Indwelling Urinary Catheter Removal

Maintaining Catheter Awareness and Prompting Removal

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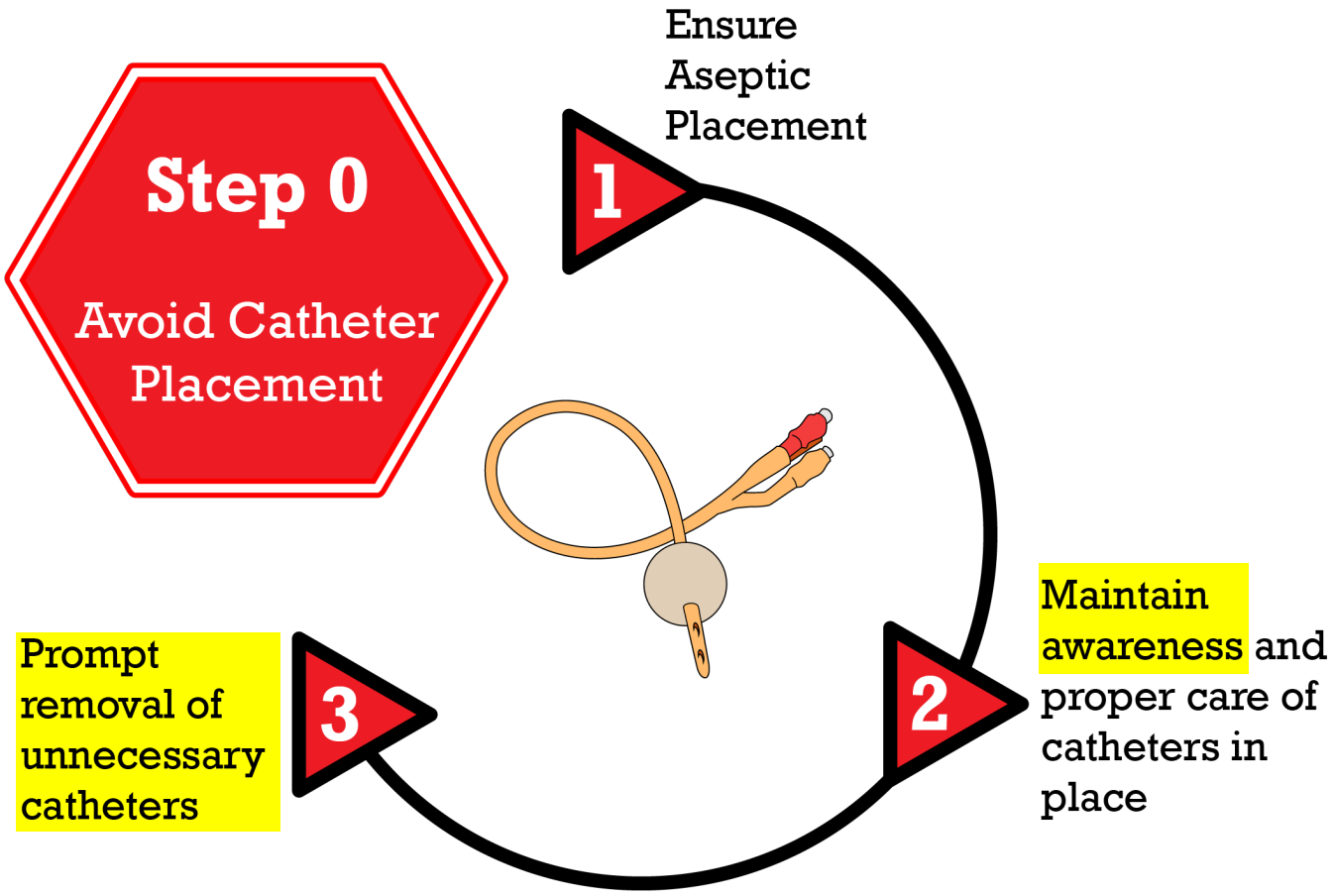
Disrupting the Lifecycle of a Urinary Catheter[1,2]



Patel PK, Gupta A, Vaughn VM, et al. Review of strategies to reduce central line-associated bloodstream infection (CLABSI) and catheter-associated urinary tract infection (CAUTI) in adult ICUs. *J Hosp Med.* 8 Nov 2017 [online ahead of print]. Used with permission of Journal of Hospital Medicine.

The Problem: Unnecessary Catheter Use[3-5]

- Urinary catheters are often placed unnecessarily, are in place without physician awareness, and are not removed promptly when no longer needed
- 10.4% to 32% of inappropriate use of indwelling catheters is in surgical and medical patients
- Prolonged catheterization is the number one risk factor for CAUTI

Traditional Steps to Catheter Removal

1. Provider recognizes catheter is present
2. Provider recognizes catheter is no longer needed
3. Provider writes order to remove catheter
4. Nurse sees order and plans to remove the catheter, or a nurse-driven protocol is present but not being used
5. Urinary catheter is removed

Socio-Adaptive Challenges To Removal[6-8]

- Communication patterns and catheter use based on unit culture
- Nurses' comfort level and feelings of empowerment with removal protocols
- Multi-professional rounding structures and processes that limit inclusion of discussion of catheter
- Overlapping responsibility for catheter removal

Strategies To Prompt Catheter Removal[9-12]

Strategy	Low Tech	High Tech
1. Reminder: 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 or catheter bag • Face to face in rounds	• Electronic medical record (EMR) reminder • Electronic tag for the urinary catheter bag
2. Stop Order: 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 • Nurse empowered to remove urinary catheters not meeting criteria by default, as part of initial catheter order • Preoperative written order to remove urinary catheter on postoperative day 1 or 2, depending on surgery • Routine postoperative order	• Computerized order for urinary catheter with indications and timed default stop date

Nurse- and Physician-Driven Strategies[4,12-13]

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

Team-Driven Strategies: Socio-Adaptive[5,7-8,14-15]

- Multi-professional rounds
  - Access EMR data during rounds for discussion on indication and duration
  - Use voice communication technology to assist in making the nurse aware that rounds are occurring on their patient to facilitate participation
  - Structure communication about devices to include current indication and duration
- Culture of Safety and empowerment
  - Creating a CUSP team or unit multi-professional quality committee to address communication challenges and help build respect among professional
  - Incorporating Learn From Defects to understand challenges with removal of catheters
  - Clarifying roles and authority for components of the life cycle of the catheter
  - Visible nursing leadership supporting nurse-driven protocols and removing obstacles to full implementation

Reminder Example–Low Tech[16]

****URINARY CATHETER REMINDER****

Date: ___ ___ / ___ ___ / ___ ___

This patient has had an indwelling urinary catheter since ___ ___ / ___ ___ / ___ ___ .

Please indicate below **EITHER (1)** that the catheter should be removed, **OR (2)** that the catheter should be retained. If the catheter should be retained, please state **ALL** of the reasons that apply.

❑ Please discontinue indwelling urinary catheter; or

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

- ❑ Urine volume measurement need:
  - **Hourly** urine volume measurement being used to inform and provide treatment **AND/OR**
  - **Daily** urine volume measurement being used to provide treatment AND volume status CANNOT be adequately or reliable assessed without an indwelling urinary catheter
- ❑ Patient has urologic problem that is being treated with an indwelling urinary catheter
- ❑ Urine sample that CANNOT be collected by non-catheter method such as urinal, external catheter, ISC
- ❑ Indwelling urinary catheter is providing comfort from severe distress related to urinary management that cannot be addressed by non-catheter option, ISC, or external catheter

ISC = intermittent straight catheter

Surgical Stop Order Example–High Tech

Electronic Urinary Catheter Protocol

Continue Urinary Catheter Only If:

- ❑ Patients with urinary catheter inserted by urologist
- ❑ Urology physician consult (includes pending consults)
- ❑ Day of surgery if required for procedure (not to exceed 24 hours)
- ❑ Bladder outlet obstruction
- ❑ Urologic/perineal procedures if required by surgeon
- ❑ Continuous bladder irrigation
- ❑ Movement intolerance due to severe impairment (e.g., severe contractures, pelvic or hip fractures)
- ❑ Open stage III/IV pressure ulcer to sacrum/perineum AND incontinent and cannot protect wound otherwise
- ❑ Critically ill patient with titrating vasopressors or receiving massive transfusion of blood products that require hourly intake and output
- ❑ Mechanically ventilated patients receiving deep sedation and/or paralytics

Remove Urinary Catheter:

- ❑ Patient does not meet criteria

Are Catheter Reminders and Stop Orders Effective?[17]

- In a systematic literature review of 30 studies, including 5 studies of only ICU patients, these interventions reduced CAUTI significantly—**by 53%**
- How many CAUTIs could your unit avoid?

Baseline rate of CAUTI episodes per 1,000 catheter days	Number of avoided CAUTI episodes per 1,000 catheter days anticipated
5	2.7 (95% CI 1.8 to 3.5)
10	5.3 (95% CI 3.6 to 7.0)
20	10.6 (95% CI 7.3 to 13.9)

CI = confidence interval

- However, catheter reminders or stop orders were only used **in about 50% of hospitals**

ICU and Peri-Procedural Protocols[10,18-22]

Setting	Strategy
ICU	• Daily checklists used in multi-professional rounds • Daily urinary catheter rounds in ICU by nurses • Nurse-empowered stop orders • Daily nurse review for indications and removal if appropriate via nurse-driven protocol • Daily assessment required by physicians of catheter need
Peri-Procedure	• Procedure-specific protocols for catheter placement and post-op stop orders.

Clinical Case for Discussion: Mr. Jones

Mr. Jones, a 57-year-old male, has been in the surgical ICU for 24 hours status post an esophagectomy with esophagogastrostomy for adenocarcinoma of mid-esophagus. His BP is 130/80, pulse is 82, and he is on pressure support ventilation. Urine output averages 80 cc/hr. Can the urinary catheter be removed?

A. No, because the indwelling urinary catheter is needed to measure hourly urine output

B. No, because the patient had a major thoracic procedure

C. No, because he is still on a mechanical ventilator

D. Yes, because hourly urine output is no longer needed to guide his care

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

Removing Urinary Catheter in Surgical Patients[23-28]

- Consider using the Michigan Appropriate Perioperative criteria (MAP) criteria for general and orthopedic procedures to determine appropriateness. OR procedures are placed into 3 groups: placement should be avoided, consider removing in the OR, use in the OR and post-op day 1 removal
- Standardizing postoperative catheter removal is critical to reducing catheter use
- Catheters for OR procedures (such as laparoscopic with suprapubic port) can be removed before leaving the OR. Discuss OR catheter removal during the third surgical timeout/debrief before that patient leaves the OR
- Patients with thoracic epidural catheters can have urinary catheters removed, often within 48 hours after surgery
    - Use mobilization and sedation vacation to prevent urinary retention while epidurals are in place and once epidurals are removed

Safe Surgical Checklist Example[25,28]

- Consider incorporating the question, "Do we need a catheter for this procedure based on the MAP criteria?"
- Surgical checklists include a "Procedure Time Out" of tasks to perform before the patient leaves the OR

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

If No, when?
☐ PACU (post-anesthesia care unit)
☐ Postoperative Day 1
☐ Other: _____

WHO Surgical Safety Checklist[46]

Clinical Case for Discussion: Mr. Grant

Mr. Grant is a 66-year-old man admitted to the ICU with fluid overload from congestive heart failure and renal insufficiency. He initially required a diuretic drip but is now clinically much improved with intermittent diuretic dosing. He is getting transferred to the floor today. Does he need an indwelling urinary catheter?

A. Yes, because all patients on diuretics need a urinary catheter

B. Yes, because the floor physician will use hourly urine output to guide diuretic dosing

C. No, as long as Mr. Grant is able to urinate by other means (urinal, external catheter, or bladder scanning and intermittent catheterization), the staff can measure urine output/volume status without a catheter (such as by daily standing weights)

D. Yes, because the urinary catheter will decrease Mr. Grant's risk of falling when getting up to urinate frequently

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Pearls and Pitfalls of Reminders and Stop Orders[5]

Pearls

- Tailor reminder type to care setting (stickers, electronic, etc.) and develop automated, timed reminders/stop order
- Embed appropriate indications to guide catheter use in the EMR
- Remember to include catheter alternatives
- Empower nurses to remove without obtaining additional order from physician team
- Use periodic audits, such as “catheter rounds” by nurse leadership, to verify appropriateness and improve implementation of catheter removal strategies
- Display at the bedside catheter data to help prompt removal or easily located in the EMR for discussion at handoff and multi-professional rounds
- Engage the patient and family in understanding importance of removal and engaging in the process

Pitfalls

- Reminders may be ignored, particularly ill-timed EMR alerts
- EMRs may make ordering catheter alternative difficult
- Employ strategies that combine the use of electronic reminders and socio-adaptive strategies to improve buy-in and implementation

Factors That Affect Success of Reminders and Stop Orders[4-5,7-8]

- Communication patterns and unit culture relative to urinary catheter use
- Nurse comfort with urinary catheter removal protocols
- Staff knowledge and skills
- Respect among nurses and physicians
- Ownership by frontline staff, local leadership, and quality staff to review, remind, and reinforce using Root Cause Analysis or Learn From Defects
- Information technology support for data collection
- Feedback using data on catheter use
- ICU team's recognition of the hazard of urinary catheters

Take-Home Points

- Reminders and stop orders can improve awareness of urinary catheters and prompt removal of unnecessary urinary catheters
- There are many low-tech and high-tech strategies to implement removal prompts and stop orders
- Nurse and physician “buy-in” is extremely important in overcoming barriers to removing unnecessary urinary catheters
- Sustaining improvements requires monitoring and feedback on urinary catheter use and rates
- Including catheter removal in routine clinical nurse-to-physician discussions can improve and sustain implementation

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