

## SURGICAL PROGRAM PROCEDURE

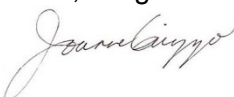
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**TITLE:** NEPHROSTOMY TUBE CARE AND FLUSHING

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### PURPOSE

To outline the procedure for nephrostomy tube care and flushing.

### PROCEDURE

#### Equipment

##### Tube Care

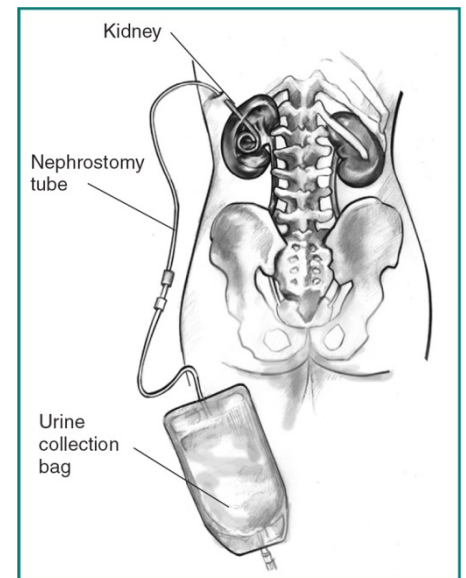
- Antiseptic wipes
- Tubing system
- Drainage bag
- Gloves
- Dressing supplies (gauze, tape, transparent dressing, hydrocolloid, other specialty dressing)
- Tubing labels
- Tubing securement device or tape

##### Tube Flushing

- Antiseptic wipes
- Gloves
- Disposable drape
- 10 mL syringe
- Sterile cap
- Single-use vial or pre-filled syringe of sterile 0.9% normal saline
- Tubing labels

### Special Instructions

- Avoid compression and kinks in the nephrostomy tube to ensure tube contents do not back up into the renal pelvis and urine can drain freely from the kidney into the drainage bag. Position the drainage bag lower than the bladder to prevent urine reflux into the kidney.
- Route tubes and catheters having different purposes in different, standardized directions (IV lines routed toward the head; enteric lines toward the feet). This is especially important in the care of neonates.



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**Method**Patient and Family Education

1. Explain the equipment and procedure.
2. Explain that flushing the tube should not be painful but that the patient should report any pain to the nurse.
3. Educate about tube care, including changing the dressing, urine inspection and measurement, flushing the tube, and monitoring the site.
4. Explain that the tubing should not be kinked and the drainage bag must hang lower than the bladder at all times.
5. Teach to assess the site and urine for signs and symptoms of infection.
6. Instruct to notify the nurse if urine leaks around the catheter site or if the tube becomes dislodged.
7. Explain that the nephrostomy site must be covered with a protective dressing during showering to keep the area dry.
8. Reinforce appropriate hand hygiene practices before and after tube care.

Preparation

1. Perform hand hygiene before patient contact.
2. Verify the correct patient using two identifiers.
3. Place the patient in a side-lying position to allow access to the nephrostomy site.
4. Place a disposable drape under the nephrostomy site.

Nephrostomy Tube Care

1. Perform hand hygiene and don gloves.
2. Verify the correct patient using two identifiers.
3. Explain the procedure to the patient and ensure that he/she agrees to treatment.
4. Ensure that the drainage bag and tubing system are securely attached to the nephrostomy tube.
5. Trace the tubing or catheter from the patient to the point of origin:
  - A. Before connecting or reconnecting any device or infusion
  - B. At any transition (new setting)
  - C. As part of the hand-off process
6. Assess the dressing around the tube and surrounding skin for evidence of urine leakage, bleeding, or skin irritation.
  - A. Change the dressing, as per physician's orders, and PRN for drainage around the tube. Minimum frequency is at least once a week.
  - B. Label the dressing per the organization's practice.
7. Ensure that urine is able to flow freely through the tubing system. **Do not clamp the catheter unless ordered by the practitioner.**
  - A. Check for kinks or pressure in the tubing system. **Avoid kinks or pressure because these could cause tube contents to back up into the renal pelvis.**
  - B. If using a leg bag, ensure that the drainage bag is attached to the patient's leg. If using a bedside drainage bag, ensure that the bag is secured on the bed and lower than the kidney to prevent the backflow of urine into the kidney.
8. Secure the tubing to the patient's flank with tape or with a catheter securement device to ensure that no stress is placed on the nephrostomy tube. Stress on the nephrostomy tube can result in the accidental dislodgement of the tubing.
9. If leakage is observed, reassess and secure all connections. If leakage continues, change the tubing system and drainage bag using aseptic technique.
10. If the catheter or tubing is accidentally dislodged from the nephrostomy site, cover the site with a dry dressing and call the practitioner.
11. Discard supplies, remove gloves, and perform hand hygiene.
12. Document the procedure in the patient's record.

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1. Perform hand hygiene and don gloves.
2. Verify the correct patient using two identifiers.
3. Explain the procedure to the patient and ensure that he/she agrees to treatment.
4. Draw up 10 mL or the prescribed amount of sterile normal saline or obtain a pre-filled syringe of normal saline.
5. Locate the irrigation port.
  - A. Trace the tubing or catheter from the patient to the point of origin:
    - i. Before connecting or reconnecting any device or infusion
    - ii. At any transition (new setting)
    - iii. As part of the hand-off process
  - B. Tubing should be labeled to reduce the chance of misconnection, especially in circumstances in which multiple IV lines or devices are in use.
  - C. Do not force connections, as this could indicate that the connection should not be made.
  - D. Check vital signs immediately after making any connection.
6. Remove the cap from the irrigation port and discard it in the appropriate receptacle.
7. Cleanse the irrigation port with an antiseptic wipe and allow it to air dry.
8. Insert the syringe into the irrigation port.
9. Turn the stopcock so urine will not flow into the drainage bag.
10. Gently flush the catheter with 2-10 mL of normal saline per the practitioner's order. Do not aspirate the solution back into the syringe. If resistance occurs, have the patient roll onto his/her back and then back onto his/her side. If resistance continues, notify the practitioner. **Never force the solution into the catheter. If the patient experiences any pain during flushing, immediately stop the procedure and notify the practitioner.**
11. Turn the stopcock so that urine will flow into the drainage bag.
12. Remove and discard the syringe into an appropriate receptacle.
13. Cleanse the irrigation port with an antiseptic wipe and allow it to air dry.
14. Place a new cap on the irrigation port.
15. Discard supplies, remove gloves, and perform hand hygiene.
16. Document the procedure in the patient's record.

Monitoring and Care

1. During each assessment, observe tubing for patency, leaks, or bleeding.
2. Assess, treat, and reassess pain.
3. Monitor for signs of infection, including elevated white blood cell count, positive urine culture results, altered mental status, or elevated temperature.
  - A. Inspect the tube insertion site for signs and symptoms of infection, such as redness, swelling, or drainage.
  - B. Observe the patient's urine output for signs of infection, such as sediment, odour, or discoloration.
4. Monitor fluid intake and output.
5. Obtain urine specimens, if ordered by the practitioner, using aseptic technique from the nephrostomy tube by gravity. **Do not aspirate urine using a syringe.**
  - A. Label the specimen in the presence of the patient.
  - B. Prepare the specimen for transport.
    - i. Place the labeled specimen in a biohazard bag.
    - ii. If the specimen requires ice for transport, place the bag with the specimen into a second biohazard bag filled with ice slurry.
    - iii. Immediately transport the specimen to the Laboratory.

Expected Outcomes

- Vital signs are within the patient's normal limits
- Urine is clear and has normal odour and colour

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- Patient has no skin or urine infection
- Insertion site shows no signs or symptoms of infection, skin irritation, or skin breakdown
- Patient's pain is well controlled
- Patient has a urine output of at least 30 mL/hr
- Catheter exit site remains clean, dry, and intact

**Unexpected Outcomes**

- Leakage from around the insertion site
- Skin or urine infection
- Skin irritation or breakdown
- Urine output below 30 mL/hr
- Unrelieved pain
- Dislodged tube
- Obstructed tube

**Documentation**

- Patient and family education
- Amount, colour, and clarity of urine output
- Flushing procedure, including amount instilled, ease of flushing, and the patient's response
- Pain or discomfort with irrigation
- Change in tubing system or drainage bag
- Tube insertion site assessment findings
- Unexpected outcomes and related nursing interventions
- Pain assessment and management
- Patient tolerance of procedure
- Date and time of dressing change

**EDUCATION AND TRAINING****Education/Training Related Information**

A nephrostomy tube is a catheter that is inserted into the renal pelvis to drain urine and relieve pressure. It can be inserted percutaneously under local anesthesia or via an open surgical procedure called a pyeloplasty. More commonly, the tube is placed percutaneously using a local anesthetic and either radiography or ultrasound for placement. Placement of a nephrostomy tube is an invasive procedure that results in an interruption of the skin, which is the body's first line of defense. Because of the problems associated with long-term nephrostomy drainage, such as infection, stone formation, intermittent hematuria, renal hemorrhage, or accidental dislodgment, a nephrostomy tube is typically used only as a temporary method of diversion; however, the tube may be used permanently.

Indications for nephrostomy tube placement are complete obstruction of the ureter, the need to bypass a urinary fistula, or flushing of the renal pelvis. Renal calculi, commonly called "kidney stones", frequently cause obstruction of the ureter. During a procedure called a percutaneous nephrolithotomy, a surgeon inserts a nephroscope into the kidney and uses ultrasonic lithotripsy to break up large stones, removing the large pieces via the nephroscope. The remains are excreted in urine. A percutaneous nephrostomy tube may be placed after this procedure for continuous or intermittent irrigation to flush out stone fragments, to help dissolve the remaining renal calculi, to prevent or remove clots from the procedure, or to infuse medications that prevent infection or further break down renal calculi.

Various types and sizes of nephrostomy tubes may be used. The smaller tube, called a pigtail, has a coiled tip, which is retained within the renal pelvis. These tubes are usually inserted in interventional radiology

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and are more likely to become obstructed. Larger, or wide-bore, tubes are inserted in the Operating Room following renal pelvis surgery, most commonly percutaneous nephrolithotomy. These larger tubes tend to be more uncomfortable for the patient. The nephrostomy tube is generally attached to a tubing system that connects to a urine drainage bag.

Flushing of the nephrostomy tube is indicated if there is no urine output, excessive blood in the urine, persistent flank pain, or a suspected blockage. Flushing the tubing and changing the tubing system and drainage bag should be done using aseptic technique. For instance, before changing the bag, the nurse should wipe the end of the tubing (where it connects to the drainage bag) with antiseptic wipes and attach a new urine drainage bag.

Before removal of any type of nephrostomy tube, the patient may require imaging studies to determine if there is adequate urine flow from the kidneys to the ureters and bladder. If the patient also has a stent in the urethra, the nephrostomy tube should be removed by the Interventional Radiology department under fluoroscopic guidance to prevent dislodgment of the stent.

**References and Related Documents**

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