CLINICAL GUIDELINE

MANAGEMENT OF PLEURX DRAINAGE CATHETER SYSTEM

TARGET AUDIENCE

All clinical staff responsible for the care of a patient with an abdominal and Thoracic PleurX Catheter.

STATE ANY RELATED PETER MAC POLICIES, PROCEDURES OR GUIDELINES

Hand Hygiene Procedure

Thoracic Aspiration Procedure

Abdominal Paracentesis Procedure

Aseptic Technique Procedure

Precinct Patient Transfer Procedure

PURPOSE

To provide clinical guidelines for the management of patients with an inserted PleurX Catheter (abdominal and thoracic) and the subsequent use of the PleurX Drainage Kit and PleurX Vacuum Bottles. This document will focus on appropriate patient preparation and post procedural care. The PleurX system is indicated for intermittent, long term drainage of symptomatic, recurrent abdominal and pleural effusions. The PleurX system is indicated for the palliation of symptoms and is intended for management in the outpatient setting.

PRE AND POST INSERTION CARE AND PATIENT PREPARATION

- Ensure patient is in a hospital gown and has had appropriate analgesia (if required) prior to transfer– if the patient requires light sedation, this will be managed by the CI staff. Administration of sedation in the ward setting prior to the procedure will impair the patient's ability to give informed consent (unless consent has already been obtained)
- FBE and clotting studies must be reviewed before procedure (platelets to be greater than 50 & INR 1.4). If the patient has not had a recent FBE/Coags (within 6 weeks) then the procedure may need to be rebooked Contact the Cancer Imaging staff for more information if required.
- All inpatients require "precinct transfer form MR/77" to be completed and accompany them.
- If patient is an inpatient being sent across to RMH, please complete "Procedure Safety Checklist IP23C"
- Identify and ensure site is appropriately marked.

PROCEDURE USING DRAINAGE KIT

Note: Procedure must only be undertaken by a suitably qualified nurse or medical officer. Hand Hygiene Procedure and Aseptic Technique Procedure should be referred to and adhered to throughout this procedure.

- Identify patients requiring drainage of pleural / ascitic fluid i.e. symptomatic or prescribed drainage times and discuss with patient decision to drain.
- Education of the patient and/or carer should take place throughout entire procedure.
- Set up a clean dressing trolley or workspace and gather required equipment:

  Equipment required Pleural:

  PleurX Drainage Kit containing:

  - Plastic Vacuum Bottle with attached Drainage Line (pleural drainage only)
  - Procedure Pack containing:
    - 3 x alcohol pads
    - Pair of sterile gloves
    - Valve cap
    - Blue emergency slide clamp
    - 4 x gauze pads
    - Foam catheter pad
    - Tegaderm
  - Yellow clinical waste bag
  - Personal Protective Equipment (PPE) as required

  Abdominal drainage:

  - PeriteX drainage kit containing:
    - 3 x alcohol pads
    - Pair of sterile gloves
    - Valve cap
    - Blue emergency slide clamp
    - 4 x gauze pads
    - Foam catheter pad
    - Tegaderm
  - Yellow clinical waste bag
  - Personal Protective Equipment (PPE) as required.

- Attend to vital signs if clinically indicated.
- Attend to hand hygiene and don non sterile gloves, gently remove the dressing from over the catheter. Observe insertion site for any redness, swelling or fluid around the catheter.
- Discard dressing and non-sterile gloves. Hand hygiene.
- **Pleural:** Open the PleurX Drainage Kit on to the clean trolley. Set adhesive dressing aside. Open the sterile procedure pack with flap side up, and carefully unfold the blue wrapping. Open the sterile Vacuum Bottle bag and remove the bottle with the attached drainage line; place on corner of dressing trolley. Remove paper tape from line; uncoil line, ensuring that the access tip is kept sterile. **If the cover had fallen off the access tip, make sure you do not touch the tip with your hands or anything non-sterile.**

  Abdominal: Open the PeriteX drainage kit on a clean trolley. Set adhesive dressing aside. Open the sterile procedure pack with flap side up, and carefully unfold the blue wrapping. Place the drainage bag on the corner of the dressing trolley. Keep access tip sterile. **If the clover had fallen off the access tip, make sure you do not touch the tip with your hands or anything non-sterile.**
- Don sterile gloves.
- Roll the roller clamp on the drainage line so it is completely closed
- Hold the drainage line near the access tip and remove the cover with your other hand by twisting and pulling gently; set back onto sterile field.
- Hold the base of the catheter valve and remove the cap by twisting it counter clockwise and pulling gently. Discard the cap.
- While holding the base of the catheter valve in one hand, clean around the valve opening with an alcohol swab (ensure opening has been cleaned a full 360 degrees)
- Continue holding the catheter near the valve. Pick up the drainage line with your other hand and insert the access tip securely into the catheter valve. You will hear a click when the access tip and valve are locked together.

  Keep the valve on the PleurX Catheter and access tip on the drainage line sterile. Keep them away from other objects to help avoid contamination.

  Ensure the drainage bag or bottle is below the site of drainage.

  Drainage of Fluid (Pleural):

  - The support clip on the vacuum bottle ensures that the vacuum seal on the bottle is not broken before you are ready. Remove the support clip by grasping the upper part of the flange and pulling outward.
  - Hold the bottle steady with one hand and push the white “T” plunger down with the other hand to puncture the foil seal. The vacuum in the bottle will pull the flexible bottle cap down. Check vacuum of bottle is intact.
  - Slowly release the roller clamp on the drainage line to begin drainage. Fluid will flow into the vacuum bottle. You can control the flow rate by adjusting the roller clamp.

- When the fluid is almost completely drained, the flow into the bottle may slow down, you may be able to observe “bubbles” or the sound might change. When the flow stops or the 500mL bottle is filled, adjust the roller clamp on the drainage line so that it is completely closed.
- Drainage will usually take 5 – 15 minutes. The patient may experience some pain or discomfort when draining fluid. Adjusting the roller clamp to slow or stop the flow of fluid for a few minutes may lessen the pain. Consider use of analgesia pre medication for subsequent drainages.

Drainage of fluid (Abdominal):

- Attach drainage line in one gloved hand and the catheter valve in the other, pull the access tip out of the valve in a firm, smooth motion. Set the drainage line down.
- Clean the valve with an alcohol swab, ensuring standard aseptic non touch technique is adhered to as per Aseptic Technique Procedure.
- Slowly release the roller clamp drainage line to begin drainage. Fluid will flow into the PeriteX bag. You can control the flow rate by adjusting the roller clamp.
- When the fluid is almost completely drained, the flow into the bag may slow down. When the flow stops or the 1,000mL bag is filled, adjust the roller clamp on the drainage line so that it is completely closed.
- Drainage will usually take 5-15 minutes. The patient may experience some pain or discomfort when draining fluid. Adjusting the roller clamp to slow or stop the flow of fluid for a few minutes may lessen the pain. Consider use of analgesia pre medication for subsequent drainages.

Drainage volumes:

The timing and volume of pleural or ascitic fluid to be drained should be determined by the patient’s symptoms and on the orders of the patients home team. This information should be documented & discussed with the family. Care must be taken not to drain large volumes of fluid too quickly to prevent the patient from becoming hypotensive.

PleurX Product Information Recommendations re drainage volumes:

Pleural drainage – it is recommended that no more than 1000mL of fluid is drained from chest at any one time

Abdominal drainage - it is recommended that no more than 2000mL of fluid is drained from abdomen at any one time

Please Note this is a guide only - it is recommended that if large volumes of fluid are to be drained this should happen over a period of time and the patient closely monitored for any adverse outcomes

Placing a New Dressing:

1. Clean around the catheter site with remaining alcohol swab. Perform skin inspection, observing for signs and symptoms of infection and exudates. Wound swab and / or fluid MCS if clinically indicated.
2. Place the foam catheter pad around the catheter.
3. Wind the catheter into loops and place it over the foam pad.
4. Cover the catheter with all gauze swabs provided.
5. Remove gloves. Hand hygiene.
6. Take the self-adhesive dressing and peel away the larger of the two pieces of paper backing from the dressing.
7. Centre the dressing over the gauze and press it down.
8. Place waterproof occlusive dressing over gauze
9. Ensure the gauze is covered and the dressing is secure.

Potential Complications:

Complication	**Signs and Symptoms**	**Management**
Pneumothorax (pleural)	Sudden onset of; • chest pain • tachycardia • cough • dyspnea • tachypnea • nasal flaring	MET call if vital signs indicate need Medical review Re-inflation of lung through interventions such as intercostal catheter
Re-Expansion Pulmonary Oedema (pleural)	• Persistent severe cough • chest pain • frothy sputum • dyspnea • tachycardia • tachypnea • hypoxemia	MET call if appropriate Administer supplemental oxygen May require ventilation
Hypotension/Hypovolemic shock if large amounts of fluid are drained to quickly (pleural & ascitic)	• Dizziness • Light headed • Weakness • Blurred vision • Fatigue • Collapse	MET call if vital signs indicate need Clamp Drainage Clinical Review or MET call if appropriate
Infection – sutures or wound site (pleural &	• Ooze • Redness	Medical review Culture and sensitivity of wound

ascitic)	• Pain • Febrile	Antibiotics as prescribed
Pain (pleural & ascitic)	• Tachycardia • Anxiety	Medical review as tubing may have dislodged Review dressing – may require more padding if pain related to position of tubing

Post Drainage

- Discard bottle or bag into yellow clinical waste bag and then place into yellow clinical waste bin, or cytotoxic waste if the patient has had chemotherapy within the last seven days.
- Assess the patient for pain, dyspnoea, difficulty breathing or general discomfort.
- Document the output onto PleurX output record, including amount, colour and any comments.
- Ensure plan is formed and documented for subsequent drainages.

Patient Education

- BDPleurX system patient education draining fluid video is available online https://www.bd.com/en-us/offerings/capabilities/interventional-specialties/drainage/about-the-pleurx-drainage-system/patient-information-pleurx-system/how-to-drain-at-home
- Provide the patient with the BD'Frequently Asked Questions' brochure and BD patient direction for use pamphlet (found on the BD website listed in references)
- Discuss potential complications the management of these and also provide the patient and carer with contact numbers

Discharge Planning

- All Peter Mac patients will require referral to Peter Mac @ Home (MR/60-IC) for management of PleurX drainages and/or ongoing supply of PleurX bottles.
- Clinical staff involved in discharge planning should make contact with the Peter Mac @ Home team to confirm receipt of referral and to seek advice on supplies to send home to patient.
- Patients should be supplied with at least 2 x 500mL PleurX bottles on discharge from the inpatient and outpatient areas.
- Ward 3A have 500mL bottles on stock, as well as abdominal drainage bags.
- Ongoing supply of PleurX bottles will be managed by the Peter Mac @ Home team.
- Patients that are self-managing their drainages will be required to make contact with the Peter Mac @ Home team to arrange supplies and arrange a time to collect from the Peter Mac @ home department.

- Patients who have regular drainages by the Peter Mac @ Home team will be supplied with PleurX bottles during their scheduled visits.
- Prior to discharge, patients must receive education and be provided with contact details in case of emergency.

DEFINITIONS

PleurX Catheter	A long – term, fenestrated, silicone catheter, inserted into the pleural or abdominal space to allow for management of symptomatic malignant effusions
PleurX Drainage Kit	A kit specifically designed to access the PleurX Catheter for drainage of pleural and ascetic fluid. The kit contains a drainage line, with a roller clamp to control rate of drainage, a vacuum bottle, and a sterile procedure pack with gloves, valve cap, slide clamp, alcohol swabs and dressing supplies. Single use only.
PleurX Vacuum Bottles	A plastic vacuum bottle, connected to the drainage line, with active vacuum technology, to ensure quick and comfortable drainage, without gravity. Vacuum bottles come in 500mL or 1000mL sizes. Single use only.

RESPONSIBILITIES

Ward Medical Staff	• Identification and referral of patients who would benefit from insertion of PleurX catheter • Ensure FBE and clotting studies are within acceptable range prior to procedure. i.e. Platelets >50,000, INR 1.0 • Withhold anti-coagulants if required. • Documentation of frequency of drainage from PleurX in conjunction with Cancer Imaging Medical Staff • Overall treatment plan for patients underlying malignancy
Cancer Imaging / Theatre Nursing Staff (if outpatient procedure) [Abdominal PleurX insertion]	• Positive patient ID before the procedure occurs – ensure a consent form has been signed & patient has received education about the procedure – ensure time out occurs • Set up equipment and assist with the procedure • Assessment of patient prior, during and post procedure • Provide handover to ward nursing staff if an inpatient procedure • Provide education and equipment to patient post procedure prior to discharge. • Referral to appropriate nursing services e.g. PM@H, RDNS, community palliative care
Cancer Imaging / Theatre Medical Staff	• Positive patient ID before the procedure occurs – ensure time out occurs

(Abdominal PleurX insertion)	• Identify indication and decision for procedure • Gain patient consent for the procedure • Assessment of patient prior, during and post procedure • Insertion of the PleurX catheter • Documentation of events on the CI assessment & observation form (MR 68C). • Determine the Rate and Volume of Fluid Drainage required.
Ward Nursing Staff (if inpatient procedure)	• Thorough clinical assessment of patients prior to and post insertion of PleurX Catheter, and pre, during, and post drainage fluid. • Liaising with medical staff and Nurse Coordinator regarding frequency of drainage • Documentation of fluid output • Awareness and troubleshooting problems that may arise due to the PleurX Catheter • Educating the patient and/or their carer how to independently manage the PleurX catheter to facilitate safe and timely discharge • Provision of resources to patients e.g. patient starter kit, information DVD, drainage instructional chart • Referral to appropriate nursing services e.g. PM@H, RDNS, community palliative care • Provision of appropriate supplies e.g. Drainage Kit & Vacuum Bottles
Nurse Consultant	• Initiates patient and staff education in ambulatory setting. • Discussion with patient and surgeon regarding marking stoma site of catheter pre procedure • Ongoing telephone assessment post procedure/discharge • Assess symptoms, drainage, advise regarding frequency of drainage, and provide ongoing equipment. • Provide practical and emotional support to patient family and community health care providers. • Communicate and liaise with medical team • Monitoring efficacy of PleurX catheter (follow up on discharge)
PM@H Nursing Staff.	• Liaising with medical staff and nursing coordinator to confirm care plan for visits including frequency and amount of drainage and specific parameters for reporting • Thorough clinical assessment of patients pre, during and post drainage of pleural effusion • Documentation of fluid drainage • Awareness and troubleshooting problems that may arise due to PleurX catheter

	• Ensure all documentation including consent and referral sent. • Liaising with nurse consultant to inform of need for more PleurX supplies • Ensure any concerns, abnormal vital signs and complications of PleurX drainage is escalated as per PM@H escalation procedure

SUPPORTING DOCUMENTS

https://www.bd.com/en-us/offerings/capabilities/interventional-specialties/drainage/about-the-pleurx-drainage-system/patient-information-pleurx-system

https://www.bd.com/en-us/offerings/capabilities/interventional-specialties/drainage/about-the-pleurx-drainage-system/pleurx-resources

REFERENCES

Kalimi, R., Khodadadian, L., Kim, A & Warren, W. (2008). Manageent of Malignant Pleural Effusions Using the PleurX Catheter. *The Society of Thoracic Surgeons,* 85, 1049-1055

Kim, A., Liptay, M & Warren, W. (2008). Identification of clinical factors predicting PleurX catheter removal in pateints treated for malignant pleural effusion. *European Journal of Cardio-thoracic Surgery,* 33, 89-94

http://wiki.cancer.org.au/australia/Clinical_question:What_is_the_optimal_management_of_malignant_pleural_effusions%3F

BD PleurX Clinician Resource
http://www.bd.com/en-us/offerings/capabilities/interventional-specialties/drainage/about-the-pleurx-drainage-system/pleurx-drainage-system

FURTHER INFORMATION

1. Review the planned chemo pathways and test the home before 10am worst case scenario to determine which pathways could still be started at 1800 in the evening and brought forward over x days to make 10 am d/c possible

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