Lakeridge Health	**Paediatric/Neonate: Urine Specimen Collection and Urethral Catheterization – Policy and Procedures**	
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☑ Harmonized	Cross Reference to: Specimen Collection and Processing-Microbiology for appropriate specimen container	
	Document Applies to: All Lakeridge Health (LH) team members performing this procedure on a neonate or paediatric patient across the organization.	
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Introduction

Collection of urine in the paediatric patient may be required for diagnostic evaluation. Urinary catheterization may be required to collect a sterile specimen of urine for diagnostic testing and/or to relieve urinary retention.

Policy

- A medical order is required for urinary catheterization that specifies both the indication for catheterization and direction for either an in and out or indwelling catheter.
- A midstream/clean catch method of urine collection is recommended in children who are toilet trained.
- In and out catheterization is the procedure of choice for febrile infants, and children undergoing evaluation for infection/sepsis where there is urgency to initiate antibiotic therapy. Voiding may occur spontaneously during or prior to the catheter being introduced. If a clean catch urine can be obtained during the void, a catheter sample is not necessary.
- Urine bag specimens are not appropriate for culture and sensitivity. Any suspicion of infection based on the result of the urinalysis from a bag specimen requires confirmation with midstream urine or catheter specimen before initiation of treatment.
- Use only urinary catheters designed for catheterization. Feeding tubes and umbilical catheters are **not recommended** for urinary catheterization as these may knot or kink within the bladder.
- Contraindications to urinary catheterization include, but are not limited to:
  - Signs of gross infection or trauma to the genitals or perineum;
  - Labial adhesion in females;
  - Uncircumcised males with penile phimosis.
  - Factors that may complicate tolerance of the procedure, such as cognitive or behavioural factors, or history of abuse, should be brought to the attention of the MRP for development of a plan for collection.
- If contraindications to transurethral catheterization are present and a sterile urine specimen is required, suprapubic aspiration for collection can be performed by the MRP.

Definitions

Clean-catch or midstream urine collection (MSU) – urine sample obtained after the urethral meatus is cleaned and the first few millilitres of urine are voided.

Paraphimosis- Refers to a retracted foreskin in an uncircumcised male that can not be returned to normal position, it may result from cleaning or retraction of the foreskin during urinary catheterization leading to swelling of the penis and foreskin. If not corrected promptly it may result in tissue necrosis or more serious complications

Urinary Catheterization – a sterile procedure during which a plastic or silicone catheter is inserted through the urethra into the bladder. May be an intermittent insertion or indwelling catheter.

Urine collection bag: A minimally invasive collection bag with adhesive material for application to the perineal skin. Used to collect non-sterile urine specimens for urinalysis, but should NOT be used for culture and sensitivity testing.

Guidelines

Size selection:

Weight	Catheter Size
Preterm infants and infants less than 3kg	3.5-5 French
Newborn and small infant (3-5kg)	5-6 French
Infant (6-9kg)	6-8 French
Toddler (10-11kg)	8-10 French
Child (12-14kg)	10 French
Child (15-18kg)	10-12 French
Child (19-22kg)	10-12 French
Large Child (24-30kg)	12 French
Adult size (greater than or equal to 32kg)	12 French

(Adapted from: Broselow Paediatric Emergency Tape, 2017)

Insertion measurements:

Weight	Insertion Length
Infants less than 1000 grams	Measured length in centimeters from the external urethral orifice to pubic symphysis **plus 1 cm**
Infants 1000-2000grams	Measured length in centimeters from the external urethra orifice to pubic symphysis **plus 2cm**
Infants greater than 2000 grams	Measured length in centimeters from the external urethral orifice to pubic symphysis **plus 3cm**

(SickKids Neonatal Nursing Handbook, 2015)

Non-Sterile urine specimen collection:

- **Cotton Balls**: For small volume specimens (urinalysis screen) several cotton balls may be inserted into the diaper to collect urine. Once saturated, cotton balls are placed in a 20mL syringe and, using syringe plunger, urine is pressed out into the specimen container**. Urine screen must be processed within 2 hours of collection**
- **Urine collection bag**: For larger volume specimens (electrolytes, drug screen), a urine bag collection is used.
  - Select a single-use self-adhesive urine bag
  - Using soap and water, cleanse and dry the genitalia, perineum, and surrounding skin.
  - The adhesive will not stick to a moist, powdered, or oily skin surface
  - The adhesive portion of the bag must be firmly applied to the skin to prevent leakage
  - For girls, apply bag first to the perineum, then toward the symphysis pubis. With small boys the bag may fit best by placing both the penis and scrotum inside the bag.
  - Reapply a diaper while awaiting a specimen.
  - Check the bag frequently and remove as soon as the specimen is available. To prevent spillage and contamination, cut the corner of the bag and pour urine into a sterile specimen container.
  - **Note:** If there is stool visible in the collection bag, discard bag and restart procedure
- **Direct collection**: For patients who are toilet-trained, collect the specimen directly in a specimen container, urine "hat", urinal, or bedpan. Toddlers and preschool children may have difficulty voiding on request. Unless contraindicated, offer liquids as appropriate and wait 30 minutes until child voids.

Sterile Urine Specimen Collection:

- **Clean-catch or MSU specimen collection:**
  - Instruct patient to cleanse the perineum prior to collection and then urinate into a toilet or urinal. Midway through urination, a specimen is collected directly from the urine stream in a sterile container
- **Urinary Catheterization for collection:**
  - See procedure below

Procedures:

Catheterization procedure:

1. Explain procedure and rationale to the patient and family/caregiver. Include instructions for muscle relaxation and breathing techniques during insertion
2. Infants may benefit from the administration of sucrose 24% prior to procedure (see: *Sucrose 24% Oral Solution for Infant Pain Management policy and procedure and medical directive*)
3. Review any need for sedation or analgesia with MRP
4. Gather equipment and an assistant as necessary
   - Sterile dressing or urinary catheterization tray
   - Specimen containers
   - 10% povidone-iodine (Betadine)
   - Water soluble lubricating jelly (included in urinary catheterization tray)
   - Sterile urinary catheter as appropriate for patient size (see 4.1 and 4.2 above)
   - 5mL sterile syringe and sterile water to fill balloon (if needed for indwelling catheter)
   - Personal protective equipment (mask, sterile gloves)
   - Portable light

5. Place patient in supine and "frog-leg" position. Use additional lighting as needed
6. Don mask and wash hands
7. Open and prepare dressing/catheterization tray:
   - Drop catheter and syringe onto sterile field
   - Pour Betadine in one compartment and sterile water in the other (for balloon, if needed)
   - Open lubricant and squeeze a small amount onto the sterile wrap
8. Wash hands again and don sterile gloves
9. If indwelling catheter: Draw up into syringe the volume of water specified for catheter balloon.
10. Position the sterile drape so the perineum is visible.
11. Lubricate the end of the catheter and place the other end in the empty section of the tray
12. Cleanse using Betadine. Allow one minute to dry (note: your hand which is holding the labia or the penis is no longer sterile and should not touch the catheter)
    - **Females** – Using a Betadine swab cleanse the urethral meatus from front to back. Repeat three times using a fresh swab each time. An assistant may be needed to retract the labia majora.
    - **Males** – Using a Betadine swab, cleanse the urethral meatus in concentric circles, moving from center to outside. Repeat three times using a fresh swab each time. ***Note:*** *Only mild tension should be applied to the foreskin of an uncircumcised penis to reveal the urethral opening. The foreskin is normally not retractile until approximately 6 months of age because the inner surface is fused to the glans of the penis. Return foreskin to the natural position after catheterization to prevent paraphimosis.*
13. Gently insert the lubricated catheter tip into the urethra and advance while observing for urine flow
    - **Males -** hold the penis in an upright position perpendicular to the lower abdomen. Resistance may be encountered near the base of the penis due to contraction of the external bladder sphincter. Maintain traction on the penis, while applying gentle pressure with the catheter. The catheter should never be forced. Once less resistance is felt continue to advance the catheter into the bladder.
    - **Females -** insert catheter into the urethral meatus Catheters that are inadvertently placed in the vagina may be left in place to serve as a landmark for subsequent attempts. Do not withdraw the catheter and reinsert into the urethra
14. Discard a few drops of the initial stream of urine, then place the distal end of the catheter into sterile container to collect specimen.
15. Gently withdraw catheter after specimen is obtained and bladder is emptied
16. Wash any residual Betadine from the skin
17. Discard supplies and wash hands
18. Label and send specimens to lab

For indwelling Foley catheters:

1. Once urine flow is observed, advance the catheter slightly then inflate the balloon. Note: Inflate the balloon only when urine is seen. If no urine is obtained, do not inflate the balloon; secure the catheter with tape and wait for urine flow.
2. Connect catheter to the sterile urine drainage- collecting system and place the system below the level of the patient's bladder to assist gravity drainage and prevent reflux
3. The collection bag should never be left on the floor.
4. Secure the catheter to the patient (inner thigh) to minimize tension on the urethra or migration of the catheter

Documentation requirements:

- Date and time of catheterization
- Type and size of catheter used
- Education and teaching provided
- Colour, clarity and volume of urine drained from the urinary bladder
- Volume of water instilled in indwelling catheter balloon (if applicable)
- Patient's reaction to the procedure, or any complications
- Patency of catheter if connected to drainage system
- If catheter requires irrigation, volume of solution irrigated and returned
- Date/time of removal of indwelling catheter, any complications, amount of urine in bag

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Appendix A: Urinary Output in Paediatric Patients

- Normal: 1 – 2ml/kg/hr
- Oliguria: <1.0ml/kg/hr
- Anuria: no urine output
- Polyuria: > 3ml/kg/hr
- Older children: 30 ml/hr is the minimum normal output