Nephrostomy Tubes: Management and Irrigation

Site Applicability

All VCH & PHC sites

Practice Level

- **RN:** Basic Skill - additional education required for irrigation
- **LPN:** Management of nephrostomy tube dressing and drainage bag as per Community of Care Collaborative Skills Grid (VCH) or Roles and Responsibilities document (PHC) and with additional education

  Note: LPN scope does not include irrigation of a nephrostomy tube

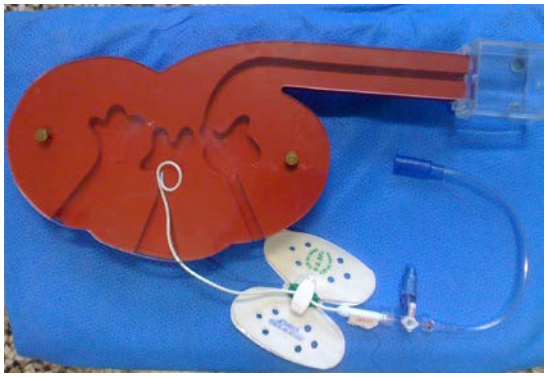
Policy Statement

- A Physician/NP order is required for irrigation of any nephrostomy tube and must include:
  - confirmation of tube placement - distal end location
  - the volume of sterile normal saline (NS) to be used
  - the frequency of irrigation recommended
- An extension tube and three-way stopcock is required for irrigation/instillation or aspiration
- Sterile normal saline for injection without preservative is the recommended solution for instillation/irrigation
- Aspiration, or the withdrawal of fluid, must be written as a separate clinical directive if required
- A Physician/NP order is required for capping a nephrostomy tube
- **Removal of a Nephrostomy tube is a physician's/NP responsibility.**

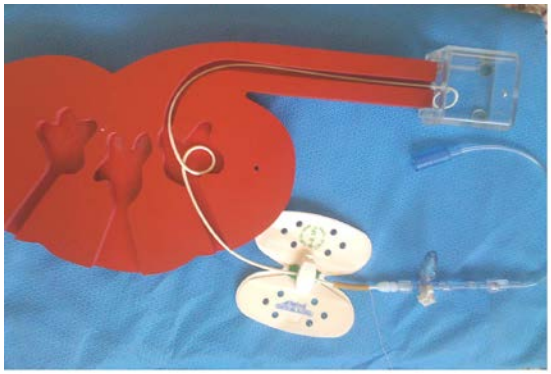
Need to Know

Nephrostomy tube is a device that is inserted percutaneously into the renal pelvis of the kidney to drain urine and relieve pressure. This urinary diversion may be temporary until treatment of the stone, stricture, or tumour is surgically arranged, or it may be permanent in palliative situations.

Various types of tubes may be used, but the most commonly used tube is a pigtail catheter. The catheter is held in place by the pigtail loop, anchored to the skin with a securement/anchoring device and covered with a sterile dressing. The tube may be capped with a non-vented end cap or attached to a drainage bag to collect the urine. The expected drainage is urine but there may be some blood following a catheter insertion/change or some calculi or debris following lithotripsy. Irrigation/flushing may be ordered if the urinary output is minimal, or if the drainage is very bloody or purulent to prevent clogging of the tube with clots or debris. Usually a Radiology follow-up appointment is schedule every 4 to 6 weeks to change the catheter.



Placement of tube in kidney



Placement of tube through ureter into bladder

Indications:
Nephrostomy tubes are used to bypass a urinary fistula and when there is a partial or complete obstruction in the upper urinary tract. (e.g. narrowing of the uretero-pelvic junction by scar tissue or congenital malformation, presence of a tumour or a urethra stricture). Nephrostomy tubes facilitate access to the kidney to instill medication and for renal endoscopic surgery, including stone removal and irrigation following lithotripsy.

Precautions:
The most common potential complications include hemorrhage and/or sepsis. Additionally the client should be monitored for stone formation or hematuria. The nephrostomy tube is held in place internally by the pig-tail end and externally by the securement device; care should be taken to avoid accidental dislodgement.

Alert the most responsible Physician/NP if there is:
- leakage from insertion site
- bleeding/clots
- increased urine sediment (gravel or stones)
- decreased urine output
- elevated temperature greater than 38.5°C
- nephrostomy tube has been accidentally dislodged

Definitions:
- Instillation is the delivery of fluid - one way only
- Irrigation or flushing are terms also used to refer to the instillation of fluid
- Aspiration is the withdrawal of fluid

Procedure
The following procedures provide direction for management of a nephrostomy tube

Cover Dressing Change

Dressing should be changed every 7 days or more frequently as clinically indicated (i.e. dressing not intact, soiled, denuded/irritated skin noted). If using a standard gauze cover dressing, change two times a week (or more often if clinical indicated). Dressing should remain dry between dressing changes.

Equipment and Supplies:
- Clean gloves
- Sterile gloves
- Sterile dressing tray
- Sterile Normal Saline
- Alcohol swabs
- Transparent dressing (if using)
- Gauze cover dressing (if needed)
- Drain sponge (if needed)
- Tape (if needed)

Procedure:
1. Gather the necessary supplies.
2. Prepare/clean work surface.
3. Position patient
4. Wash hands.
5. Open dressing tray and prepare all dressing supplies (i.e.: add sterile supplies to center of sterile dressing tray)

6. Put on clean gloves. Remove cover dressing carefully anchoring tube at insertion site with sterile gauze to prevent dislodgement during dressing remove.
7. Remove clean gloves. Wash hands again and apply sterile gloves
8. Cleanse the skin around the insertion site of the nephrostomy tube with sterile Normal Saline, move from centre of tube exit site outwards in a circular motion, discarding each piece of gauze once lifted from skin.
9. Note condition of insertion site and surrounding skin. Redness, swelling and drainage may indicate infection. Consult WC (Wound Clinician) if concerns and report to physician/NP/MRP (Most Responsible Physician)
10. Carefully clean nephrostomy tube from insertion site outwards with alcohol wipe to remove adhesive residue prn. Allow skin to dry.
11. Apply one the following dressings as appropriate for the insertion site/surrounding skin:
    - If skin is intact, a sterile semi-permeable transparent dressing (e.g. Opsite or Tegaderm transparent) placed directly over the nephrostomy tube insertion site, allows for visibility of the site.
    - If there are concerns regarding the surrounding skin (redness, rash, pustules or blisters which may indicate infection or contact allergy), a sterile gauze dressing secured with tape. Consult WC (Wound Clinician) or Physician/NP/MRP to provide direction to manage skin concerns.
    - If there is leakage from the nephrostomy tube (usually occurs post-tube insert) a sterile drain sponge around tube, cover with a sterile gauze dressing and secure with tape.
12. Ensure the nephrostomy tube is secured distal to the insertion site with a commercial available securement device; Steri-strips or tape may be used as an alternative to a commercially available securement device. Ensure that the nephrostomy tube is not kinked at the insertion site before securing the tube.
13. Clean up the work surface.
14. Remove gloves and wash hands.

Securement Device Change

The purpose of the securement device is to prevent traction on the nephrostomy tube from the drainage bag and tubing. The securement device must be positioned distal to the tube insertion site and the cover dressing. The securement device should only be changed whenever a clinical indication arises (i.e. denuded /irritated skin noted, device not intact).

Equipment and Supplies:

- Clean gloves
- Sterile dressing tray
- Sterile Normal Saline
- Alcohol swabs or adhesive remover pads
- Skin protectant
- Securement device or steri-strips (ensure device is appropriate size for nephrostomy tube)
- Additional sterile 4 x 4 gauze if needed

Procedure:

1. Gather the necessary supplies.
2. Prepare/clean work surface.
3. Position patient.
4. Wash hands.

If securement device and surrounding skin are intact

1. Leave device in place.
2. Note condition of skin and document as 'device and skin intact'.

If skin is not intact under securement device (redness, rash, pustules or blisters)

1. Gently lift nephrostomy tube from securement device.
2. Loosen adhesive pads of device using alcohol or adhesive removal swab.
3. Cleanse the skin previously covered by the securement device with sterile Normal Saline in an outwards direction discarding each piece of gauze once lifted from skin.
4. Use tape to anchor/secure the nephrostomy tube, distal to the insertion site dressing.
5. Cover area with sterile gauze dressing as needed.
6. Note condition of skin. Consult WC (Wound Clinician) to provide direction to manage skin concerns.

If securement device is not intact (soiled, torn, not-adhering to intact skin)

1. Gently lift nephrostomy tube from securement device
2. Loosen adhesive using alcohol or adhesive removal swab.
3. Cleanse the skin previously covered by the securement device with sterile Normal Saline in an outwards direction discarding each piece of gauze once lifted from skin.
4. Note condition of surrounding skin. Apply skin protectant; allow to dry completely (greater than 30 seconds).
5. Remove paper backing and apply new securement device to skin. Gently press tube into securement device and close the tab. Follow manufacturer directions for use of specific devices (i.e. StatLock® – Appendix A).
6. Cleanup the work surface.
7. Remove gloves and wash hands.

Drainage Bag Change

The drainage bag does not need to be changed unless it is damaged or soiled, such that the quality of the urine cannot be assessed. The drainage bag must be changed whenever Radiology changes the nephrostomy tube and at the start of antibiotic treatment for a nephrostomy related infection.

Equipment and Supplies:

- Alcohol swabs
- Clean gloves
- New sterile drainage bag

Procedure:

1. Gather the necessary supplies.
2. Prepare/clean the work surface.
3. Position patient.
4. Wash hands and put on clean gloves.
5. Swab the connections between the nephrostomy tube and the old drainage bag using an alcohol swab for 15 seconds, dry completely (greater than 30 seconds).
6. Carefully disconnect, taking care not to contaminate the nephrostomy tube end.
7. Remove cap from new sterile bag and connect to nephrostomy tube.

8. Cleanup the work surface.
9. Remove gloves and wash hands.

Adding or Changing a stopcock/extension tubing, needleless connector or end cap

A three-way stopcock and extension tubing is attached and left in place whenever instillation/irrigation is ordered by the Physician/NP. Radiology may add the extension tubing at the time that nephrostomy tube is inserted. A needleless connector may be added to the sideport of the three-way stopcock for greater ease of irrigation. The nephrostomy tube may be capped as per Physician/NP orders.

Replace the stopcock and/or needleless connector if broken or blocked; end caps are to be discarded when removed. The extension tube and stopcock/ needleless connector must be changed whenever Radiology changes the nephrostomy tube and at the start of antibiotic treatment for a nephrostomy related infection.

Equipment and Supplies:

- Alcohol swabs
- Clean gloves
- Sterile extension tube (if not already attached)
- Sterile three-way stopcock
- Sterile needleless connector, if needed
- Sterile non-vented end cap, if using

Procedure:

1. Gather the necessary supplies.
2. Prepare/clean the work surface.
3. Position patient.
4. Wash hands and put on clean gloves.
5. Swab the connection between the nephrostomy tube and drainage bag with an alcohol swab for 15 seconds, dry completely (greater than 30 seconds).
6. Taking care not to contaminate the ends, disconnect the nephrostomy tubing from the drainage bag tubing.
7. If adding the extension tubing, connect the
   - sterile extension tubing to the nephrostomy tube.
   - sterile stopcock to the extension tubing.
   - drainage bag tubing to the stopcock; ensure the stopcock is open to the nephrostomy tube/drainage bag and off to the side port.
8. If using, connect the sterile needleless connector to the side port of the three-way stopcock.
9. If nephrostomy tube has been ordered to be capped, then apply sterile non-vent end cap to the stopcock.
10. Cleanup the work surface.
11. Remove gloves and wash hands.

Nephrostomy Tube Irrigation

An extension tube and stopcock is required for instillation/irrigation (see above). Check Physician/NP order for the amount of irrigation solution to be used before proceeding.

Equipment and Supplies

- Sterile 10 mL syringe (minimum gauge)
- Injectable Sterile Normal Saline without preservative
- Alcohol swab
- Clean gloves
- Needleless connector (if needed)
- Sterile non-vented cap (if needed)

Procedure:

1. Gather the necessary supplies.
2. Prepare/clean the work surface.
3. Position patient.
4. Wash hands and put on clean gloves.
5. If extension tube and stopcock not present, add prior to first irrigation (see above section)
6. Prepare a 10 mL syringe with the ordered amount of sterile Normal Saline.
7. Remove the stopcock's non-vented end cap if being used.
8. Cleanse the stopcock's sideport or needleless connector connection with alcohol swab for 15 seconds, dry completely (greater than 30 seconds).
9. Attach the Normal Saline-filled 10 mL syringe to the stopcock sideport and open stopcock to patient
10. Gently instill ordered volume of sterile Normal Saline. Always use gentle pressure when irrigating with NS**. If there is resistance or pain on instillation STOP, and notify Urologist or responsible Physician/NP.**
11. Close stopcock to sideport/ needleless connector and remove syringe
12. If nephrostomy tube is to be capped, apply a sterile non-vented cap to sideport.
13. If using a drainage bag system, ensure that stopcock is open to allow for drainage to flow from patient to drainage bag
14. Clean up work surface.
15. Remove gloves and wash hands.

Expected Client/Family Education

Review pamphlet "Nephrostomy Tube – Care, Management and Discharge Instructions' prior to discharge from acute site. Patient/client and/or family will understand:

- Purpose and expected duration of nephrostomy tube
- Activity restrictions and frequency of assessments post-procedure
- How to monitor insertion site and to alert RN or physician if they experience leakage from insertion site, clots, bleeding, an unexpected change in type or amount of drainage, or elevated temperature greater than 38.5°C or if other signs and symptoms of infection are noted
- How to follow Physician/NP Order for irrigation of nephrostomy tube. Following discharge from hospital Community Health Nurse (CHN) will reinforce education and support client to manage independently

- Role of Community Health Nurse: Nurse will change dressing once per week, on established nephrostomy tubes, more frequently as clinically indicated.
- Client or family will be taught how to irrigate the tube if needed and how to change the dressing when able.
- Where to purchase supplies as needed (medical supply shops/drug stores)
- Requirement to drink 6 to 8 glasses (8 oz/glass) of fluids a day to prevent debris, and calculi or stones from forming
- Importance of keeping nephrostomy tube drainage bag emptying port closed to reduce risk of infection.
- How to keep the tube and drainage bag tubing free of twists, kinks, or leaks
- A 3-way stopcock is used for flushing the tube when irrigation is ordered (a needleless connector may be added to the tubing if required for greater ease with irrigation).
- How and when to empty drainage bag
- When to change drainage bag (bag is not routinely changed but replaced when the tube is replaced or if bag becomes damaged)
- Observe urinary drainage noting colour and presence of sediment or odour
- Cleaning and reuse of bags is not recommended as it increases risk of infection

Patient Education Materials: order through VCH or PHC

- Nephrostomy Tube Care, Management and Discharge Instructions (FP.490.C18)

Documentation

VCH: Document procedure as determined by your agency.

PHC: Document assessments, actions and outcomes on the 24 hour Flow Sheet, Interdisciplinary or Nursing Notes.

Related Documents

VCH-PHC: Percutaneous Drainage Catheters: Management and Procedure for Irrigation (BD-00-12-40053)

References

Mosby's Skills. *Nephrostomy tube care and flushing* - Author: Colleen Kovacs, RN, MSN, January 2013

Irrigation of nephrostomy tubes by RNs, University of the State of New York - New York State Education Department, Barbara Zittel, RN, PhD, Executive Secretary, State Board for Nursing, May 15, 2009

Nephrostomy catheter care, © Copyright, (2/21/2008) Department of Radiology, The Ohio State University Medical Center - Upon request all patient education Handouts are available in other formats for people with special Hearing, vision and language needs, call (614) 293-3191.

Guidelines for management of nephrostomy tubes, nephrostomy care. The Christie Patient Information Service September 2009 Produced in conjunction with the South Manchester Stoma Care Nurses CHR/PRO/221-02/08.09.03 Review Sept 2012 (www.christie.nhs.uk)

Nephrostomy tube flushing:an evidence-based practice project, Marie Swisher, MSN, RN, OCN®, Johns Hopkins Hospital, Baltimore, MD Vol. 37, No. 3, May 2010 • Oncology Nursing Forum

Vancouver Coastal Health – PolicyNet Coastal (Sept 2011) Patient Care Guideline N-04 *Nephrostomy Tube Care*

Developed by

CPD Developer Lead:

Wound Clinician, AOA, Vancouver Community
Clinical Educator CHA 5, Vancouver Community
Clinical Educator, Home & Community Care, Coastal

Development Team members:

WOCN, VGH
Wound Clinician, RH
Clinical Educator CHA 4, Vancouver Community
Manager Transition Services Team (Acute to Community), VGH
Nurse Clinician, General Surgery ENT/GI, VGH
Clinical Nurse Specialist-Surgery, St. Paul's Hospital, PHC
Nurse Clinician, General Surgery, LGH
Respiratory Nurse Clinician, LGH
WOCN, Clinical Lead/Implementation Lead for eWMS/Pixalere, VCH

Endorsed by

VCH:

Regional SharePoint 2nd Reading - Endorsement by:

Health Authority Profession Specific Advisory Council Chairs (HAPSAC)
Health Authority & Area Specific Interprofessional Advisory Council Chairs (HA / AIAC)
VCH Operations Directors
VCH Professional Practice Directors
Health Authority Medical Advisory Council (HAMAC)

PHC Professional Practice Standards Committee

Final Sign-off & Approved for Posting by

Vice President, Clinical and Systems Transformation and Chief Nursing Officer & Executive Lead, Professional Practice, VCH

Professional Practice Standards Committee, PHC

Date of Creation/Review/Revision

Approved: November 15, 2013

Posted: November 19, 2013

Appendix A: See Manufacturer's information – Securement device

http://www.bardaccess.com/statlock-other-universal-plus.php

This is the info available by following the link above- Most use small

The StatLock® Universal Plus Stabilization Device stabilization of biliary and nephrostomy percutaneous drainage, and peritoneal lavage catheters. The StatLock® Universal Plus Stabilization Device comes in four sizes, to fit virtually all percutaneous drainage catheters:

- small (6 to 8.5 Fr) ,
- medium (10 to 12 Fr),
- large (12 to 14 Fr),
- extra large (14 to 16 Fr) -The extra large size is especially adapted to secure 14 to 16 Fr. peritoneal lavage catheters.