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# **ACI Urology Network - Nursing**

## **Management of patients with Nephrostomy Tubes**

**Clinical Guideline and Patient Information**

## Acknowledgements

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## Clinical Guideline (Nephrostomy Tubes)

The nephrostomy tube is inserted directly into the collecting system of the kidney to allow permanent or temporary urinary drainage.

The following applies to all patients undergoing insertion or change of a nephrostomy tube.

### Acute care setting

- Written patient consent must be obtained prior to insertion or change of the tube.
- A fluid balance chart must be maintained for all patients whilst a nephrostomy tube is insitu.
- Removal of the nephrostomy tube must be attended by a Medical Officer or a Registered Nurse experienced in the procedure and with a Medical Officer's written order
- All nephrostomy tubes must be checked once per shift for patency and abnormal signs or symptoms (e.g. pain, leakage or bleeding) or as required in an acute care setting.
- Urea, electrolytes and creatinine (UEC's), must be ordered and monitored by Medical Officer

### General: Acute/Community

- A Medical Officer must order irrigation or removal of a nephrostomy tube.
- A Medical Officer (MO) or a Registered Nurse (RN) experienced in the procedure must perform irrigation of the nephrostomy tube.
- 2 -10 mls of normal saline to be used for irrigation and the same amount may be retrieved by gravity
- Aseptic technique must be maintained for irrigation, dressing changes and when obtaining urine specimen.
- All urine specimens must be collected from nephrostomy tube by gravity. Do not use aspiration.
- Nephrostomy tubes must be firmly secured and drainage bag anchored to prevent displacement or kinking of the tube.
- All patients and their families/carers must be educated in care of nephrostomy tube well in advance of discharge and provided with a nephrostomy fact sheet and contact telephone numbers in case of problems.
- All patients discharged with a nephrostomy tube must be referred to the Community Nurse to ensure that client/carer is monitoring patency of tube and for maintenance of continuity of care

## Background

Percutaneous Nephrostomy is an image-guided placement of a catheter into the renal collecting system. Nephrostomy tubes are inserted in the Operating Theatre or Radiology Department to provide permanent or temporary urinary drainage following a procedure or to relieve ureteric obstruction. Irrigation of a nephrostomy tube is indicated if there is

absence of urine in the drainage system, blood in the urine or if flank pain occurs. Medical Officer orders irrigation of the nephrostomy tube

## Types of nephrostomy drainage tubes

**Pigtail:** The retaining mechanism is a coil which is retained within the renal pelvis (placed in Radiology)

**Wide Bore** e.g. Malecot or Foley catheter (placed in operating theatre) following renal pelvis surgery predominately percutaneous nephrolithotomy

## Indications for Insertion of a Nephrostomy Tube

- To enable remove renal calculus.
- To decompress an obstructed system and to maintain or improve renal function following ureteric obstruction
- To obtain access to the renal pelvis for radiological procedures. E.g. insertion of ante grade stent

## Complications associated with Insertion of a Nephrostomy Tube

- Bleeding
- Sepsis
- Injury to an adjacent organ

## Insertion of a Nephrostomy Tube

### Pre- Procedure Management

- Nil by mouth six hours prior to the procedure or as ordered by Medical Officer.
- Confirm with Medical Officer administration or withholding of anticoagulants and other medication
- Administer analgesia or pre-medication as prescribed.
- Non-insulin dependent diabetic patients must have blood glucose levels (BSL) checked according to facility protocol from fasting time.
- Insulin dependent diabetic patients must have insulin dextrose infusion and hourly BSL checked unless otherwise stated by Medical Officer.
- UECs must be obtained pre-procedure and results to be reviewed by Medical Officer.

### Post-Procedure Management

- Administer analgesia as prescribed.
- Patient should be on bed rest for 4 hours
- Nephrostomy tube must be connected to a sterile closed drainage system and drainage bag should be below level of kidney at all times.

- Post procedure vital signs to be monitored half hourly for 2 hours, hourly for the next 2 hours then four hourly for 24 hours.
- **If temperature is higher than 38 degrees, BP less than 100mmhg systolic and/or pulse greater than 120 beats per minute, Medical Officer must be notified. If Medical Emergency Team criteria exist, call the team.**
- Measure urine output hourly for 4 hours, then 4 hourly for 24 hours then progress to 8 hourly until stable.
- **If total urine output is less than 30mls/hr notify Medical Officer.**
- Monitor urine for colour and presence of sediment.
- *Note:* It is normal for blood to be present in the urine immediately after nephrostomy insertion but it should decrease within 48 hours.
- Notify Medical Officer if urine flow consistently remains heavily blood stained.
- Strict fluid balance chart must be maintained
- Medical Officer must monitor UEC's until results are stabilized.
- Nephrostomy tube dressing site must be observed every hour for four hours, 4 hourly for 24 hours, then once per shift for bleeding and signs of infection (pain, leakage, redness, swelling, bleeding)
- Report any abnormalities to the Medical Officer.
- Inspect nephrostomy tube to ensure it is secure and no kinking has occurred
- Encourage the patient to drink at least two litres of fluid daily unless contraindicated.
- Observe for leakage at connection joints and seek advice if leakage evident.
- All urine specimens must be collected from nephrostomy tube by gravity. Do not use aspiration.
- Nephrostomy tube must be well secured at all times to prevent dislodgment.
- Nephrostomy insertion site **MUST** be kept dry, protect whilst showering.

## Ongoing Care

### Irrigation of Nephrostomy Tube

#### Important Points to Consider

- This is an aseptic procedure
- Irrigation is required if there is absence of urine, if urine remains heavily blood stained, if patient has persistent flank pain or suspected blockage. Check with attending Medical Officer if standing orders apply.
- Do not flush greater than 20mls of sterile saline.
- Observe for continuous urine flow and signs of infection.
- Notify Medical Officer immediately if the tube cannot be irrigated or if it is dislodged or fallen out. In a community setting refer the patient to the Emergency department.

## Equipment

- Personal Protective Equipment (PPE)
- Dressing pack
- Disposable blue sheet
- Sterile gloves
- Alcohol wipes or 70% alcohol
- 10 ml syringe (Pigtail Catheter)
- Catheter tip (Toomey) syringe (Foley Catheter)
- Sterile normal saline
- Drain fix dressing

## Procedure

- Confirm the Medical order is documented in the patient's health care record.
- Explain the procedure to the patient.
- Assemble equipment.
- The patient lies on their side on the opposite side of the nephrostomy tube
- Place the disposable sheet under the patient.
- Wash hands.
- Wear Personal Protective Equipment (PPE)
- Clean the connection port with 70% alcohol, allow to dry before removing drainage bag.
- Gently instil sterile normal saline.
- Do not aspirate or force, if resistance occurs, ask the patient to lie down on their back and then again on their side. If resistance continues notify Medical Officer. In the community stop procedure and refer client to the emergency department.
- Notify Medical Officer if no drainage occurs. In the community refer client to Emergency
- Document in the patient's health care record and fluid balance chart, the total used for irrigation as well as amount drained

## Nephrostomy Tube Removal

Before removal of any type of nephrostomy tube the patient may have a Nephrostogram.

**NB: If the patient has a ureteric stent insitu the pigtail nephrostomy tube should be removed in Radiology department under image intensifier to prevent dislodgment of the stent**

## Equipment

- Personal protection equipment (PPE)
- Dressing pack
- Stitch cutter

- Sterile normal saline
- Sterile gloves
- Pressure dressing (Combine with Hyperfix) if excessive urine drainage after removal or transparent dressing with absorbent gauze (opside)
- 5ml syringe to deflate the balloon (Foley Catheter)
- Ostomy or drainage bag (if persistent leakage from site)

### **Procedure**

- Explain procedure to the patient.
- Administer analgesia (if required) prior to the removal of the nephrostomy tube.
- The patient lies on their side on the opposite side of the nephrostomy tube
- Wash hands
- Wear PPE
- Medical Officer/Registered Nurse (experienced in the procedure) removes nephrostomy tube according to type as below

### **Pigtail**

- Cut suture
- Release locking mechanism
- Gently withdraw tube until removed
- If any resistance felt abort procedure and seek advice from experienced clinician

### **Wide bore catheter (Foley type)**

- Cut suture
- Attach a 5ml syringe to the catheter and allow the balloon to self-deflate.
- Remove gently.
- Apply dry dressing to the site

### **Malecot Catheter (not commonly used)**

- Withdraw gently
- If Registered Nurse is removing any type of catheter and if resistance felt, do not force and contact Medical Officer immediately.
- Apply dry dressing to the site
- Following removal of catheter continue to observe site for ongoing drainage and leakage.
- If excessive drainage occurs an ostomy bag may be applied over the site.
- Educate patient regarding possible leakage from drain site for next 24 hours.
- Document procedure in the patient health care record.

## Dressing around the tube

Dressings around a nephrostomy tube may vary depending on availability. Options include:

- A specialised catheter anchor called a drainfix. This can stay insitu for 2-3 weeks.
- A comfeel wafer placed around the exit site.
- Op site.
- Dry dressing.
- Waterproof the dressing before showering.

## Patient Discharge

- Provide individualised education to the patient, relatives or significant others
- Reinforce hand hygiene when handling the nephrostomy tube, dressing and before and after emptying the drainage bag.
- Educate patient/carer to perform tube care and record urine output under the supervision of a RN before discharge.
- Provide patient/carer with extra 3 drainage bags (leg bags if ambulant) and 3 drain fix dressings
- Inform patient to arrange an appointment with Medical Officer on discharge. If the tube is to be permanent make a booking in the Radiology Department for routine change every 6 – 8 weeks, as requested by the doctor.
- Provide patient/carer with education fact sheet prior to discharge and confirm that they understand the information.
- Refer patient to appropriate services for access to equipment before discharge.
- Refer patient to Primary Health Nursing Team to maintain continuity of care.
- Document in the patient's health care record.

## Supply of Equipment and Funding Bodies

An assessment by a continence nurse advisor is recommended to ensure the most appropriate continence product, including the correct fit and application of the product.

### Continence Aids Payment Scheme (CAPS)

This is a federal government scheme available to people aged five years and over who have a permanent and severe incontinence due to:

- Neurological conditions (no Pension Concession Card required) such as intellectual disability (e.g. autism, autism spectrum and Aspergers Syndrome), paraplegia & quadriplegia, acquired neurological conditions (e.g. Alzheimer's Disease, dementia), degenerative neurological diseases (e.g. Parkinson Disease, motor neurone disease), or
- Permanent and severe bladder/bowel innervations (e.g. atonic bladder/hypotonic bladder, prostatectomy with nerve removal) or
- Other causes such as bowel cancer, prostate disease and holds a pension Concession Card

Applicants will need to provide a Health Report from an appropriate health professional such as their medical practitioner or continence nurse about their condition.

Eligible CAPS clients receive an annual indexed payment for continence products

A patient is NOT eligible for CAPS if their incontinence is not permanent or severe or any of the following:

- they are a high care resident in a Australian Government funded aged care home
- they are eligible for assistance with continence aids under the Rehabilitation Appliances Program ( RAP ) which is available through the Department of Veterans' Affairs
- they receive an Australian government funded Extended Aged Care at Home Package (EACH) or an extended Aged Care at Home Dementia Package ( EACH D package )

Further information on eligibility and to obtain an application form:

CAPS Helpline: 1300 366 455

Email: [continence@health.gov.au](mailto:continence@health.gov.au)

### Enable NSW Aids and Equipment Program

Enable NSW provides a wide range of equipment (including continence aids) to people with permanent disabilities living in the community who:

- Have a permanent or indefinite disability
- Have a Health Care Card, Health Interim Voucher or Pension Concession Card
- Have not received compensation for their injuries or disability, including not being on a Commonwealth rehabilitation Program or being supplied with aids and appliances under the Motor Accident Act
- Are State wards or children in foster care who have a disability.

Continence aids are available to people 3 years and older living in the community or who have recently been discharged from hospital or acute care. The person must be discharged for at least one month and not be under outpatient treatment.

Subsidy is decided by product quota rather than by financial amount. Clients are required to make a \$100 co-payment each year in which an item is received. In the case of continence

products, where the supply is generally ongoing, the client would contribute \$100 each year. PADP is meant as an assistance program not to cover all costs incurred by a person.

Assessment is required by an authorised health professional (assessment by medical practitioners is not accepted) to obtain a prescription for appropriate aids and apply to EnableNSW. Information is available on the NSW Health website:

[www.enable.health.nsw.gov.au](http://www.enable.health.nsw.gov.au)

## **BrightSky Australia offers**

- One-stop-shop that provides retail and a national home delivery service of specialist healthcare products.
- Professional continence and wound care advice by phone or appointment. Please call (02) 8741 5600

Address: 6 Holker Street, Newington NSW 2127 (cnr Avenue of Africa)

Phone no.: 1300 88 66 01

Fax: 1300 88 66 02

Email: [orders@brightsky.com.au](mailto:orders@brightsky.com.au)

Web store: [www.brightsky.com.au](http://www.brightsky.com.au)

## **Independence Australia**

Independence Australia offers online and retail shopping for medical and healthcare products to the general public. It is also one of the national suppliers of continence products to eligible veterans in Australia under the Rehabilitation Appliances Program (RAP). The order form has to be completed by a health professional.

Address: 47B Princes Road West, Auburn NSW 2144

Phone: 1300 78 88 55

Fax: 1300 78 88 11

Email: [customerservice@independencesolutions.com.au](mailto:customerservice@independencesolutions.com.au)

Web store: [www.Independenceaustralia.com](http://www.Independenceaustralia.com)

## **Intouch Direct**

Intouch is one of the national suppliers of continence products to general public, eligible veterans and war widows/widowers.

Phone: 1300 13 42 60

Fax: 1300 76 62 41

Email: [healthcare@intouchdirect.com.au](mailto:healthcare@intouchdirect.com.au)

Web store: [www.intouchdirect.com.au](http://www.intouchdirect.com.au)

## **Chemist**

You may like to discuss with your chemist about getting your supply and negotiate the price.

## **Supermarkets**

Incontinence pads are available from local supermarkets.

## **Department of Veterans' Affairs (DVA)**

The Commonwealth Department of Veterans' Affairs (DVA) provides a range of incontinence products to eligible veterans and ward widow/er's via the Rehabilitation Appliances Program (RAP). Eligible applicants need to:

- hold a Gold Card; ( eligible for treatment of all conditions whether or not they are related to war service) ;
- hold a White Card and the incontinence is a result of a specific accepted disability;
- have been assessed by a health professional as requiring products for incontinence; or
- products are provided as part of the overall health care management

Gold and White Card holders are not eligible if they are residents receiving high level aged care

A form requesting the incontinence products is filled out by the assessing doctor or health professional. It is then sent to an authorised product supplier on behalf of the client.

For all enquiries in regards to continence products and supply arrangements, please Contact the South Australian State Office:

National Continence Contract Team

Department of Veterans' Affairs

GPO Box 1652

(199 Grenfell St)

Adelaide SA 5001

Phone: 1300 131 945

Or NSW Dept of Health – Primary Health & Community Partnerships: (02) 9391 9515

Continence Promotion Centre: (02) 8741 5699

## References

NSW Health: Managing Pigtail Drains Safely. Safety Notice - 019/09 Dated 08 October 2009

Clinical updates: Pigtail Drain tubes: A guide for Nurses Hayes. D. Australian Nursing Journal. 2005, V12 (10), 19-20

Hautmann S. H. and Leveillee, R. Nephrostomy. Emedicine: Instant access to the minds of medicine; 2001.December 3; [cited 2002 Oct 10]. Available from: URL <http://www.emedicine.com/med/topic3040.htm>

Lewis S.M., Heitkemper M.M., & Dirksen. Medical Surgical Nursing. (2000) Mosby: St. Louis, Missouri.

Piera, M. Cote Robson, Caring for Your Nephrostomy Catheter (2011) Memorial Sloan-Kettering Cancer Center.

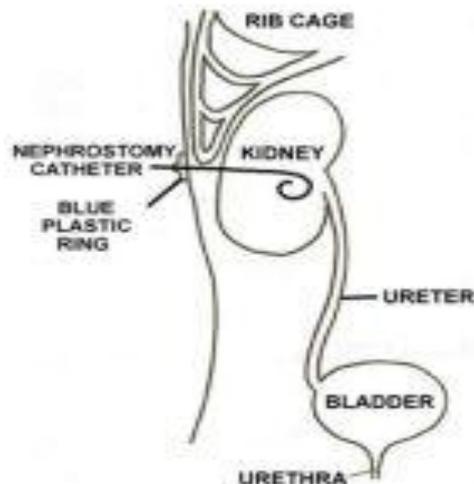
Ramchandani, P., Cardella, J. F., Grassi, C J., Roberts, A. C., Sacks, D., Schwartzberg, M. S., and Lewis, C. A. Quality improvement guidelines for percutaneous nephrostomy. Journal of Vascular Interventional Radiology 2001; 12: 1247- 1251.

Unknown. Renal Concepts in critical care: nephrostomy tube care. Nursebob; 2001 February 5; [cited 2002 April 23]. Available from:

Ng, C. K., Yip, S. K. H., Tan, B. H., Wong, M. Y. C., Tan, B. S., and Hiao, A. Outcome of Percutaneous Nephrostomy for the Management of Pyonephrosis. Asian Journal of Surgery 2002; 3(25): 215-219.

## Fact Sheet

A nephrostomy is an artificial opening created between the kidney and the skin which allows direct drainage of urine from the upper part of the urinary system when normal flow is impeded.



### Why do I need a nephrostomy tube?

- You may have a blockage of the ureter (the structure that normally carries urine from the kidney to the bladder).
- There may be a hole in the ureter or bladder causing urine to leak.
- To prepare for surgery or other procedures on the kidney and ureter, such as removal of a large kidney stone<sup>10</sup>.

### Before the procedure or operation

- You will be given information to prepare you before the procedure or operation.
- Inform your doctor if you are on medications especially blood thinning medication e.g. warfarin or aspirin or Clopidogril. These should usually be stopped 7 to 10 days before surgery as they increase the risk of bleeding. The doctor will inform you when to stop and restart the medications.
- Blood and urine samples will be taken for investigation.

### After the procedure or operation

- A dressing will be covering the site of the tube which will be checked by the nursing staff.
- There may be blood draining from the tube which is normal and will decrease in a few days.
- You should drink 1500mls - 2000mls (6 to 8 glasses of 250mls size) fluid to flush the blood from the kidneys.
- Your stay in hospital maybe 2-3 days.
- Generally the tube will be removed before you leave the hospital however you may be discharged with the tube attached to a drainage bag.

### **How to care for your Nephrostomy tube**

- Education to you or a family member of your choice must be provided before leaving the hospital to go home.
- Ask your doctor what is the minimal amount of urine you should expect to pass daily.
- Ask the nursing staff, if a community nurse follow-up visit has been arranged.
- Make sure you are provided with drainage bags and given information about how to obtain more supplies

### **How to care for your tube**

- Empty your drainage bag as required
- Drink at least 1500mls – 2000mls (6 to 8 glasses of 250mls size) fluid everyday or as advised by the doctor
- Ensure that tube is kept straight and not bent to allow proper flow of urine
- Keep the tube well secured. Tape to a wafer or comfeel to protect the skin.

### **Dressing around the tube**

Dressings around a nephrostomy tube may vary depending on availability. Options include:

- A specialised catheter anchor called a drainfix. This can stay insitu for 2-3 weeks.
- A comfeel wafer placed around the exit site.
- Op site.
- Dry dressing.
- Waterproof the dressing before showering.

### **Changing your bag**

- Change the urine drainage bag every 7 days
- Always wash your hands before and after changing the bag from the nephrostomy tube.
- If another person is assisting with changing your bag they **must** wear disposable gloves and protective eyewear
- Empty your drainage bag into the toilet
- Gently pinch with your fingers the soft nephrostomy tubing to prevent any leakage and gently disconnect your bag
- Connect the new bag and release the tube to allow for urine to drain.
- Make sure your bag is below the level of your kidneys to prevent urine going back into the kidney
- Place your old empty urine drainage bag in a disposal bag before placing it in the household rubbish bin.

### **When to call your Nurse or Doctor**

- The urine amount is below what you were told by your doctor to expect to drain daily.
- Excessive pain (not relieved by medication ordered by your doctor).
- If you have a temperature.
- Chills
- Nausea and vomiting.
- Back pain
- Cloudy and smelly urine.
- Blood in your urine.
- Blood around the tube
- Leaking of urine from insertion site

If the Nephrostomy tube falls out it is essential that it be replaced quickly as the insertion site may begin to close. You will have to go to the hospital Emergency Department immediately for the tube to be replaced.

Ask the Doctor/Nurse the date and day of your next appointment to change or remove the nephrostomy tube

Family Doctor

Tel No:

Primary Health Nurse

Tel No:

Local Hospital

Tel No: