

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE, AND REMOVAL

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Critical Points

1. Indwelling urinary catheters are usually double-lumen catheters with an inflatable retention balloon that keeps the catheter in place, such as a Foley® catheter. A contraindication for insertion of a urinary catheter is a urethral tear or abnormal anatomy.
2. Indications for catheter need:

Urinary Catheter Indication	Interpretation
Hemodynamically unstable	<ul style="list-style-type: none"> • In general, urinary catheters should be removed as soon as possible for these indications; usually at or before 48 hrs.
Intensive fluid monitoring	<ul style="list-style-type: none"> • For monitoring fluid resuscitation or diuretic therapy.
Relief of outlet obstruction Surgical indication	<ul style="list-style-type: none"> • For urinary catheters placed for urologic procedure/surgery, discuss with appropriate team (e.g., urology, trauma and/or transplant) before removing.
End of life comfort	<ul style="list-style-type: none"> • Ideally placed for 48 hrs. or less.
Wound prevention/healing	<ul style="list-style-type: none"> • For prevention of skin or wound exposure to urine.
Radioactivity/Chemotherapy	<ul style="list-style-type: none"> • For patients undergoing MIBG therapy to contain radioactive urine. • To prevent skin damage in some diapered patients receiving caustic chemotherapy (e.g., HD MTX, HD ARA-C)

3. Review Appendix C: [Post Indwelling Urinary Catheter Algorithm](#) when considering placing a catheter on a patient who has had one removed in the last 48 hours. In addition, consult the [Bladder Scan](#) and [Clean Intermittent Catheterization](#) procedures, as appropriate.
4. Consider external devices: [Primafit](#) (female genitalia), [Primofit](#) or condom catheters (male genitalia) ([Appendix D](#))

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

5. Catheter insertion is an aseptic procedure performed by a Registered Nurse (RN) and a Licensed Vocational Nurse (LVN) in the Ambulatory Care setting who has a documented competency procedure). RNs, LVNs, or Patient Care Assistants who have been oriented to this procedure perform catheter care.
6. Complications related to indwelling catheters are bladder spasm, trauma, urethral tear or perforation, catheter encrustation, urethral strictures, catheter knotting, and urinary tract infection.
7. Review Catheter-Associated Urinary Tract Infections (CAUTI) prevention bundle: [Appendix B](#).
8. Temperature Sensing catheters are not MRI compatible.

Supplies

- See [Appendix A](#): Catheter Size and Supplies.

Procedure

PREPARATION FOR URINARY CATHETER INSERTION

1. Obtain provider order and review indication for placement.
2. Explain procedure to patient and family (as appropriate for age/condition).
3. Contact Child Life for procedural support as appropriate.
4. Review patient history of allergies to povidone-iodine. Use soap/water if allergic.
5. Consider procedural pain and treatment.

INSERTION OF A CATHETER

1. Use aseptic technique and sterile equipment.
2. Gather supplies (see [Appendix A](#)).
 - Gather kit and additional supplies.
 - If inserting a temperature sensing or 3-way irrigation catheter, use the kit and detach the kit's urinary catheter aseptically and replace it with the desired urinary catheter prior to insertion. Follow the steps below for optimal insertion technique.
 - If inserting a urinary catheter for a MIBG patient, use the kit to insert the catheter, then aseptically break the red seal, detach the drainage tubing set, and replace it with the longer drainage set .
3. View [Video for 6F thru 14F SureSTEP® kit](#). Scroll to appropriate timeline section below.
 - Male – minute 02:48 to 08:44
 - Female – minute 08:45 to 13:15
 - StatLock for all placements – minute 17:49 to 19:30
 - Care & Maintenance – minute 13:16 to 17:48, following procedure standards
4. Obtain assistance in positioning patient and preventing contamination during procedure.
5. Place disposable pad (or clean diaper for neonates) beneath buttocks.
6. Perform hand hygiene and don PPE.
7. Prepare supplies using aseptic technique on clean bedside table.
8. Next steps, specific to catheter kit type:

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

3.5 F & 5 F Kits (Utah Medical®)	6 F thru 14 F Kits (SureSTEP®)
Cleanse urethral area with wipes	Remove kit from package and don clean gloves
Remove gloves and perform hand hygiene	Cleanse urethral area with kit wipes
Open kit	Remove gloves and perform hand hygiene with provided alcohol hand sanitizer
Place drape between legs and fenestrated drape on patient with opening exposing urethra	Open kit wrapping and place between legs close to the insertion site. <i>If MIBG pt., aseptically break red seal, disconnect and discard provided tubing, and connect longer tubing set (PMM 650) to catheter.</i>
Don sterile gloves	Don sterile gloves
Open betadine swab package	Open under pad, grasp edges and roll partially around gloves and place beneath patient buttock, shiny side down, being careful to prevent glove contamination
Catheter balloon, if present, is not inflated to avoid urethral tears unless otherwise ordered by MD	Position fenestrated drape on patient with opening exposing urethra
Open lubricant and lubricate 1 cm of the catheter end	<ul style="list-style-type: none"> • Saturate 3 foam swab sticks in Povidone Iodine • Attach water filled syringe to the inflation port, DO NOT test the balloon. NOTE the fill volume printed on catheter inflation cap • Remove catheter from wrap and lubricate catheter tip
<p>Female: Spread labia using gauze in tray and hold catheter 3-4 cm from tip; aim catheter towards urethra and posteriorly. Insert lubricated catheter, advance catheter until urine flows then an additional 1-2 cm depending on the neonate size. Urethral length in a term infant female is approximately 2.2 cm.</p> <p><i>If catheter is inadvertently inserted into vagina, leave catheter in place and attempt urethral insertion again with a new sterile catheter.</i></p>	<p>Female: Using a downward stroke cleanse the right labia minora with saturated Povidone Iodine swab, then discard. Repeat it, do the same for the left minora, with the last swabstick, cleanse the middle area between the minora, including the urethra.</p>
<p>Male: If circumcised, hold penis just below the glans with non-dominant hand. If uncircumcised, retract foreskin with non-dominant hand, then hold penis at 60 to 90° angle from body, straightening the urethra. Insert catheter and advance until urine flow begins, then advance 1-2 cm more depending on neonate size. Urethral length in a term infant male is approximately 6 cm.</p>	<p>Male: If circumcised, hold penis just below the glans with non-dominant hand. If uncircumcised, retract foreskin with non-dominant hand, then grasp penis. Cleanse the penis in a circular motion starting at the meatus and working outward using the Povidone iodine swabstick, discarding each when at outward area.</p>

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

3.5 F & 5 F Kits (Utah Medical®)	6 F thru 14 F Kits (SureSTEP®)
Secure catheter to thigh with Duoderm and Tegaderm. Male: Direct penis toward the chest and secure catheter additionally with small Tegaderm at the meatus	Proceed with catheterization, when tip has entered bladder and, urine is visible in the drainage tube, insert catheter 2 more inches and inflate balloon with fill volume listed on catheter inflation cap., DO NOT overfill or under fill. <i>NOTE: if catheter is inadvertently inserted into vagina, leave catheter in place, and attempt urethral insertion again using a new sterile catheter kit.</i>
Cleanse perineal area with saline wipe	Once inflated, gently pull catheter until the inflated balloon is snug again bladder neck
Document procedure in medical record	Secure catheter to thigh using the included stabilization device, see Video in this procedure.
	Place drainage bag hanger on bed foot hook ensuring bag is below bladder, assess for good gravity flow. Consider placing drainage bag in basin on floor to promote gravity flow if needed.
	Secure tubing clip to bed linen to avoid kinking
	Wet disposable wash cloth and remove betadine using downward motion. Discard each after one wipe after use.
	Document procedure in medical record

MAINTENANCE OF INDWELLING CATHETER

1. Monitor urinary output. If decreased, assess for mechanical vs. physiological cause. See [Troubleshooting](#) section for mechanical problems.
2. Assess indwelling urinary catheter need daily using [indications](#) for catheter and document.
3. Maintain a sterile, continuously closed drainage system.
4. Ensure flow remains unobstructed and aided by gravity.
5. Ensure catheter and tubing are free of kinks and/or obstructions.
6. Position tubing to prevent reflux of urine which is associated with increased risk of infection. Keep drainage collection bag below bladder level without direct contact with floor or place bag in basin on floor. DO NOT place drainage bag on top of patient or bed during transport.
7. Ensure catheter is secured to thigh and change as needed when not clean, dry or intact. For SureSTEP catheter insertion, see [video for StatLock technique](#) (timeline 17:49 to 19:30). For 5F, see insertion step 7 above.
8. Perform daily perineal and meatus cleansing using CHG (unless contraindicated). For neonates, use sterile water unless feces present, in which case use a bathing product. Avoid vigorous meatus cleansing as this may increase risk for infection. No cleaning will occur in the male neonate due to use of Tegaderm® at the meatus.
9. Empty collection bag regularly and prior to transport, using a graduate container (not urinal) for each patient, and avoid allowing the draining spigot to touch the collecting container.
 - For 3.5/5 F catheters empty urine from burette into a clean container.
10. Empty collection bag when 2/3 full to prevent potential backflow.

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

DAILY CATHETER CARE

1. Gather Supplies.
 - Bath product: CHG cloth or CHG foam soap (e.g., Hibiclens), or soap/water if CHG contraindicated (see [CHG procedure](#)). Avoid using abrasive wash cloth.
 - Catheter securement device, if needed
2. Perform hand hygiene and apply clean gloves.
3. Obtain assistance in positioning patient and preventing contamination during care.
4. Assess anchor site, replace if not secure or skin assessment needed. The goal of securement is to prevent the catheter from moving in and out of the urethra.
5. **Male peri-care and catheter cleaning:**
 - With non-dominant hand retract foreskin if not circumcised, hold penis at shaft just below glans, maintaining position throughout procedure.
 - Assess urethral meatus and surrounding tissues for inflammation, swelling, erosion, and discharge. Ask whether burning or discomfort is present.
 - Wash meatus and down penis with CHG cloth or soap and warm water; then cleanse catheter for 6 inches from the body. Rinse off soap if needed (dependent on bath product used) and dry.
 - Return foreskin to natural position if uncircumcised.
 - Wash perirectal area separately

OR

Female peri-care and catheter cleaning:

- With non-dominant hand, gently retract labia to fully expose urethral meatus and catheter insertion site; maintain position of hand throughout procedure.
 - Assess urethral meatus and surrounding tissues for inflammation, swelling, erosion, and discharge.
 - Ask whether burning or discomfort is present.
 - Wash gently around meatus with CHG cloth or soap and warm water; then cleanse catheter for 6 inches from the body. Rinse off soap if needed (dependent on bath product used) and dry.
 - Wash rest of perirectal area separately
6. Document peri-care, urinary catheter care and bath when done. Peri-care and Urinary Catheter care is provided in tandem.

OBTAINING CULTURE FROM INDWELLING CATHETER

1. Gather supplies:
 - Povidone-iodine swab
 - Specimen container
 - 10 mL syringe
 - Sterile gloves
 - Personal protective equipment (PPE)
 - Plastic clamp (e.g., blue)
 - Patient label

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2. Obtain provider order for urine culture.
3. Perform hand hygiene and don PPE.
4. Using aseptic technique: open 10 mL syringe, specimen container, and sterile gloves.
5. Clamp urinary drainage bag 3 inches below access port on drainage tubing with blue clamp.
6. Prep access port with Povidone-Iodine swab for 2 minutes.
7. Don sterile gloves.
8. Draw 10 mL (preferred volume) of urine from access port. (Exception: minimum 0.5mL in neonates)
9. Instill urine into specimen container.
10. Apply patient label and send to lab.

REMOVAL OF INDWELLING CATHETER

1. Gather supplies:
 - Clean gloves
 - 10 mL syringe
 - Disposable under pad (e.g., Chux)
 - Sterile basin or container
2. Obtain provider order for catheter removal.
3. Ensure patient and family understand procedure.
4. Perform hand hygiene and don clean gloves.
5. Place disposable under pad beneath buttocks.
6. Deflate balloon by withdrawing fluid (not applicable for 3.5/5 F catheters).
7. Remove catheter in a slow, steady, and controlled motion. If resistance is met during removal, stop removal and notify provider.
8. Remove securement device.

CATHETER IRRIGATION

1. Gather supplies:
 - Povidone-iodine
 - Sterile gloves
 - Sterile drape
 - 30 mL or 60 mL syringe
 - Sterile normal saline or sterile water for irrigation, at room temperature
2. Obtain provider order for irrigation solution and volume. Recommendation: 5 mL or less for neonate or 15 to 30 mL for pediatric patient, depending on size.
3. Ensure patient and family understand procedure.
4. Position child supine.
5. Perform hand hygiene and don clean gloves.
6. Place sterile drape under buttocks.
7. Using aseptic technique, open sterile gloves and place syringe with irrigant on edge of glove sterile field.

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

8. Gently palpate bladder to assess for fullness; consider need to assess with bladder scanner.
9. Empty bladder and catheter drainage tubing into bag.
10. Clamp urinary drainage bag just below access port on drainage tubing with blue clamp.
11. Prep access port with povidone-iodine swab for 2 minutes
12. Don sterile gloves.
13. Instill irrigant slowly, stopping if resistance met, and unclamp tubing immediately after instillation.
14. Allow solution to empty by gravity. Report to provider if instilled volume doesn't drain.
15. Calculate urine output: subtract the volume of irrigant used from the volume of drainage returned.
16. Document procedure in medical record.

Note: Solutions other than sterile normal saline or sterile water for irrigation are administered only by provider.

DOCUMENTATION / EDUCATION

1. Document urinary output.
2. Document each shift assessment of catheter insertion site, catheter function, and evaluation for catheter indication.
3. Educate family regarding function of the catheter, safety and placement of drainage bag.

Troubleshooting

Problem	Suspected issue	Action
Dislodgement of catheter	<ul style="list-style-type: none"> • Catheter balloon malfunction • Patient dislodged • Other 	<ul style="list-style-type: none"> • For post-op kidney transplant, call transplant surgery team to discuss intervention(s). Do not replace catheter before discussing with team. • For all other patients, notify primary provider and discuss possible intervention(s).
Catheter disconnection from drainage bag tubing	<ul style="list-style-type: none"> • Unsecured attachment • Patient movement 	<ul style="list-style-type: none"> • Scrub disconnected end of catheter with betadine and place in diaper for urine absorption. • If post-op kidney transplant, notify transplant surgery team and discuss intervention(s). Do not remove/replace catheter before discussion with team. • For all other patients, notify provider team and discuss removing vs. reconnecting based on infection risk.
Mechanical Problems	<ul style="list-style-type: none"> • Catheter kinking • Catheter obstruction • Blood clots, sediment, stones, or other debris 	<ul style="list-style-type: none"> • Assess catheter for kinking and attempt to correct. If unable, notify provider. • If kidney transplant patient, notify transplant team before implementing further interventions.

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		<ul style="list-style-type: none"> Consider bladder scan to evaluate residual urine. Provider may order catheter irrigation.
No urine output	<ul style="list-style-type: none"> Catheter kink Catheter obstruction Hypovolemia 	<ul style="list-style-type: none"> Consider actions under Mechanical Problems, above Notify provider
Leaking around catheter or catheter leak	<ul style="list-style-type: none"> Size of catheter too small Damaged catheter 	<ul style="list-style-type: none"> Remove and replace after review with provider

References

	Level*	Reference
Level of Evidence (FAME*)	E3	Bigelow, A. M., Koh, W., Kinstler, A., Conn, S. M., Geiser, L., Wright, C. C., LaMantia, S. P., France, A., & Cooper, D. S. (2020). Eliminating catheter-associated urinary tract infections in a pediatric cardiac ICU. <i>Pediatric Critical Care Medicine</i> , 21(9), e819–e826. https://doi.org/10.1097/PCC.0000000000002469
	E4	Bowden, V. R. & Greenberg, C. S. (2012) <i>Pediatric Nursing Procedures</i> (3 rd Ed). Philadelphia: Lippincott Wilams & Wilkins.
	E4	Gould, C.V. et al (2017). <i>Center for Disease Control: Guidelines for Prevention of Catheter-associated Urinary Tract Infections 2009</i> . (Available at: http://www.ih.org/Topics/CAUTI/Pages/default.aspx)
	E4	How-to Guide: <i>Prevent Catheter-Associated Urinary Tract Infections</i> . Cambridge, MA: Institute for Healthcare Improvement; 2017. (Available at www.ih.org).
	E4	Lo, E et al (2008). <i>A Compendium of Strategies to Prevent Health care-Associated Infections in Acute Care Hospitals</i> . <i>Infection Control and Hospital Epidemiology</i> Vol. 29, No S1, ppS41-S50.
	E4	Lebet, R. M.(2010). <i>Indwelling Urinary Catheter: Insertion and removal</i> . In J. T. Verger. AACN Procedure manual for Pediatric Acute and Critical Care (pp. 815-821). St. Louis, Missouri: Saunders.

* FAME Scale details: See nursing policy [Policy, Procedure, & Competency Development, Review, & Approval](#)

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

Procedure History

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Appendix A: Catheter Size & Supplies

Age	Male Catheter Size	Female Catheter Size
Preterm	3.5F to 5F	3.5F to 5F
Neonate	5F to 6F	5F to 6F
Infant	5F to 6F	6F to 8F
Toddler/preschooler	8F to 10F	8F to 10F
School-aged	8F to 10F	8F to 12F
Adolescent	12F	12F to 14F**

**16F or larger can distend the urethra and permanently damage it and the bladder neck, as well as cause bladder spasms and leaking around the catheter.

PMMs	Urinary Catheter Kit	Additional Supplies Needed
217425	3.5 F	<ul style="list-style-type: none"> Non-sterile gloves Personal Protection Equipment (PPE) Bath supplies for cleansing genital area Saline wipes Securement: Duoderm & Tegaderm
80796	5F	
598012	6F	<ul style="list-style-type: none"> Non-sterile gloves Personal Protection Equipment (PPE) Disposable wash cloth
339475	8F	
281603	10F	
978770	12 F	
270376	14F	
PMM	MIBG Patients	Exception
650	Urine closed system drainage bag	Tubing is 12 inches longer and required for MIBG patients only.

Alternative supplies if kit not available: choose Foley size, obtain drainage bag and insertion tray.

PMM	Supply
30844	8 Fr. Foley
30845	10 Fr. Foley
30827	12 Fr. Foley
20821	14 Fr. Foley
650	Urine drainage bag
2516	Foley insertion tray

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Urinary Thermometry Catheters

- a. Thermometry option (good accuracy and reliability as core temperature).
- b. Do not use urine bladder thermometry if patient is anuric or oliguric (UO < 500 mLs/day)
- c. Temperature sensing Foley catheters are not MRI compatible.

Thermometry Foleys:

PMM#	ITEM DESCRIPTION
58967	FOLEY 8FR TEMP
58968	FOLEY 10FR TEMP
58969	FOLEY 12FR TEMP
58970	FOLEY 14FR TEMP

INDWELLING URINARY CATHETER: INSERTION, MAINTENANCE AND REMOVAL (*continued*)

Appendix B: Catheter-Associated Urinary Tract Infection Prevention Bundle



CAUTI (Catheter Associated Urinary Tract Infection) Prevention Bundle → **STOP - UTI**



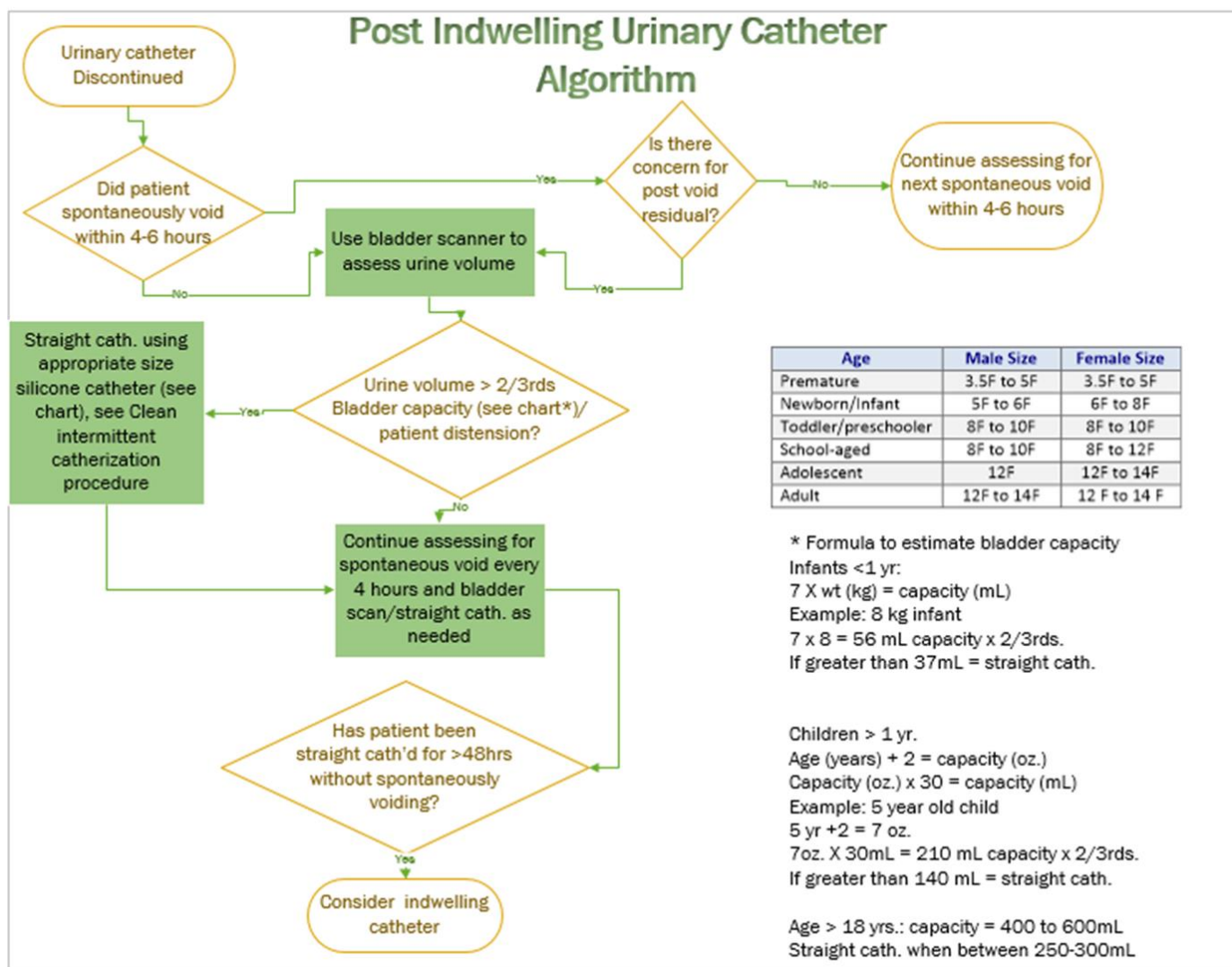
- S**ystem is closed
- T**ube is secured
- O**utflow is patent
- P**erineal care is done






- U**rine bag level is below urinary bladder
- T**echnique (insertion/sampling is aseptic)
- I**ndication for use is present



Appendix C: Post Indwelling Urinary catheter Algorithm



Appendix D: Alternatives to Indwelling Urinary Catheters

Device	PMM	Patient Population	Tips for Use
Condom	<ul style="list-style-type: none"> Small: PMM 42135 Medium: PMM 42134 Large: PMM 42132 	<p>Indications:</p> <ul style="list-style-type: none"> Patients with male genitalia who are incontinent and require close monitoring of I/O <p>Contraindications:</p> <ul style="list-style-type: none"> Urinary retention or obstruction Anatomic abnormality Rash at application site Infection/inflammation of glans, prepuce, or urethra Purulent or bloody urethral drainage 	<ul style="list-style-type: none"> Clean application site prior to use with CHG (soap and water if CHG contraindicated) Make sure penis is COMPLETELY dry before application. Hold condom catheter for about 15 seconds after placement to activate adhesive.
PrimoFit	<ul style="list-style-type: none"> PMM 270513 	<p>Indications:</p> <ul style="list-style-type: none"> Patients with male genitalia who are incontinent, require close monitoring of I/O and may not have anatomy compatible with traditional condom catheters May be used for pediatric patients of any age in which adhesive pad seal is adequate, e.g., 5 y.o. and older <p>Contraindications:</p> <ul style="list-style-type: none"> Urinary retention or obstruction Anatomic abnormality 	<p>Refer to PrimoFit External Urine Collection Device (Male Genitalia) Procedure with video</p>
PrimaFit	<ul style="list-style-type: none"> PMM 227934 	<p>Indications:</p> <ul style="list-style-type: none"> Patients with female genitalia who are incontinent and require close monitoring of I/O Adult and pediatric females approximately 13 y.o. or older as anatomy allows for appropriate fit, assess, and ensure optimal gluteal tip placement at gluteal cleft to avoid injury. <p>Contraindications:</p> <ul style="list-style-type: none"> Urinary retention or obstruction Anatomic abnormality 	<p>Refer to PrimaFit External Urine Collection Device (Female Genitalia) Procedure with video</p>