

Children's National Hospital
Division of Nursing & Patient Services

Nursing Practice Guideline

Chapter: General Nursing 3

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Care of the Patient with an Indwelling Urinary Catheter

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I. Introduction

Urinary tract infections (UTIs) are one of the most common types of healthcare-associated infection, reported by acute care hospitals. Most healthcare-associated UTIs are associated with an indwelling urinary catheter. Catheter Associated Urinary Tract Infection (CAUTI) is the most common hospital-acquired infection and has been associated with increased morbidity, mortality, hospital cost, and length of stay.

The most important risk factor for developing a CAUTI is prolonged use of an indwelling urinary catheter. Additional risk factors influencing the development of a CAUTI include, but are not limited to: sterile technique used with insertion and daily management.

II. Definitions/explanations

1. Urinary Tract Infection (UTI) – is an infection involving any part of the urinary system, including urethra, bladder, ureters, and kidney.
2. Catheter Associated Urinary Tract Infection (CAUTI) – occurs when microorganisms (typically bacteria) enter the urinary tract through the urinary catheter and cause an infection.
- B. Indwelling Urinary Catheter – is a drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system.
- C. Intermittent Catheterization – also known as “in-and-out” catheterization, involves brief insertion of a catheter into the bladder through the urethra to drain urine at intervals.
- D. External Catheter – is a urine containment device that fits over or adheres to the genitalia and is attached to a urinary drainage bag. Condom catheters & urinary bags are two common types used.

III. Assessment for Necessity

- A. Indications for Appropriate Use of Indwelling Urinary Catheter
 1. Patient has acute urinary retention or bladder outlet obstruction.
 2. Need for accurate measurements of urinary output in critically ill patients.
 3. Perioperative use for selected surgical procedures:
 - a. Patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract.
 - b. Anticipated prolonged duration of surgery (catheters inserted for this reason should be removed in PACU).
 - c. Patients anticipated receiving large-volume infusions or diuretics during surgery.
 - d. Need for intraoperative monitoring of urinary output.
 4. To assist in healing of open sacral or perineal wounds in incontinent patients.
 5. Patient requires prolonged immobilization (e.g. potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures).
 6. To improve comfort for end of life care if needed.
- B. Inappropriate Indications for Use of Indwelling Urinary Catheters
 1. As a substitute for nursing care of the patient with incontinence.
 2. As a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void.
 3. For prolonged postoperative duration without appropriate indications (e.g., structural repair of urethra or contiguous structures, prolonged effect of epidural anesthesia, etc.).
- C. Alternatives to Placement of Indwelling Urinary Catheters
 1. Consider using external catheters as an alternative to indwelling urethral catheters in cooperative male patients without urinary retention or bladder outlet obstruction.
 2. Consider alternatives to chronic indwelling catheters, such as intermittent catheterization, in spinal cord injury patients.
 3. Intermittent catheterization is preferable to indwelling urethral or suprapubic catheters in patients with bladder emptying dysfunction.
 4. Consider intermittent catheterization in children with myelomeningocele and neurogenic bladder to reduce the risk of urinary tract deterioration.

IV. Procedure

A. Identify Appropriate Size Indwelling Urinary Catheter

Attachment D – Pediatric Foley Sizing

Age	Male Catheter Size	Female Catheter Size
Premature infant	3.5Fr to 5Fr	3.5Fr to 5Fr
Newborn	5Fr	5Fr to 6Fr
Infant	5Fr to 6Fr	6Fr to 8 Fr
Toddler/preschool	8Fr to 10Fr	8Fr to 10Fr
School-aged	8Fr to 10Fr	8Fr to 12Fr
Adolescent	12Fr	12Fr to 14Fr

B. Equipment for Insertion

1. The indwelling urinary catheter bundle kit
2. An extra pair of sterile gloves
3. Appropriate sized indwelling urinary catheter, unless provided in bundle kit
4. Clean gloves for perineal cleansing
5. For intermittent catheterization, you will need “in and out” bundle kit and appropriate sized catheter if not supplied in kit

C. Indwelling Urinary Catheter Insertion Process

1. Provide education to patient and family using teach-back method when appropriate
 - a. Reason for necessity of urinary catheter
 - b. Procedure for placement of urinary catheter
 - c. Ongoing maintenance and catheter care
 - d. Expectations of how long catheter will remain in place
 - e. Address remaining questions and concerns
2. Verify LIP order, correct patient using two patient identifiers
3. Perform hand hygiene
4. Don clean gloves
5. Obtain appropriate sized indwelling catheter and bundle kit
6. Establish a sterile field
7. Place patient supine
8. Pick up under buttocks drape by edge without contaminating contents and place with shiny side down under area to be prepped
9. Perform perineal cleansing as needed
10. Perform hand hygiene.
11. Drop the catheter onto the sterile field
 - a. Follow the manufacturer's instructions for testing the balloon. Most manufacturers no longer recommend testing balloon catheters with inflatable balloons because testing may result in a larger French size or weakened balloon after deflation.
12. Don sterile gloves and attach Foley catheter to urine meter

13. Open the water-based lubricant and squeeze it onto the sterile field
14. Open the Povidone-iodine swabsticks
 - a. In case of allergy to Povidone-iodine, use BZK swabsticks to clean prior to catheter insertion.
15. Use the dominant hand to clean the area around the urethral meatus with Povidone-iodine swabsticks. Use BZK swabsticks if the child is allergic to Povidone-iodine. Use a new swabstick for each wipe. After cleansing, continue to keep the non-dominant hand on the area and allow the solution to dry.
 - a. For females, separate the labia with the thumb and index finger of the non-dominant hand and cleanse the perineal area, cleaning from the front to the back.
 - b. For uncircumcised males, retract the foreskin gently until the meatus is seen. For all males, hold the penis with the non-dominant hand and cleanse the head of the penis in a circular motion, beginning at the meatus and cleaning to the outer edge of the glans.
16. Hold the catheter in the sterile dominant hand and lubricate the catheter tip with water-based lubricant. Place the end of the catheter in a sterile specimen container.
17. Insert the catheter into the urethral meatus and gently advance it the appropriate distance for the patient's age (generally, at least 2.5 cm to 5 cm [1 to 2 in] beyond the point at which urine flow is noted).
 - a. For females, if the catheter is placed in the vagina, leave the catheter in place and attempt the insertion again with a new sterile catheter to decrease the likelihood of reentering the vagina a second time.
 - b. For males, hold the penis at a 90-degree angle from the body to straighten the urethra and allow for an easier insertion.
 - c. Anticipate that slight resistance may be noted when the catheter reaches the urethral sphincter. Use relaxation techniques, if the child is able to cooperate, and continue to advance the catheter. Do not force the insertion against resistance.
18. Inflate the balloon (unless otherwise indicated i.e. NICU patients) using the syringe with sterile water to the volume indicated by the manufacturer. Once the balloon is inflated, gently pull back on the catheter to ensure that the catheter is positioned at the bladder neck.
 - a. Do not continue to inflate the balloon if resistance is noted during inflation. Use sterile water only to inflate the balloon. **Do not use saline solution** to inflate the balloon, because the solution may evaporate and leave salt crystals, making balloon deflation difficult. Do not use air to inflate the balloon because a balloon inflated with air may float above the level of urine in the bladder.
 - b. For uncircumcised males, return the foreskin to its original position after the balloon is inflated to prevent paraphimosis.
19. Secure the catheter to the patient's thigh, allowing enough slack so that the child can move his or her leg without pulling on the catheter.
20. Apply **Stabilization device (i.e. Griplock, tegaderm for NICU/CICU)**. This will help avoid movement of the catheter.
Position the drainage bag below the level of the bladder, ensuring that no dependent loops are present.
21. Discard supplies, remove gloves, and perform hand hygiene.
22. Document the procedure in the patient's medical record.

V. Maintenance

A. Assess Indwelling Urinary Catheter Necessity

1. Assess need of urinary catheter every day in collaboration with the LIP and/or primary team.

2. Evaluate for possible alternatives to indwelling urinary catheter.
3. Implement nurse-driven protocol for catheter removal if applicable in your clinical area.

B. Indwelling Urinary Catheter Care

1. Assessment
 - a. Maintain unobstructed urine flow. Ensure that the drainage bag is always positioned below the level of the bladder and that no kinks or dependent loops are present. Do not place the drainage bag on the floor. This practice will prevent urine from back flowing into the bladder. (Gould, 2009).
 - b. Ensure securement device is intact and there is enough slack on the catheter to avoid pulling with patient movement.
 - c. Assess urethral meatus for signs of infection or excoriation.
 - d. Assess color and quantity of urine output.
2. Empty drainage bag regularly and prior to bag becoming 2/3 full. The drainage bag spout should not touch anything while emptying the bag.
3. Perform indwelling urinary catheter care at a minimum of every shift and more frequently as needed if the indwelling urinary catheter becomes contaminated (i.e. stool). See procedure below.

C. Procedure for Indwelling Urinary Catheter Care

1. Perform hand hygiene before patient contact.
2. Verify the correct patient using two identifiers per organizational policy.
3. Assess the patient and family for knowledge related to catheter care and provide education as needed.
4. Provide privacy for the patient.
5. Organize equipment and supplies for catheter/perineal care and place within reach during procedure.
6. Perform hand hygiene and don gloves.
7. Raise bed to appropriate working height. If side rails are raised, lower side rail on working side.
8. Position the patient and cover with bath blanket, exposing only the perineal area.
 - a. Female: Dorsal recumbent position
 - b. Male: Supine position
9. Place waterproof pad under the patient.
10. Remove gloves, perform hand hygiene, and don gloves.
11. Remove catheter from stabilization device.
12. Expose urethral meatus with non-dominant hand:
 - a. Female: Gently retract labia to fully expose urethral meatus and catheter insertion site. Maintain position of hand throughout procedure.
 - b. Male: Retract foreskin if patient is not circumcised. Hold penis at shaft just below glans, maintaining position throughout procedure.
13. Assess urethral meatus and surrounding tissues for inflammation, swelling, and discharge, and ask the patient whether burning or discomfort is present.
14. Provide routine perineal care with soap and water. Application of topical antimicrobial agents is not recommended.
15. Stabilize catheter using non-dominant hand. Use clean washcloth or prepackaged, approved wipe to clean the perineal area and portion of catheter in contact with the perineum or meatus.
16. Remove all traces of soap and pat dry with a clean towel. For males, reduce or reposition the foreskin after care.

17. Secure foley with stabilization device.
18. Avoid pulling on or placing tension on the catheter.
19. Discard supplies, remove gloves, and perform hand hygiene.
20. Document the procedure in the patient's record.

D. Indwelling Urinary Catheter Contamination with Stool

1. Cleanse with soap and water (or castile soap and water), following procedure above.
2. Leave diaper open to prevent further contamination with stool.

E. Irrigating Urinary Catheter

1. Provide education to patient and family
 - a. Reason for irrigation
 - b. Procedure for irrigation
 - c. Address questions and concerns
2. Verify LIP Order
3. Verify correct patient using two identifiers per hospital policy
4. Don clean gloves
5. Gather supplies
 - a. 50ml catheter tip syringe
 - b. Irrigation solution
6. Draw up specified volume of irrigation solution as ordered by LIP into syringe
7. Disconnect catheter from tubing
8. Insert syringe into catheter
9. Slowly and gently instill the irrigation solution through the catheter
10. Disconnect syringe from catheter and allow fluid to drain OR aspirate solution from bladder if ordered by LIP.
11. Repeat procedure until returns are clean of mucous, sediment, or clots
12. If the flow of urine is not re-established, stop and call LIP.

F. Obtaining Sterile Urinary Culture

1. If a urinary tract infection is suspected, obtain a sterile urine culture as soon as possible. Common symptoms of urinary tract infections include, but are not limited to:
 - a. Burning or pain in the lower abdomen.
 - b. Fever
 - c. Bloody urine may be a sign of infection, but also can be caused by other problems.
 - d. Increased white blood cell count.
 - e. Sediment noted in urine.
2. Obtaining sample from an indwelling urinary catheter drainage system:
 - a. If a small volume of fresh urine is needed for examination (i.e. urinalysis or urine culture), aspirate the urine from the needleless sampling port with a sterile syringe adapter after cleaning the port with Chlorhexidine wipe for 30 seconds, and allow to dry for 30 seconds.
 - b. If obtaining large volumes of urine for special analysis (not culture), aseptically access urinary collection device and collect sample in a clean container.

VI. Removal

A. Indications for Replacing or Removing Indwelling Urinary Catheter

1. Need for catheter no longer exists.
2. Obstruction of catheter unable to be resolved.

3. Malfunction of equipment unable to be resolved.
4. Proven urinary tract infection by sterile urine culture.
5. Catheter leakage unable to be resolved.

B. Equipment Necessary For Removal of Indwelling Urinary Catheter

1. Appropriate size syringe to deflate the balloon.
2. Clean gloves.

C. Procedure For Removal of Indwelling Urinary Catheter

1. Perform hand hygiene.
2. Verify correct patient using two patient identifiers.
3. Determine the volume of sterile water placed in the catheter's balloon upon insertion.
4. Provide for privacy.
5. Position the patient supine.
6. Perform hand hygiene and don clean gloves.
7. Place waterproof pad under patient's buttocks.
8. Gently remove material used to secure catheter, using adhesive remover as necessary.
9. Deflate balloon by attaching a syringe to the inflation valve and allow the water to withdrawal by itself. Do not manually withdrawal the fluid into the syringe.
 - a. If the balloon cannot be completely deflated, the catheter should be left in place and urology should be consulted.
10. Remove catheter in a steady and controlled motion.
 - a. If resistance is met during catheter removal, ensure all fluid has been withdrawn from balloon and attempt removal again. If resistance remains, catheter should be left in place and urology should be consulted.
11. Discard supplies; remove gloves and perform hand hygiene.
12. Document procedure in EHR.

D. After Removal of Indwelling Urinary Catheter

1. Monitor urinary output for possible retention or infection.

VII. Surveillance

- A. Consider surveillance for CAUTI when indicated by facility-based risk assessment.
- B. Identify the patient groups or units on which to conduct surveillance based on frequency of catheter use and potential risk of CAUTI.
- C. Use standardized methodology for performing CAUTI surveillance.
- D. Examples of metrics that should be used for CAUTI surveillance include:
 1. Number of CAUTI per 1,000 catheter-days.
 2. Number of bloodstream infections secondary to CAUTI per 1,000 catheter-days.
 3. Catheter utilization ratio (urinary catheter days/patient days) x 100.
 4. Use CDC/NHSN criteria for identifying patients who have symptomatic UTI's

VIII. Unexpected Outcomes Regarding Indwelling Urinary Catheters

COMPLICATION	PREVENTION	TREATMENT
Inability to advance catheter, Resistance	<ul style="list-style-type: none"> • See procedure for correct insertion position • Use appropriate size catheter for patient's age 	<ul style="list-style-type: none"> • Utilize relaxation techniques for patient including deep breathing while applying gentle pressure • Do not force catheter

		<ul style="list-style-type: none"> • Urology consult
Inability to inflate balloon	<ul style="list-style-type: none"> • Test balloon with sterile water prior to insertion if recommended by manufacturer's instructions 	<ul style="list-style-type: none"> • Reposition as appropriate, check depth of catheter • Remove catheter if unable to resolve
Inflation of balloon in urethra	<ul style="list-style-type: none"> • Advance catheter to recommended depth prior to inflating balloon • If resistance is felt or patient develops acute pain, stop and reevaluate 	<ul style="list-style-type: none"> • Deflate balloon • Remove catheter • Assess patient
No urinary drainage, Concern for incorrect catheter placement	<ul style="list-style-type: none"> • Visualize urinary meatus with insertion • Select appropriate size catheter for patient's age • Advance catheter to recommended depth 	<ul style="list-style-type: none"> • Assess patient • Assess catheter size and placement • Assess balloon • Remove catheter if unable to resolve concerns
No urinary drainage, Catheter occlusion	<ul style="list-style-type: none"> • Follow procedure for catheter and bag placement below bladder • Assess frequently for kinks or dependent loops • Ensure patient's clinical status includes adequate hydration 	<ul style="list-style-type: none"> • Assess site of occlusion. Reposition or replace urinary collection bag if appropriate • Obtain LIP order for bladder scan • Notify LIP • Follow procedure for catheter irrigation if ordered
Sediment or cloudy urine	<ul style="list-style-type: none"> • Perform catheter and perineal care every 12 hours and when contaminated • Adhere to sterile techniques upon insertion and accessing system 	<ul style="list-style-type: none"> • Assess patient • Report concerns to LIP • Follow procedure for obtaining sterile urine culture if ordered • Document in EHR
Skin breakdown	<ul style="list-style-type: none"> • Use of approved securement device • Use skin prep when appropriate 	<ul style="list-style-type: none"> • See Skin Care NPG

	<ul style="list-style-type: none"> • Provide enough slack on catheter line when secured 	
Bladder perforation	<ul style="list-style-type: none"> • Follow procedure for bag placement and frequent urinary collection bag emptying • Monitor urinary output 	<ul style="list-style-type: none"> • Notify LIP • Anticipate Urology consult
Inadvertent removal of catheter	<ul style="list-style-type: none"> • Use of approved securement device • Inflate balloon with sterile water to appropriate volume 	<ul style="list-style-type: none"> • Assess patient and site • Dispose of contaminated supplies • Document and inform LIP • Reassess need for indwelling urinary catheter

IX. Patient And Family Education

- A. Educate the patient, when appropriate, and family about the procedure, purpose of indwelling urinary catheter, treatment, and care.
- B. Inform patients and family the actions taken by the hospital to reduce CAUTI
- C. Verify understanding by using teach back method when appropriate.
- D. Utilize Child Life Specialist and comfort interventions when appropriate.
- E. Address additional concerns or questions as they arise.
- F. Document as appropriate.

X. Documentation

- A. Document indwelling urinary catheter insertion procedure including catheter size, instilled water amount into balloon, date, and time.
- B. Document ongoing indwelling urinary catheter assessment in the patients EHR.
- C. Indwelling urinary catheter care preformed every shift
- D. Removal procedure including date and time indwelling urinary catheter removed.
- E. Intermittent catheterization procedures performed including date, time, and catheter size used.
- F. Patient/family education.

XI. References

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XII. Reviewers

- A. Shared Nursing Leadership Practice Council – Systems Level
- B. HAC CAUTI Team
 - 1. CICU Attending Physician
 - 2. PICU Attending Physician
 - 3. Director of Nephrology
 - 4. Infection Control
 - 5. Department of Urology

XIII. Legal Statement

The nursing practice guidelines are intended to serve as a reference for the nurses in their practice. The compilation of information provided is drawn from relevant literature research from juried, reliable and respected sources. The guidelines are not intended to replace individual judgment but instead to inform decision making. The material is updated approximately every 12-24 months.

XIV. Approval

Senior Vice President & Chief Nursing Officer

Date

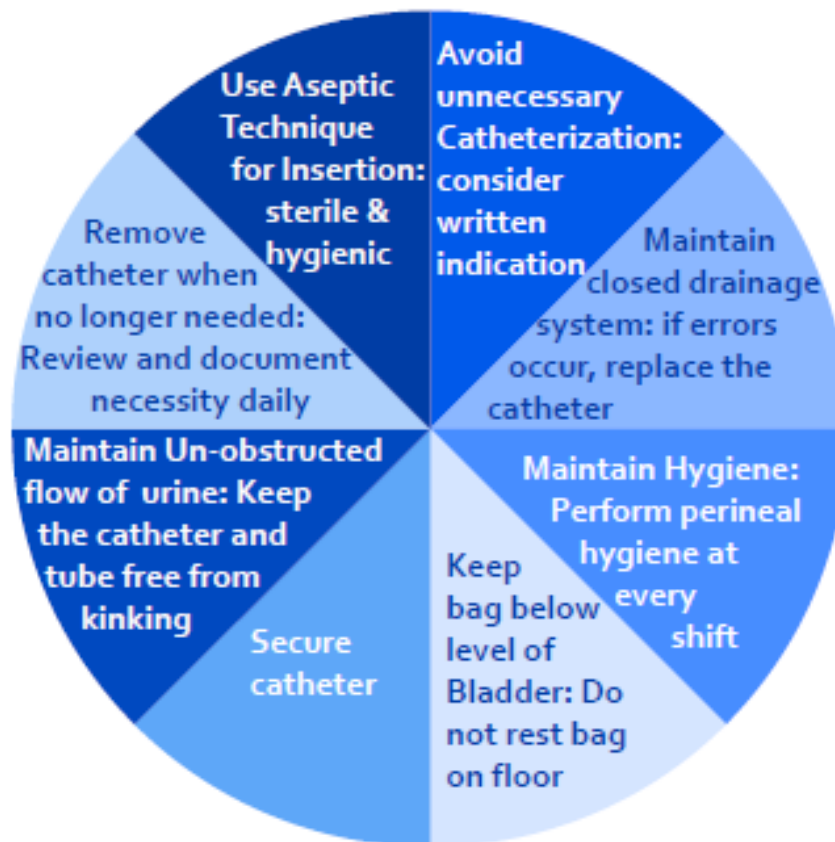
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Catheter Associated Urinary Tract Infection

CAUTI Bundle

Care bundles are recommended best practices to reduce harm in patients.
In 2016, Children's National saw a 82% reduction
in CAUTI compared to 2015.



For more information on bundles, please contact the unit educator or manager.

zero in on
zero harm