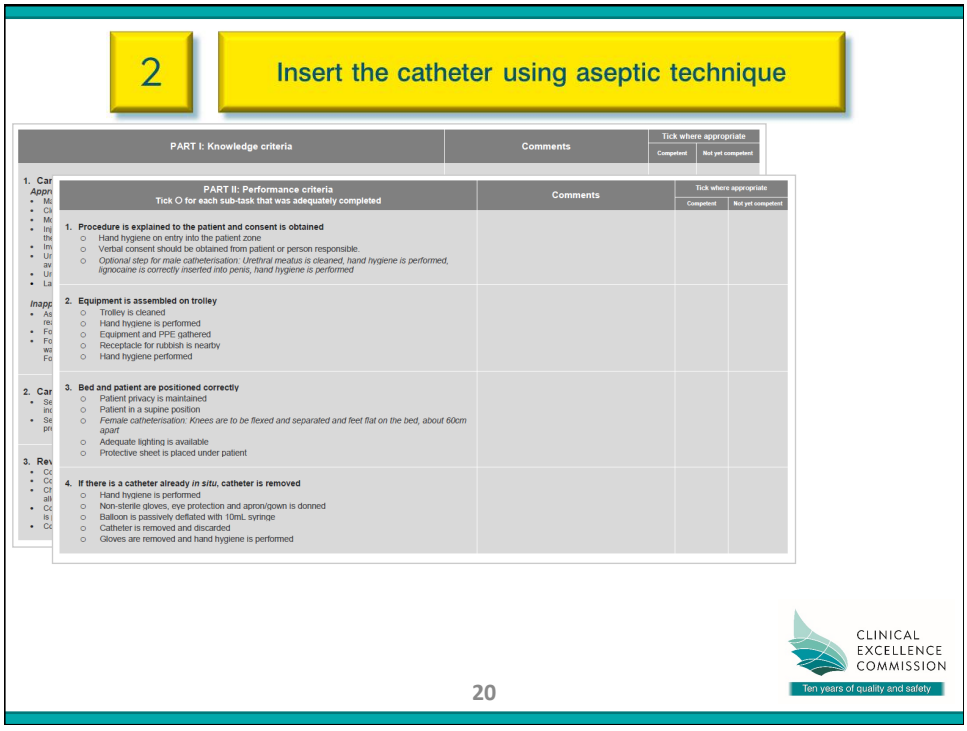

2 Insert the catheter using aseptic technique

PART I: Knowledge criteria	Comments	Tick where appropriate	
		Competent	Not yet competent

PART II: Performance criteria Tick O for each sub-task that was adequately completed	Comments	Tick where appropriate	
		Competent	Not yet competent
1. Procedure is explained to the patient and consent is obtained ○ Hand hygiene on entry into the patient zone ○ Verbal consent should be obtained from patient or person responsible. ○ *Optional step for male catheterisation: Urethral meatus is cleaned, hand hygiene is performed, lignocaine is correctly inserted into penis, hand hygiene is performed*			
2. Equipment is assembled on trolley ○ Trolley is cleaned ○ Hand hygiene is performed ○ Equipment and PPE gathered ○ Receptacle for rubbish is nearby ○ Hand hygiene performed			
3. Bed and patient are positioned correctly ○ Patient privacy is maintained ○ Patient in a supine position ○ *Female catheterisation: Knees are to be flexed and separated and feet flat on the bed, about 60cm apart* ○ Adequate lighting is available ○ Protective sheet is placed under patient			
4. If there is a catheter already *in situ*, catheter is removed ○ Hand hygiene is performed ○ Non-sterile gloves, eye protection and apron/gown is donned ○ Balloon is passively deflated with 10mL syringe ○ Catheter is removed and discarded ○ Gloves are removed and hand hygiene is performed			

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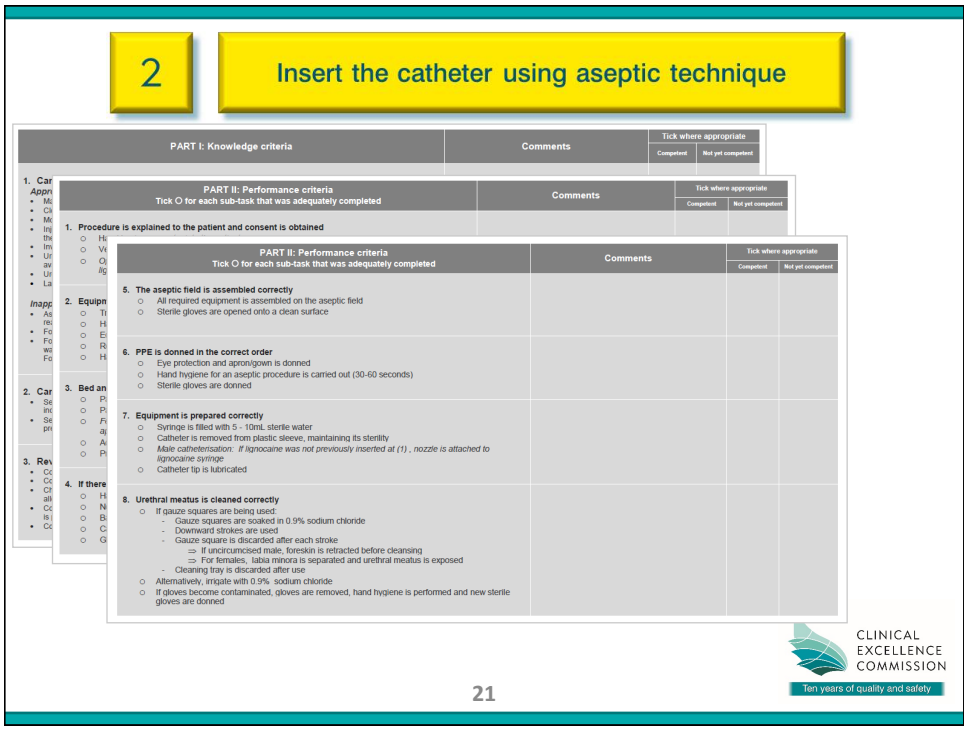
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Insert the catheter using aseptic technique
PART I: Knowledge criteria
Comments
Tick where appropriate
Competent
Not yet competent
PART II: Performance criteria
Tick O for each sub-task that was adequately completed
1. Procedure is explained to the patient and consent is obtained
5. The aseptic field is assembled correctly
All required equipment is assembled on the aseptic field
Sterile gloves are opened onto a clean surface
6. PPE is donned in the correct order
Eye protection and apron/gown is donned
Hand hygiene for an aseptic procedure is carried out (30-60 seconds)
Sterile gloves are donned
7. Equipment is prepared correctly
Syringe is filled with 5 - 10mL sterile water
Catheter is removed from plastic sleeve, maintaining its sterility
Male catheterisation: If lignocaine was not previously inserted at (1) , nozzle is attached to lignocaine syringe
Catheter tip is lubricated
8. Urethral meatus is cleaned correctly
If gauze squares are being used:
Gauze squares are soaked in 0.9% sodium chloride
Downward strokes are used
Gauze square is discarded after each stroke
⇒ If uncircumcised male, foreskin is retracted before cleansing
⇒ For females, labia minora is separated and urethral meatus is exposed
Cleaning tray is discarded after use
Alternatively, irrigate with 0.9% sodium chloride
If gloves become contaminated, gloves are removed, hand hygiene is performed and new sterile gloves are donned
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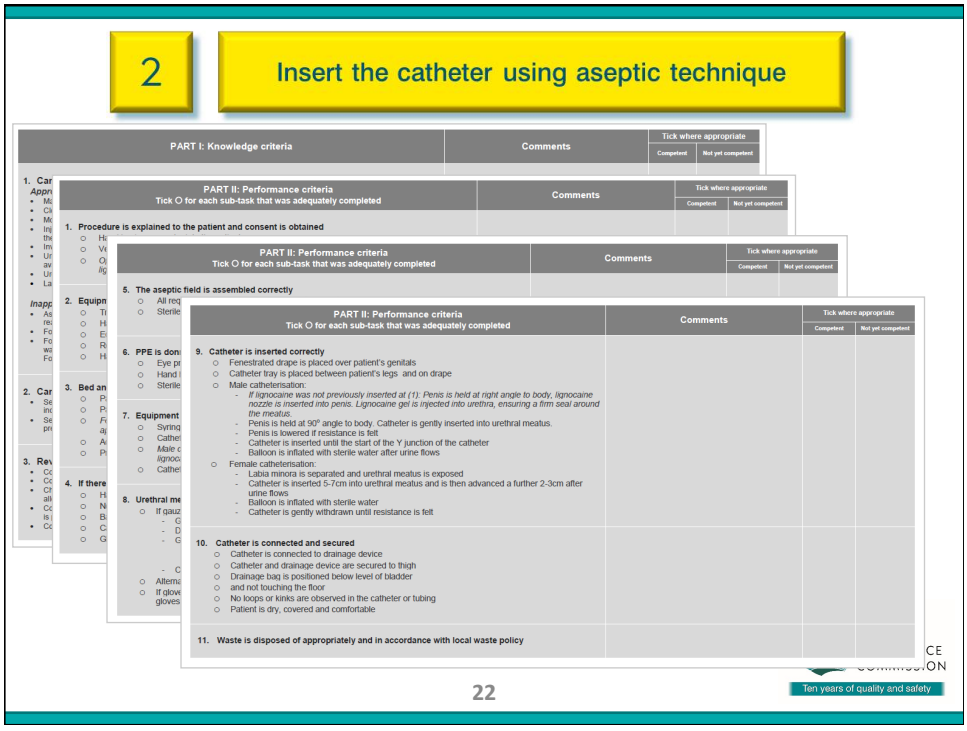
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Insert the catheter using aseptic technique
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Tick where appropriate
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Not yet competent
PART II: Performance criteria
Tick O for each sub-task that was adequately completed
1. Procedure is explained to the patient and consent is obtained
5. The aseptic field is assembled correctly
9. Catheter is inserted correctly
Fenestrated drape is placed over patient's genitals
Catheter tray is placed between patient's legs and on drape
Male catheterisation:
If lignocaine was not previously inserted at (1): Penis is held at right angle to body, lignocaine nozzle is inserted into penis. Lignocaine gel is injected into urethra, ensuring a firm seal around the meatus.
Penis is held at 90° angle to body. Catheter is gently inserted into urethral meatus.
Penis is lowered if resistance is felt
Catheter is inserted until the start of the Y junction of the catheter
Balloon is inflated with sterile water after urine flows
Female catheterisation:
Labia minora is separated and urethral meatus is exposed
Catheter is inserted 5-7cm into urethral meatus and is then advanced a further 2-3cm after urine flows
Balloon is inflated with sterile water
Catheter is gently withdrawn until resistance is felt
10. Catheter is connected and secured
Catheter is connected to drainage device
Catheter and drainage device are secured to thigh
Drainage bag is positioned below level of bladder
and not touching the floor
No loops or kinks are observed in the catheter or tubing
Patient is dry, covered and comfortable
11. Waste is disposed of appropriately and in accordance with local waste policy
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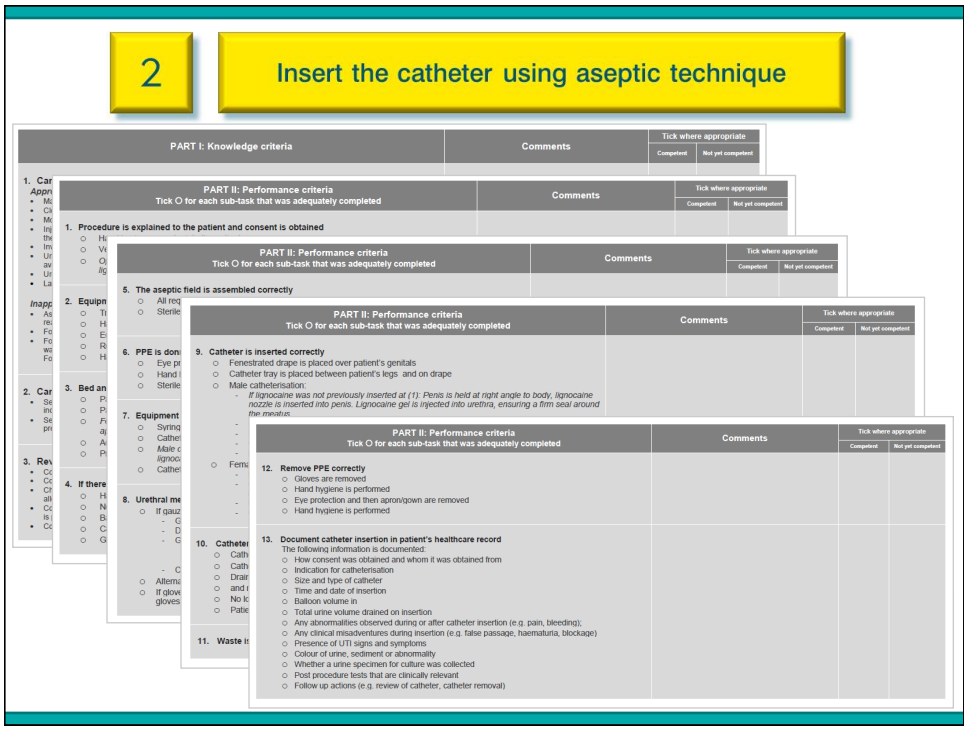
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Insert the catheter using aseptic technique
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Not yet competent
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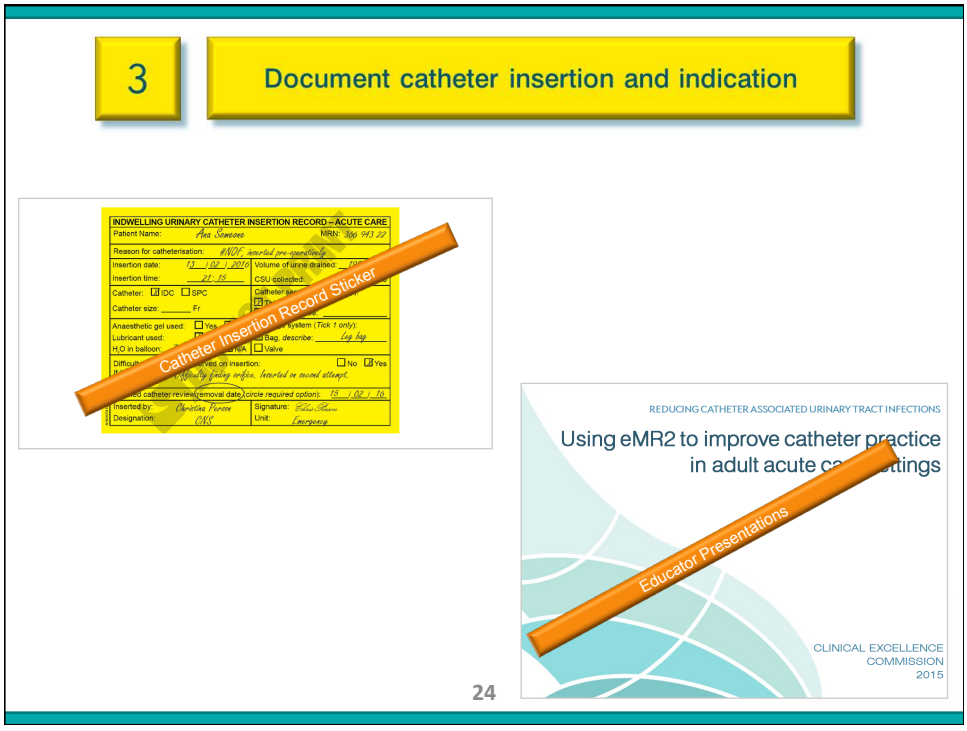
Tick O for each sub-task that was adequately completed
1. Procedure is explained to the patient and consent is obtained
5. The aseptic field is assembled correctly
9. Catheter is inserted correctly
Fenestrated drape is placed over patient's genitals
Catheter tray is placed between patient's legs and on drape
Male catheterisation:
12. Remove PPE correctly
Gloves are removed
Hand hygiene is performed
Eye protection and then apron/gown are removed
Hand hygiene is performed
13. Document catheter insertion in patient's healthcare record
The following information is documented:
How consent was obtained and whom it was obtained from
Indication for catheterisation
Size and type of catheter
Time and date of insertion
Balloon volume in
Total urine volume drained on insertion
Any abnormalities observed during or after catheter insertion (e.g. pain, bleeding);
Any clinical misadventures during insertion (e.g. false passage, haematuria, blockage)
Presence of UTI signs and symptoms
Colour of urine, sediment or abnormality
Whether a urine specimen for culture was collected
Post procedure tests that are clinically relevant
Follow up actions (e.g. review of catheter, catheter removal)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Document catheter insertion and indication
INDWELLING URINARY CATHETER INSERTION RECORD – ACUTE CARE
Catheter Insertion Record Sticker
REDUCING CATHETER ASSOCIATED URINARY TRACT INFECTIONS
Using eMR2 to improve catheter practice
Educator Presentations
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3 Document catheter insertion and indication

URINARY CATHETER RECORD

Reason for Catheterisation:

Catheter Type: ☐ IDC ☐ SPC
Catheter Size: ___ FG
Catheter Length: ☐ M ☐ F
Anaesthetic Gel Used: ☐ Yes ☐ No
Amount of H^0 in Balloon: ___
Volume of Urine Drained: ___
CSU Obtained: ☐ Yes ☐ No
Difficulty On Insertion: ☐ Yes ☐ No
Describe Difficulty:

Insertion Date: ___
Date Change Due: ___
Date Removed: ___
Autonomic Dysreflexia Risk ☐ Yes ☐ No
On Removal: ☐ Yes ☐ No

Print Name:
Signature: Designation:

INDWELLING URINARY CATHETER INSERTION RECORD – ACUTE CARE

Patient Name: *Ana Someone* MRN: *306 943 22*

Reason for catheterisation: *#NOF, inserted pre-operatively*

Insertion date: *13 / 02 / 2016* Volume of urine drained: *198* mL
Insertion time: *21: 15* CSU collected: ☐ Yes ☒ No

Catheter: ☒ IDC ☐ SPC
Catheter size: ___ Fr

Catheter secured (*Tick 1 only*):
☒ Thigh
☐ Other, *describe*: ___

Anaesthetic gel used: ☐ Yes ☒ No
Lubricant used: ☒ Yes ☐ No
H_2O in balloon: *7.2* mL ☐ N/A

Drainage system (*Tick 1 only*):
☒ Bag, *describe*: *Leg bag*
☐ Valve

Difficulty/abnormality observed on insertion: ☐ No ☒ Yes
If Yes, describe: *Difficulty finding orifice. Inserted on second attempt.*

Planned catheter review/removal date (*circle required option*): *15 / 02 / 16*

Inserted by: *Christina Person* Signature:
Designation: *CNS* Unit: *Emergency*

Example

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3 Document catheter insertion and indication

REDUCING CATHETER ASSOCIATED URINARY TRACT INFECTIONS

Using eMR2 to improve catheter practice in adult acute care settings

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MODULE 1
Dipstick results

MODULE 2
Catheter insertion

MODULE 3
Automatically triggering a medical review of the catheter

MODULE 4
Recording catheter care and maintenance for short term, long term and suprapubic catheters

MODULE 5
Recording catheter removal

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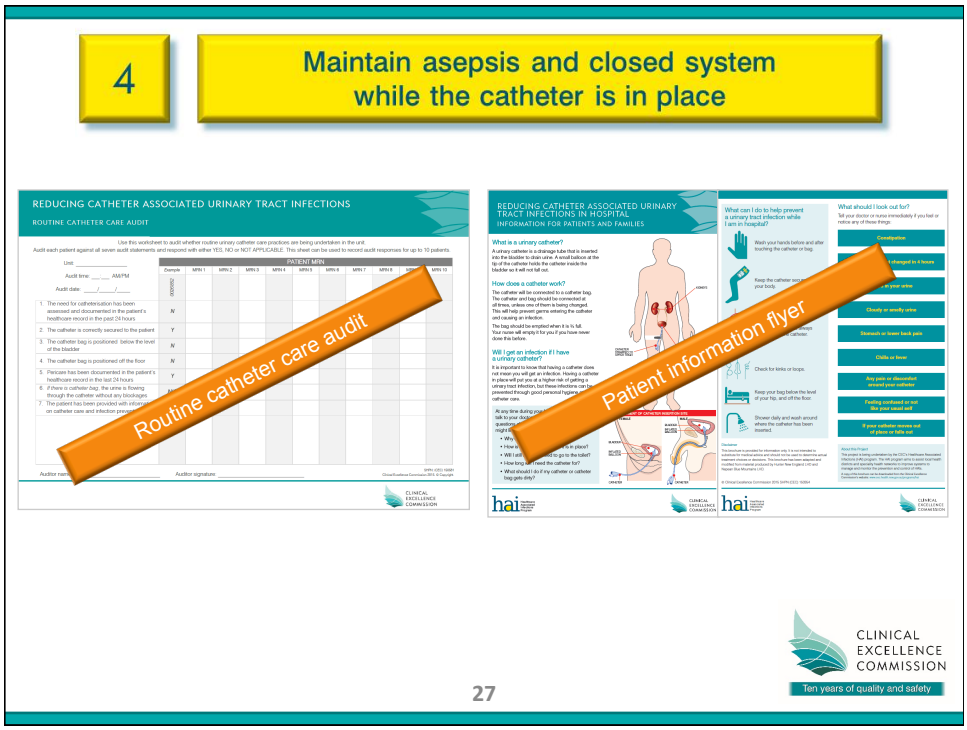
4
Maintain asepsis and closed system while the catheter is in place
REDUCING CATHETER ASSOCIATED URINARY TRACT INFECTIONS
ROUTINE CATHETER CARE AUDIT
Routine catheter care audit
REDUCING CATHETER ASSOCIATED URINARY TRACT INFECTIONS IN HOSPITAL
INFORMATION FOR PATIENTS AND FAMILIES
Patient information flyer
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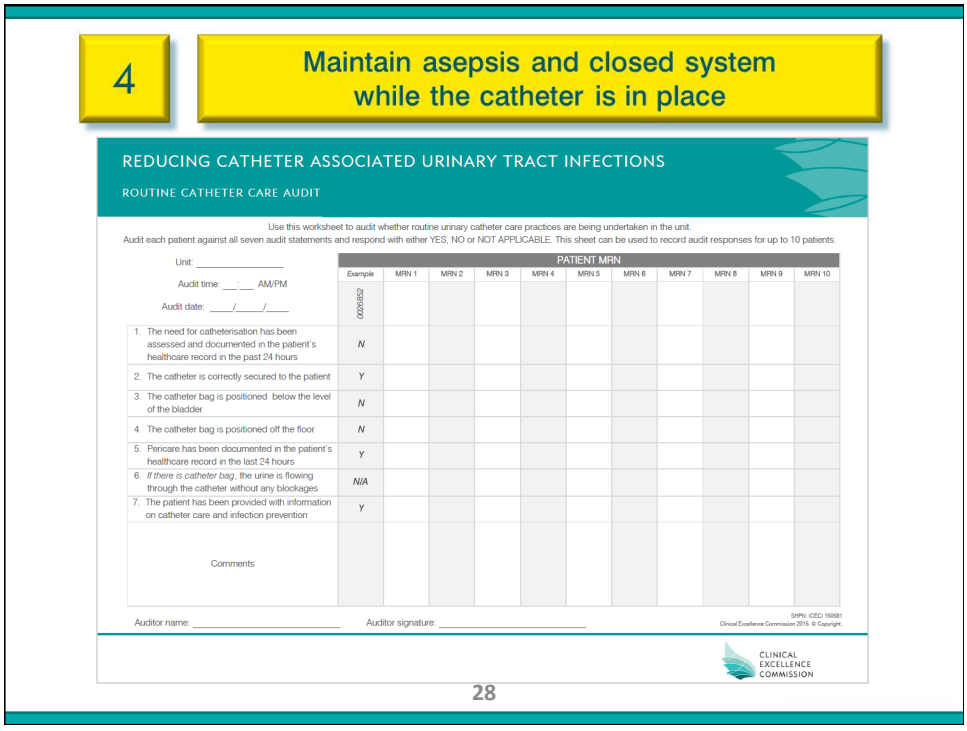
4
Maintain asepsis and closed system while the catheter is in place
REDUCING CATHETER ASSOCIATED URINARY TRACT INFECTIONS
ROUTINE CATHETER CARE AUDIT
Use this worksheet to audit whether routine urinary catheter care practices are being undertaken in the unit.
Audit each patient against all seven audit statements and respond with either YES, NO or NOT APPLICABLE. This sheet can be used to record audit responses for up to 10 patients.
Unit: _____
Audit time: ___:___ AM/PM
Audit date: ____/____/____
PATIENT MRN
Example
MRN 1
MRN 2
MRN 3
MRN 4
MRN 5
MRN 6
MRN 7
MRN 8
MRN 9
MRN 10
0226852
1. The need for catheterisation has been assessed and documented in the patient's healthcare record in the past 24 hours
N
2. The catheter is correctly secured to the patient
Y
3. The catheter bag is positioned below the level of the bladder
N
4. The catheter bag is positioned off the floor
N
5. Pericare has been documented in the patient's healthcare record in the last 24 hours
Y
6. If there is catheter bag, the urine is flowing through the catheter without any blockages
N/A
7. The patient has been provided with information on catheter care and infection prevention
Y
Comments
Auditor name: _____
Auditor signature: _____
SHPN: (CEC) 150581
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4 Maintain asepsis and closed system while the catheter is in place

Children's Hospitals' Solutions for Patient Safety
Every patient. Every day.

MAINTENANCE

Bundle Element	Care Descriptions
STANDARD ELEMENTS	
Maintain a closed drainage system	• If breaks in aseptic technique, disconnection, or leakage occur, replace the catheter and collecting system using aseptic technique and sterile equipment
Maintain hygiene	• Perform perineal hygiene at minimum daily
Keep bag below level of bladder	• Do not rest bag on floor [CDC Reference]
Maintain unobstructed flow	• Keep the catheter and collecting tube free from kinking
Remove catheter when no longer needed	• Review necessity daily • Document indication daily
RECOMMENDED ELEMENTS	
Secure catheter	• No details

Source: Rachel Bowes, Solutions for Patient Safety http://www.solutionsforpatientsafety.org/wp-content/uploads/CA-UTI_PediatricWebinar_Public.pdf

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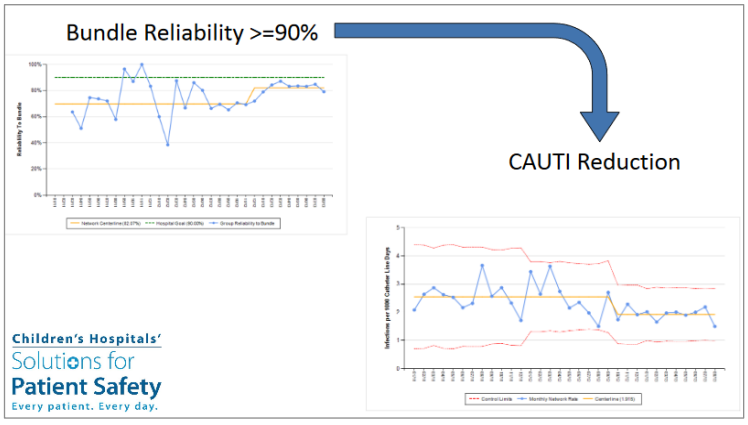
4 Maintain asepsis and closed system while the catheter is in place



Source: Rachel Bowes, Solutions for Patient Safety http://www.solutionsforpatientsafety.org/wp-content/uploads/CA-UTI_PediatricWebinar_Public.pdf

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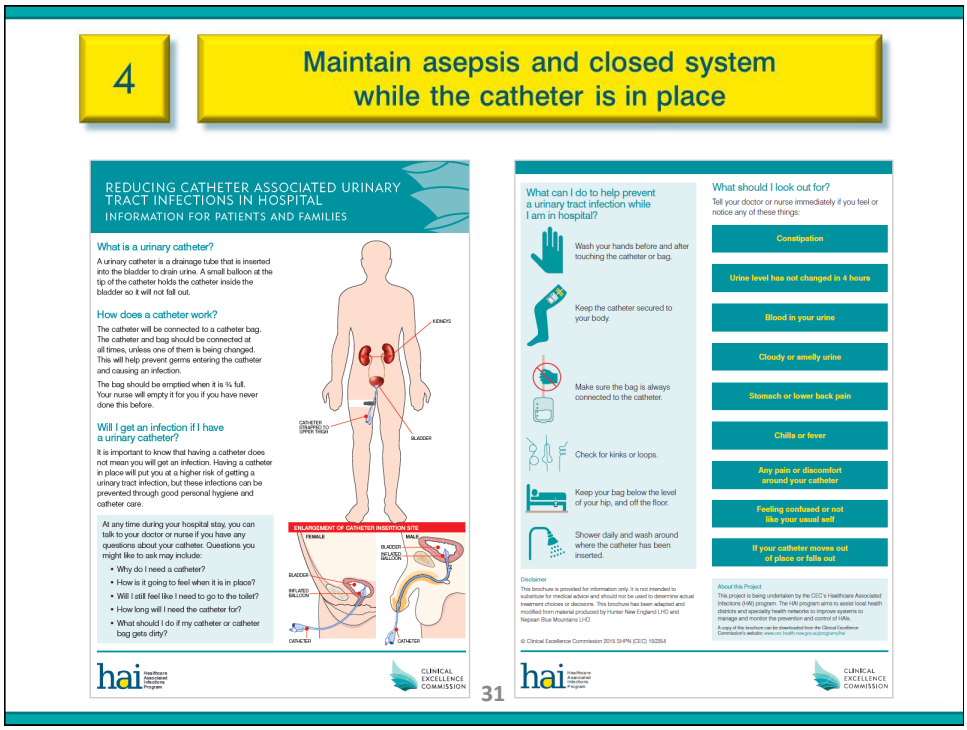
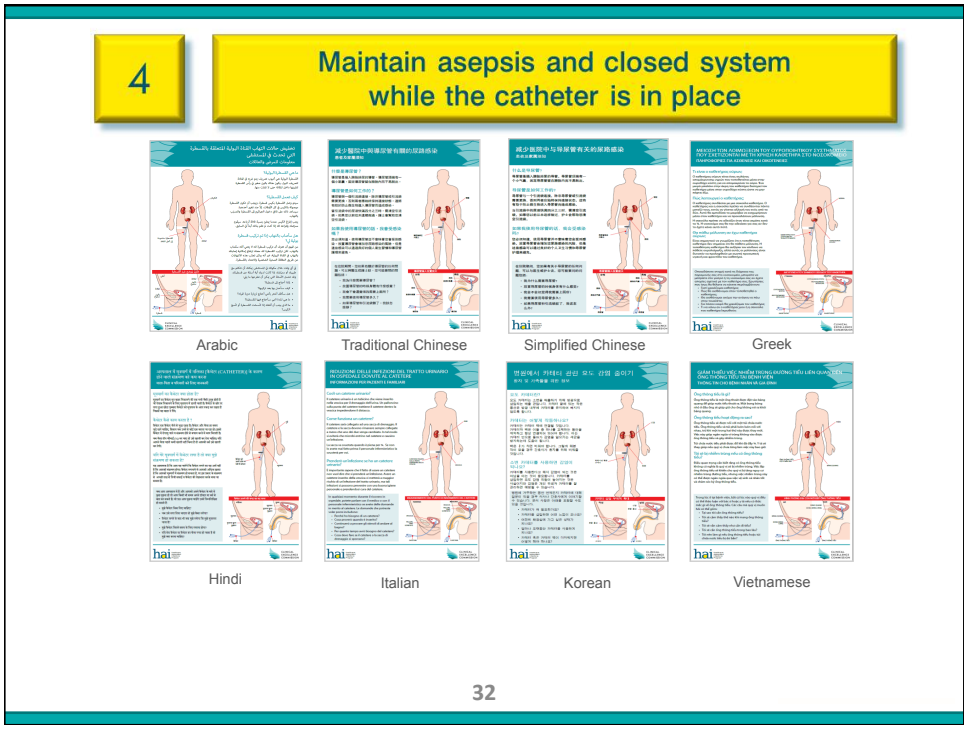
Catheter-Associated Urinary Tract Infection Prevention in the Continuum of Acute Care
Dr. Jan Gralton, National HAI Prevention Program, ACSQHC, Australia
A Webber Training Teleclass





Hosted by Jane Barnett jane@webbertraining.com
www.webbertraining.com

5

Only collect urine specimens for culture if clinically indicated

Implications of unnecessary specimen collection/culture

- Patient level:
  - o Detection of asymptomatic bacteriuria → antimicrobial treatment.
  - o Manipulation of closed system → extraluminal contamination → CAUTI
- System level:
  - o Unnecessary pathology waste.

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Advice on unnecessary laboratory testing

Choosing Wisely Australia
An initiative of NPS MedicineWise

RCPA
The Royal College of Pathologists of Australasia

1 **Do not perform surveillance urine cultures or treat bacteruria in elderly patients in the absence of symptoms or signs of infection**

Asymptomatic bacteruria is a common finding in all ages and in association with other comorbidities. Treatment of asymptomatic bacteruria is recommended in pregnancy but not in other clinical situations. Prophylaxis against development of symptoms prior to simple cystoscopy and prosthetic joint replacement is not recommended. Extensive guidelines from the Infectious Diseases Society of America (IDSA) are available for this condition and asymptomatic bacteruria in catheterised patients. The use of chemical screening strips in asymptomatic patients may lead to unnecessary urine cultures when positive results are obtained. Increasing antibiotic resistance in urinary pathogens may be a consequence of unnecessary treatment.

Source: http://www.choosingwisely.org.au/getmedia/aa012d60-e6d2-4246-a897-e762370578ad/RCPA-Choosing-Wisely-recommendations.pdf.aspx

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Choosing Wisely
An initiative of the ABIM Foundation

Advice on unnecessary laboratory testing

Society of General Internal Medicine

Don't perform routine pre-operative testing before low-risk surgical procedures.

Pre-operative assessment is expected before all surgical procedures. This assessment includes an appropriately directed and sufficiently comprehensive history and physical examination, and, in some cases, properly includes laboratory and other testing to help direct management and assess surgical risk. However, pre-operative testing for low-risk surgical procedures (such as cataract extraction) results in unnecessary delays and adds to significant avoidable costs and should be eliminated.

American Society for Clinical Pathology

Avoid routine preoperative testing for low risk surgeries without a clinical indication.

Most preoperative tests (typically a complete blood count, Prothrombin Time and Partial Prothomboplastin Time, basic metabolic panel and urinalysis) performed on elective surgical patients are normal. Findings influence management in under 3% of patients tested. In almost all cases, no adverse outcomes are observed when clinically stable patients undergo elective surgery, irrespective of whether an abnormal test is identified. Preoperative testing is appropriate in symptomatic patients and those with risks factors for which diagnostic testing can provide clarification of patient surgical risk.

Critical Care Societies Collaborative - Critical Care

Don't order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.

Many diagnostic studies (including chest radiographs, arterial blood gases, blood chemistries and counts and electrocardiograms) are ordered at regular intervals (e.g., daily). Compared with a practice of ordering tests only to help answer clinical questions, or when doing so will affect management, the routine ordering of tests increases health care costs, does not benefit patients and may in fact harm them. Potential harms include anemia due to unnecessary phlebotomy, which may necessitate risky and costly transfusion, and the aggressive work-up of incidental and non-pathological results found on routine studies.

Source: http://www.choosingwisely.org/

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In 1993, only 24% of CSUs collected were because of UTI signs and symptoms!

Table I. *Indications for requesting microbiological examination of urines*

		Sister		Staff nurse		Student nurse		Enrolled nurse	
		Yes	No	Yes	No	Yes	No	Yes	No
Reasons for requesting test on CSU	✗ Routine daily	0	20	1	47	1	17	0	20
	✗ Routine weekly	2	19	6	42	3	16	8	14
	✗ Smelly	19	4	46	7	17	2	27	1
	✗ Cloudy	21	5	37	14	16	2	26	2
	✗ Frequency	4	17	7	36	4	11	11	10
	✓ Symptoms	23	2	44	7	17	1	23	2
	✗ Post catheterization	10	9	25	27	12	6	14	10
	✗ Catheter tip	3	14	2	45	4	15	8	12

Source: Rao, G.G. *et al*. Journal of Hospital Infection, **1993.** 25: p. 219-22.

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5

Only collect urine specimens for culture if clinically indicated

URINE SPECIMEN COLLECTION AND CULTURE DURING CATHETERISATION
- ADULT ACUTE CARE SETTINGS -

Does your patient with an IDC need a urine culture?

Use the decision tree below to determine if it is necessary to collect a urine specimen for culture from an adult catheterised patient and the type of specimen to be collected.

Is a septic work up required AND/OR does patient have UTI symptoms?
Adults with a UTI may present with ≥1 of the following symptoms with no other recognised cause:
fever, suprapubic tenderness, costovertebral angle pain or tenderness, delirium or hypothermia (<35.5°C core).

NO
- Disregard the appearance or smell of urine (e.g. cloudy, sediment, foul smelling
- Disregard positive urinalysis results for protein, leucocytes, blood or nitrite

Do not collect any urine specimens for culture

YES
Is the IDC still clinically indicated?

YES
Collect CSU from the existing IDC
Note: It may be difficult to interpret culture results if catheter has been in situ >48 hours due to biofilm colonisation.

NO
If IDC was removed, would patient be able to produce a clean MSU?

YES
Remove IDC and collect MSU

NO
Remember:
- Avoid dipstick urinalysis for asymptomatic patients - positive reactions for nitrite, pyuria, leukocyte and protein are likely but do not warrant laboratory investigation.
- Adults with spinal cord injury may have a different symptom presentation or may not present with pain. Seek further advice from a senior clinician if UTI is suspected.
- Asepsis must be maintained when collecting specimens and changing catheters.
- Document the indication for urine specimen collection.
- Interpret urine culture results with caution if patient was on an antimicrobial regime at the time of or prior to specimen collection.
- Signs and symptoms of UTI among older patients, particularly those with dementia, are often vague or atypical.

IDC: Indwelling urinary catheter
UTI: Urinary tract infection
MSU: Mid stream urine
CSU: Catheter specimen of urine

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Appropriate urine specimen collection

Pilot testing @ 4 sites

Finding 1: Nothing changed

3 sites (ICU, ED, Ortho)

Validated that existing approach to specimen collection was good

Finding 2: Significant reduction in CSU and total urine specimen collection

1 site (Geriatric)

Finding 3: Significant reduction in catheter days and catheter use

1 site (Geriatric)

Gralton, J., Boston, B., Cook, C. Thomas, K., Taylor, P., Kizny Gordon, A., Smerdely, P., Hughes, G., Louey, M. Curtis, P. Improving the appropriateness of urine specimen collection. *Infection, Disease and Health*. In Press

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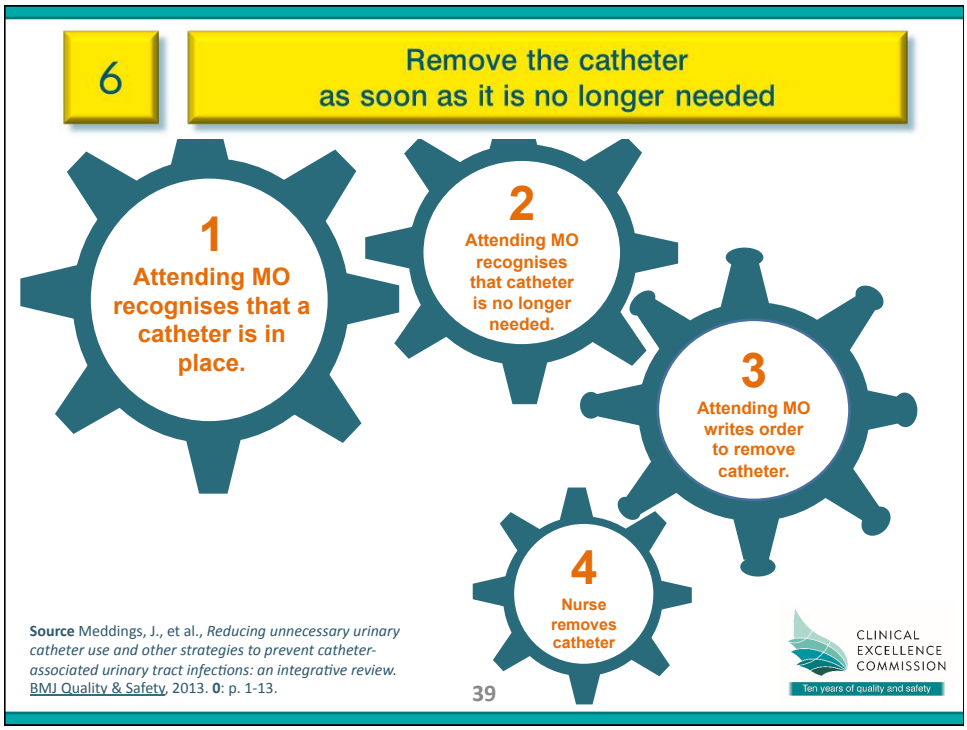
6
Remove the catheter as soon as it is no longer needed
1
Attending MO recognises that a catheter is in place.
2
Attending MO recognises that catheter is no longer needed.
3
Attending MO writes order to remove catheter.
4
Nurse removes catheter
Source Meddings, J., et al., Reducing unnecessary urinary catheter use and other strategies to prevent catheter-associated urinary tract infections: an integrative review. BMJ Quality & Safety, 2013. 0: p. 1-13.
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6
Remove the catheter as soon as it is no longer needed
Unaware catheter is in place
• Not documented
• Not handed over
Unaware of indication for catheterisation
• Incomplete documentation/handover
• Reluctance
Attending MO is not available to order removal
• Unpredictable rounding
• Timing for TOV
No removal order
• Incomplete documentation
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Criteria led urinary catheter removal protocol

Evidence based - nurse led removal protocols

- Alexaitis et al, 2014: Catheterisation length ↓ 2.5 days
  CAUTI rate ↓ 20.5%
  Cost of CAUTIs ↓ 40.7%
- Parry et al, 2013: Catheter use ↓ 50%
  CAUTI incidence ↓ 70%
- Gotelli et al, 2008: Catheter use ↓ 7%

References:
Alexaitis, I. and B. Broome (2014). *Implementation of a nurse-driven protocol to prevent catheter-associated urinary tract infections*. Journal of Nursing Care Quality **29**(3): 245-252.
Parry, M. F., B. Grant and M. Sestovic (2013). *Successful reduction in catheter-associated urinary tract infections: Focus on nurse-directed catheter removal*. American Journal of Infection Control **41**: 1178-1181.
Gotelli, J. M., P. Merryman, C. Carr, et al. (2008). *A quality improvement project to reduce the complications associated with indwelling urinary catheters*. Urology Nursing **28**(6): 465-467.

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Criteria led urinary catheter removal protocol

Overall aim is to reduce duration of unnecessary catheterisation

- Reduce number of catheters days
- Reduce incidence of CAUTIs

Advantages

- No reliance on documented removal order
- Respects existing orders
- Links into trial of void
- Provides escalation pathways
- Reduces burden on attending medical officer
  - ⮑ Can be driven by other MOs or nursing staff (e.g. JMO removal round)

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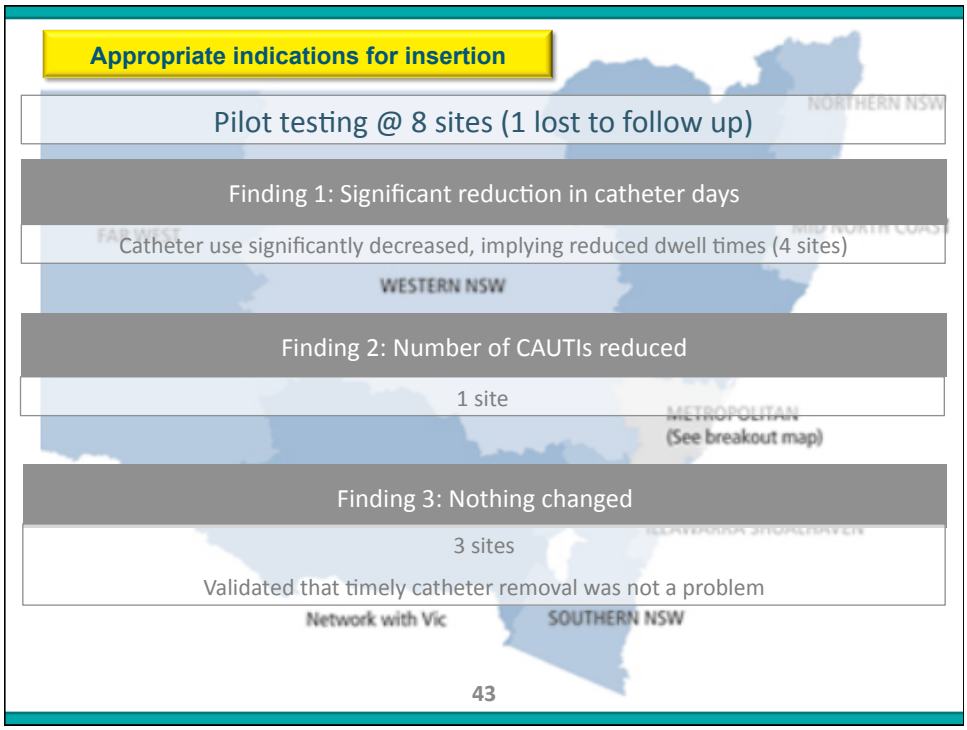
Appropriate indications for insertion
Pilot testing @ 8 sites (1 lost to follow up)
Finding 1: Significant reduction in catheter days
Catheter use significantly decreased, implying reduced dwell times (4 sites)
Finding 2: Number of CAUTIs reduced
1 site
Finding 3: Nothing changed
3 sites
Validated that timely catheter removal was not a problem
NORTHERN NSW
WESTERN NSW
METROPOLITAN
(See breakout map)
SOUTHERN NSW
Network with Vic
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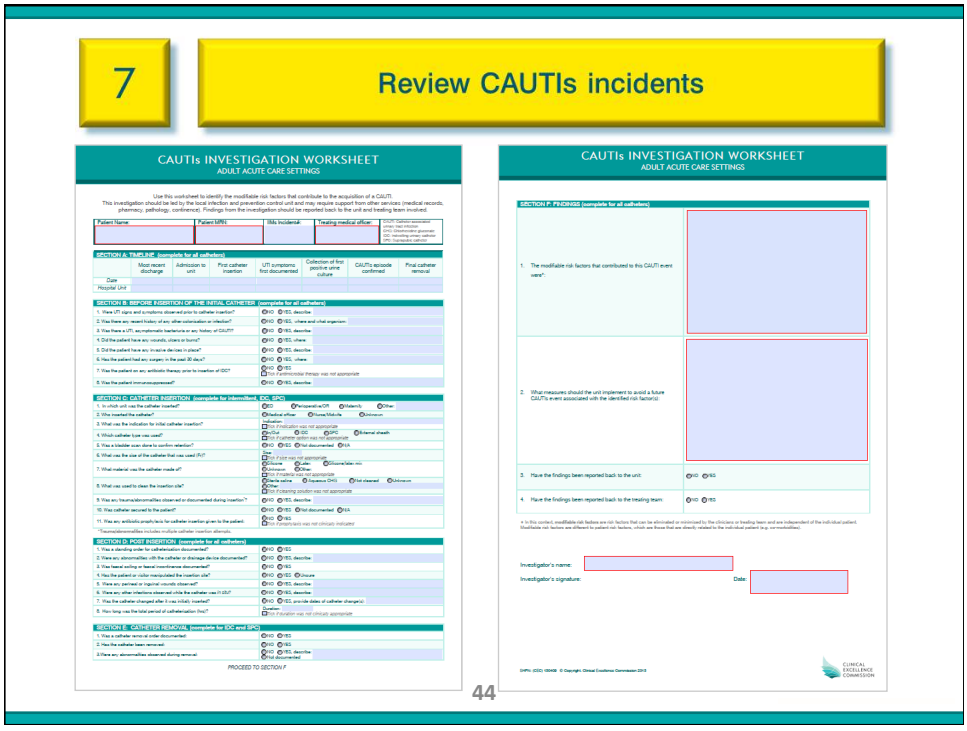
7
Review CAUTIs incidents
CAUTIs INVESTIGATION WORKSHEET
ADULT ACUTE CARE SETTINGS
CAUTIs INVESTIGATION WORKSHEET
ADULT ACUTE CARE SETTINGS
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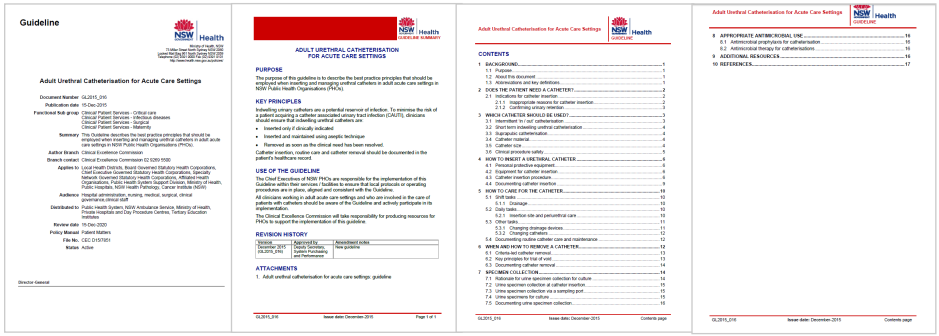
NSW Health Guidelines



Available from
http://www0.health.nsw.gov.au/policies/gl/2015/GL2015_016.html

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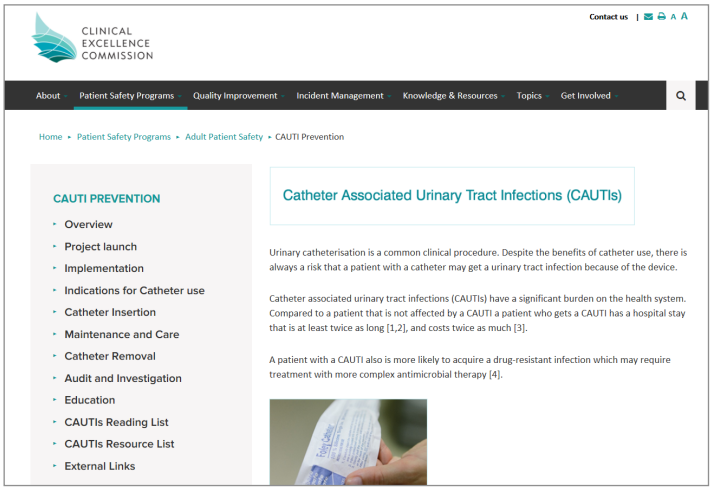
Where to find CEC resources



http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/cauti-prevention

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Thank you

For further information:
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www.cec.health.nsw.gov.au

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www.webbertraining.com/schedulepl.php

February 23, 2017	USING EXPERT PROCESS TO COMBAT *CLOSTRIDIUM DIFFICILE* INFECTIONS Speaker: **Isabelle Guerreiro** and **Camille Achonu**, Public Health Ontario, Canada
February 28, 2017	*(European Teleclass)* THE ROLE OF DRY SURFACE CONTAMINATION IN HEALTHCARE INFECTION TRANSMISSION Speaker: **Prof. Jon Otter**, Imperial College Healthcare NHS Trust, London
March 9, 2017	EVALUATION OF INFECTION CONTROL TRAINING Speaker: **Martin Kiernan**, University of West London
March 16, 2017	*(FREE Teleclass)* HOW TO BECOME CIC CERTIFIED WITHOUT BECOMING CERTIFIABLE Speaker: **Sue Cooper**, Public Health Ontario, Canada
March 28, 2017	*(European Teleclass)* TREATMENT OF SEVERE MRSA INFECTIONS: CURRENT PRACTICE AND FURTHER DEVELOPMENT Speaker: **Dr. Philippe Eggimann**, Centre Hospitalier Universitaire Vaudois, Switzerland
March 30, 2017	SCREENING FOR *STAPHYLOCOCCUS AUREUS* BEFORE SURGERY ... WHY BOTHER Speaker: **Dr. Hilary Humphreys**, The Royal College of Surgeons in Ireland

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