Health Sciences North
Horizon Santé-Nord

SURGICAL PROGRAM
PROCEDURE

CATEGORY: System-Level Clinical
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SUBJECT: **CHEST TUBE REMOVAL (INTRAPLEURAL OR MEDIASTINAL)**

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PURPOSE
To ensure the safe removal of intrapleural (large bore or small bore/pigtail catheter) or mediastinal chest tubes upon the order of a physician.

PROCEDURE
Equipment
- Sterile dressing tray
- Approved antiseptic solution
- PPE (clean gloves, sterile gloves, surgical mask, protective eyewear)
- Suture cutter
- Sterile Vaseline packs (at least one package on one 4x4 gauze per chest tube)
- Prepackaged Jelonet (one Jelonet dressing on one 4x4 gauze per chest tube) for cardiac patients
- Cloth tape (Medipore/Hypafix)
- 2 rubber tipped chest tube clamps or atraumatic plastic clamps

Special Instructions
- **This is an added nursing skill which requires two RNs**. One must be certified. The second nurse assists in the removal, dressing application and maintenance of an occlusive seal.
- Prior to removal, verify the following:
  - There is no intrapleural airleak (temporarily discontinue suction to assess) and that the indication for the chest tube has been resolved
  - Correct patient, correct procedure and correct site
- Remove mediastinal chest tubes prior to pleural chest tubes.
- Assess for presence of a purse string suture. If present, do not cut this suture.
- If any sucking-type sounds are heard from the chest at any time during this procedure, reinforce the site with a Vaseline and gauze occlusive dressing. Notify the physician immediately, as this could indicate a potential pneumothorax.

- If any resistance is met during withdrawal, stop the procedure, cover the chest tube site with an appropriate occlusive dressing and notify the physician.

See Appendix A for Removal of One Chest Tube (Large Bore) to a Single Closed Drainage System
See Appendix B for Removal of a Small Bore/Pigtail Catheter
See Appendix C for Chest Tube Removal with a Purse String Suture
See Appendix D for Removal of Both Bifurcated Chest Tubes
See Appendix E for Removal of One Bifurcated Chest Tube - Closed Drainage Systems with 6-in-1 Y Connector
See Appendix F for Removal of One Bifurcated Chest Tube - Thopaz Double Tubing with Built-In Y Connector
See Appendix G for Chest Tube Removal on Ventilated Patients

EDUCATION AND TRAINING

Definitions

1. Bifurcated Chest Tubes: Two chest tubes connected to a single drainage container.
2. Purse-String Suture: A surgical suture passed as a running stitch in and out along the edge of a circular wound. When the ends of the suture are drawn tight, the wound is closed like a purse.

Education/Training Related Information

To be certified in chest tube removal, the RN must complete the Verification of Skill process:

- Observe at least one removal and assist with at least one removal before being permitted to perform the removal under observation
- Perform the removal at least twice and perform the skill independently (without coaching)

References and Related Documents

HSN Self Learning Package: Chest Tube Maintenance and Removal

Lynn-McHale Wiegand, D., (2011). AACN Procedure Manual for Critical Care, 6th Edition. St Louis: Elsevier, Saunders.

Perry, A. G., Potter, P., Ostendorf, W. R. (2014). Clinical Nursing Skills & Techniques, 8th Edition. St Louis: Elsevier, Mosby.

Smith, S.F., Duell, D. J., Martin, B. C. (2012). Clinical Nursing Skills, Basic to Advanced Skills, 8th Edition. New Jersey: Pearson

APPENDIX A

Removal of One Chest Tube (Large Bore) to a Single Closed Drainage System

Method

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Instruct the patient on the proper breathing pattern to be used during the removal.
   A. Inhale and exhale deeply twice. On the third occasion, take a deep breath in and hold it (Valsalva maneuver) until the tube is removed and the occlusive dressing is applied.
   B. If unable to hold his/her breath, instruct the patient to hum while exhaling after the third breath until the tube is removed and the occlusive dressing is applied.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the dressing tray and add the occlusive dressing.
6. Both RNs don appropriate masks and protective eyewear as per infection control guidelines and clean gloves.
7. Remove the chest tube dressing.
8. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain culture for C&S. A physician order is required to send a C&S swab.
9. Maintain the **current order for suction** during the removal procedure.
10. Both RNs wash hands and don sterile gloves.
11. Cleanse the chest tube insertion site with approved antiseptic solution.
12. Cut and remove the suture that secures the chest tube to the skin. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal. If there is more than one chest tube ordered to be removed, remove **one tube at a time** and only cut the suture securing the chest tube prior to removing each individual tube.
13. Coach the patient through the proper breathing pattern (Step 3). While the patient holds his breath on the third inhalation:
    A. Pinch the exit wound edges together.
    B. Hold the occlusive dressing in place over the site.
    C. Remove the chest tube quickly, in one fluid motion with the simultaneous application of the occlusive dressing (to decrease the possibility of air entering the pleural space).
    D. Apply direct and immediate mild pressure over the occlusive dressing at the exit site.
    E. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume normal breathing.
14. **Mark the date of the chest tube removal on the dressing.**
15. Post-removal monitoring:
    A. Immediately auscultate over the dressing at the exit site to assess for an air leak.
    B. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
    C. Check the dressing for drainage and reinforce/replace as necessary.
    D. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
16. Document the removal and patient's tolerance in the nursing notes.
17. Dispose of the chest tube, tubing and sealed drainage container in a biohazardous waste receptacle.
18. Remove the dressing in 48 hours and change PRN. If changed within 48 hours of removal, replace the dressing with a Vaseline occlusive dressing secured with cloth tape (Medipore/Hypafix).

APPENDIX B

Removal of a Small Bore/Pigtail Catheter Chest Tube

Additional Equipment

- Sterile scissors
- Occlusive film dressing (Tegaderm)
    - If a physician prefers an alternative dressing, specific orders will be written.

Special Instructions

- This is an added nursing skill which requires **one RN** certified in the skill.

Method

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Instruct the patient on the proper breathing pattern to be used during the removal.
    A. Inhale and exhale deeply twice. On the third occasion, take a deep breath in and hold it (Valsalva maneuver) until the tube is removed and the occlusive dressing is applied.
    B. If unable to hold his/her breath, instruct the patient to hum while exhaling after the third breath until the tube is removed and the occlusive dressing is applied.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the sterile dressing tray.
6. Maintaining sterility, open the occlusive film dressing (Tegaderm) onto the dressing tray.
7. Don a appropriate mask, protective eyewear as per infection control guidelines and clean gloves.
8. Remove the chest tube dressing.
9. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain culture for C&S. A physician order is required to send a C&S swab.
10. Maintain the **current order for suction** during the removal procedure.
11. Wash hands and don sterile gloves.
12. Prepare the occlusive film dressing (Tegaderm) on the sterile dressing tray, then cleanse the catheter insertion site with appropriate antiseptic solution.
13. Cut and remove the suture that secures the catheter to the skin (if present).
14. Determine if the catheter is a **locking** pigtail. If yes, cut the pigtail stitch attached. Cutting this stitch uncoils the “pigtail”. If present, it must be clipped prior to catheter removal to avoid tissue damage.
15. Coach the patient through the proper breathing pattern (Step 3). While the patient holds his breath on the third inhalation, remove the chest tube catheter quickly, in one fluid motion and immediately apply the occlusive film dressing (Tegaderm) to the site.
16. **Mark the date of the chest tube removal on the dressing.**
17. Post-removal monitoring:
    A. Immediately auscultate over the dressing at the exit site to assess for an air leak.
    B. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
    C. Check the dressing for drainage. If required, replace the dressing with Vaseline and gauze occlusive dressing secured with cloth tape (Medipore/Hypafix).
    D. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
18. Document the removal and patient’s tolerance in the nursing notes.
19. Dispose of the pigtail catheter, tubing and sealed drainage container in a biohazardous waste receptacle.
20. Remove the dressing in 48 hours and change PRN.

APPENDIX C

Chest Tube Removal with a Purse String Suture

Method

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Instruct the patient on the proper breathing pattern to be used during the removal.
   A. Inhale and exhale deeply twice. On the third occasion, take a deep breath in and hold it (Valsalva maneuver) until the tube is removed and the occlusive dressing is applied.
   B. If unable to hold his/her breath, instruct the patient to hum while exhaling after the third breath until the tube is removed and the occlusive dressing is applied.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the dressing tray and add the appropriate occlusive dressing.
6. Both RNs don appropriate masks and protective eyewear as per infection control guidelines and clean gloves.
7. Remove the chest tube dressing.
8. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain culture for C&S. A physician order is required to send a C&S swab.
9. Maintain the **current order for suction** during the removal procedure.
10. Both RNs wash hands and don sterile gloves.
11. Cleanse the chest tube insertion site with approved antiseptic solution.
12. Cut and remove the suture that secures the chest tube to the skin. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal. If there is more than one chest tube ordered to be removed, remove **one tube at a time** and only cut the suture securing the chest tube prior to removing each individual tube.
13. The nurse assisting (2nd RN) will:
    A. Unravel the purse string suture (usually wrapped around the chest tube) and separate the ends.
    B. Tie a loose knot with the purse string suture (it is tightened during chest tube removal).
14. Coach the patient through the proper breathing pattern (Step 3). While the patient holds his breath on the third inhalation:
    A. Remove the chest tube quickly, in one fluid motion while the 2nd RN simultaneously tightens the first loose knot to close the skin, then ties a second knot.
    B. Immediately apply the appropriate occlusive dressing.
    C. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume normal breathing.
15. **Mark the date of the chest tube removal on the dressing.**
16. Post-removal monitoring:
    A. Immediately auscultate over the dressing at the exit site to assess for an air leak.
    B. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
    C. Check the dressing for drainage and reinforce/replace as necessary.
    D. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
17. Document the removal and patient's tolerance in the nursing notes.
18. Dispose of the chest tube, tubing and sealed drainage container in a biohazardous waste receptacle.
19. Remove the dressing in 48 hours and change PRN. If changed within 48 hours of removal, replace the dressing with a Vaseline occlusive dressing secured with cloth tape (Medipore/Hypafix).

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APPENDIX D

Removal of Both Bifurcated Chest Tubes

Closed Drainage Systems (Pleurevac, Atrium) and Digital Thoracic Drainage Systems (Thopaz)

Special Instructions

- Prepare **two** occlusive dressings and **two sets** of sterile gloves (one for each tube).

Method

Preparation

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Instruct the patient on the proper breathing pattern to be used during the removal.
   A. Inhale and exhale deeply twice. On the third occasion, take a deep breath in and hold it (Valsalva maneuver) until the tube is removed and the occlusive dressing is applied.
   B. If unable to hold his/her breath, instruct the patient to hum while exhaling after the third breath until the tube is removed and the occlusive dressing is applied.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the dressing tray and add the appropriate occlusive dressing.

First Removal

1. Both RNs don appropriate masks and protective eyewear as per infection control guidelines and clean gloves.
2. Remove the chest tube dressing.
3. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain a culture for C&S. A physician order is required to send a C&S swab.
4. Maintain the **current order for suction to the chest tube which is being removed at the time**.
5. The 1st RN will:
   A. Don sterile gloves.
   B. Cleanse the chest tube insertion site with approved antiseptic solution.
   C. Cut and remove the suture which secures the chest tube to the skin, **on the tube to be removed first**. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal.
6. The 2nd RN will:
   A. Temporarily apply two clamps crosswise to the chest tube that is **NOT** being removed at this time (as close to the exit site as possible).
   B. Don sterile gloves.
7. Coach the patient through the proper breathing pattern. While the patient holds his breath on the third inhalation:
   A. Pinch the exit wound edges together.
   B. Hold the occlusive dressing in place over the site.
   C. Remove the chest tube quickly and in one fluid motion while simultaneously applying the occlusive dressing (to decrease the possibility of air entering the pleural space).
   D. Apply direct and immediate mild pressure over the occlusive dressing at the exit site.
   E. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume normal breathing.

Second Removal (Remaining Bifurcated Chest Tube)

1. Unclamp only **one** of the chest tube clamps from the chest tube remaining in situ. Apply the clamp crosswise to the chest tube which has just been removed.

2. Unclamp the second clamp from the chest tube remaining in situ to re-establish suction. Apply the second clamp crosswise on the chest tube which has been removed.
3. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain a culture for C&S. A physician order is required to send a C&S swab.
4. Maintain the **current order for suction** during the removal procedure.
5. Both RNs don sterile gloves.
6. Cleanse the chest tube insertion site with approved antiseptic solution.
7. Cut and remove the suture which secures the chest tube to the skin. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal.
8. Coach the patient through the proper breathing pattern. While the patient holds his breath on the third inhalation:
   A. Pinch the exit wound edges together.
   B. Hold the occlusive dressing in place over the site.
   C. Remove the chest tube quickly and in one fluid motion while simultaneously applying the occlusive dressing (to decrease the possibility of air entering the pleural space).
   D. Apply direct and immediate mild pressure over the occlusive dressing at the exit site.
   E. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume normal breathing.
9. **Mark the date of the chest tube removal on the dressing.**

Post-Removal Monitoring

1. Immediately auscultate over the dressing at the exit site to assess for an air leak.
2. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
3. Check the dressing for drainage and reinforce/replace as necessary.
4. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
5. Document the removal and patient's tolerance in the nursing notes.
6. Dispose of the chest tube, tubing and sealed drainage container in a biohazardous waste receptacle.
7. Remove the dressing in 48 hours, and change PRN. If changed within 48 hours of removal, replace the dressing with a Vaseline occlusive dressing secured with cloth tape (Medipore/Hypafix).

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APPENDIX E

Removal of One Bifurcated Chest Tube - Closed Drainage Systems with 6-in-1 Y Connector

Pleurevac, Atrium Systems

Additional Equipment

- New single tubing/drainage set
- Sterile scissors
- 5-in-1 connector

5-in-1 connector

6-in-1 Y tubing connector

Method

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Instruct the patient on the proper breathing pattern to be used during the removal.
   A. Inhale and exhale deeply twice. On the third occasion, take a deep breath in and hold it (Valsalva maneuver) until the tube is removed and the occlusive dressing is applied.
   B. If unable to hold his/her breath, instruct the patient to hum while exhaling after the third breath until the tube is removed and the occlusive dressing is applied.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the dressing tray and add the appropriate occlusive dressing.
6. Both RNs don appropriate masks and protective eyewear as per infection control guidelines and clean gloves.
7. Remove the chest tube dressing.
8. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain a culture for C&S. A physician order is required to send a C&S swab.
9. Maintain the **current order for suction to the chest tube which is being removed at the time**.
10. The 1st RN will:
    A. Don sterile gloves.
    B. Cleanse the chest tube insertion site with approved antiseptic solution.
    C. Cut and remove the suture which secures the chest tube to the skin, **on the tube to be removed**. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal.
11. The 2nd RN will:
    A. Temporarily apply two clamps crosswise to the chest tube that is **NOT** being removed at this time (as close to the exit site as possible).
    B. Don sterile gloves.
12. Coach the patient through the proper breathing pattern. While the patient holds his breath on the third inhalation:
    A. Pinch the exit wound edges together.
    B. Hold the occlusive dressing in place over the site.
    C. Remove the chest tube quickly and in one fluid motion while simultaneously applying the occlusive dressing (to decrease the possibility of air entering the pleural space).
    D. Apply direct and immediate mild pressure over the occlusive dressing at the exit site.
    E. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume normal breathing.
13. Once the first chest tube is removed, temporarily leave the chest tube clamps in place. Then:
    A. Detach the Y tubing connector from the in situ chest tube.
    B. Tightly insert a new single tubing set into the open end of the in situ chest tube and band the connection.

C. Remove both chest tube clamps from the in situ chest tube.

If Unable to Disconnect the Connector from the Chest Tube

1. Use sterile scissors to cut the in situ chest tube (while clamped) **just above** the Y-tubing connector.
2. Insert a new single tubing set into the open end of the chest tube.
3. Band and remove the clamps as above.

To Maintain the Existing Drainage Tubing Set

1. Use sterile scissors to cut the drainage tubing **just below** the Y-tubing connector.
2. Tightly insert **one end** of a new 5-in-1 connector into the open end of the tubing and the **other end** into the open end of the chest tube.
3. Band both connections and remove clamps as above.

Post-Removal Monitoring

1. Immediately auscultate over the dressing at the exit site to assess for an air leak.
2. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
3. Check the dressing for drainage and reinforce/replace as necessary.
4. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
5. Document the removal and patient's tolerance in the nursing notes.
6. Dispose of the chest tube, tubing and sealed drainage container in a biohazardous waste receptacle.
7. Remove the dressing in 48 hours, and change PRN. If changed within 48 hours of removal, replace the dressing with a Vaseline occlusive dressing secured with cloth tape (Medipore/Hypafix).

APPENDIX F

Removal of One Bifurcated Chest Tube – Thopaz Double Tubing with Built-In Y Connector

Additional Equipment

- Thopaz sealing cap **or** new single Thopaz tubing set
- Sterile scissors

Thopaz Sealing Cap

Method

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Instruct the patient on the proper breathing pattern to be used during the removal.
   A. Inhale and exhale deeply twice. On the third occasion, take a deep breath in and hold it (Valsalva maneuver) until the tube is removed and the occlusive dressing is applied.
   B. If unable to hold his/her breath, instruct the patient to hum while exhaling after the third breath until the tube is removed and the occlusive dressing is applied.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the dressing tray and add the appropriate occlusive dressing.
6. Both RNs don appropriate masks and protective eyewear as per infection control guidelines and clean gloves.
7. Remove the chest tube dressing.
8. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain a culture for C&S. A physician order is required to send a C&S swab.
9. Maintain the **current order for suction to the chest tube which is being removed at the time**.
10. The 1st RN will:
    A. Don sterile gloves.
    B. Cleanse the chest tube insertion site with approved antiseptic solution.
    C. Cut and remove the suture which secures the chest tube to the skin, **on the tube to be removed**. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal.
11. The 2nd RN will:
    A. Temporarily apply two clamps crosswise to the chest tube that is **NOT** being removed at this time (as close to the exit site as possible).
    B. Don sterile gloves.
12. Coach the patient through the proper breathing pattern. While the patient holds his breath on the third inhalation:
    A. Pinch the exit wound edges together.
    B. Hold the occlusive dressing in place over the site.
    C. Remove the chest tube quickly and in one fluid motion while simultaneously applying the occlusive dressing (to decrease the possibility of air entering the pleural space).
    D. Apply direct and immediate mild pressure over the occlusive dressing at the exit site.
    E. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume normal breathing.
13. Once the first chest tube is removed, temporarily leave the chest tube clamps in place. Then:
    A. Detach the built-in Y tubing connector from the discontinued chest tube.
    B. Tightly attach a Thopaz sealing cap onto the open end of the Y connector and band the connection.
    C. Remove both chest tube clamps on in situ chest tube.
    OR

Detach the built-in Y connector from the in situ chest tube and tightly insert a new Thopaz single tubing set into the open end of the in situ chest tube. Band the connection, then remove both chest tube clamps on the in situ chest tube.

14. Post-removal monitoring:
    A. Immediately auscultate over the dressing at the exit site to assess for an air leak.
    B. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
    C. Check the dressing for drainage and reinforce/replace as necessary.
    D. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
15. Document the removal and patient's tolerance in the nursing notes.
16. Dispose of the chest tube, tubing and sealed drainage container in a biohazardous waste receptacle.
17. Remove the dressing in 48 hours, and change PRN. If changed within 48 hours of removal, replace the dressing with a Vaseline occlusive dressing secured with cloth tape (Medipore/Hypafix).

APPENDIX G

Chest Tube Removal on Ventilated Patients

Method

1. Perform a baseline assessment of breath sounds and air entry to all lung fields.
2. Offer analgesia 30 minutes prior to the procedure.
3. Engage a RRT or RN for assistance.
4. Place the patient in the most appropriate position to access the chest tube (supine to semi-fowlers).
5. Aseptically prepare the dressing tray and add the appropriate occlusive dressing.
6. Both RNs don appropriate masks and protective eyewear as per infection control guidelines and clean gloves.
7. Remove the chest tube dressing.
8. Inspect the site for signs of infection (redness, purulent discharge). If any signs are present, cleanse the area with N/S and obtain a culture for C&S. A physician order is required to send a C&S swab.
9. Maintain the **current order for suction** during the removal procedure.
10. Both RNs will don sterile gloves.
11. Cleanse the chest tube insertion site with approved antiseptic solution.
12. Cut and remove the suture which secures the chest tube to the skin. **Do not** remove a purse string suture or additional skin closure sutures (if present). Confirm the chest tube is free from sutures prior to removal. If there is more than one chest tube ordered to be removed, remove **one tube at a time** and only cut the suture prior to removing each individual tube.
13. Disconnect the patient from the ventilator and manually ventilate the patient with 100% oxygen.
14. Ensure the bag-valve mask device (ambu bag) is kept in the deflated position as the chest tube is removed to prevent the patient from breathing spontaneously. Then:
    A. Pinch the exit wound edges together.
    B. Hold the occlusive dressing in place over the site.
    C. Remove the chest tube quickly and in one fluid motion while simultaneously applying the occlusive dressing (to decrease the possibility of air entering the pleural space).
    D. Apply direct and immediate mild pressure over the occlusive dressing at the exit site.
    E. Tightly apply cloth tape (Medipore/Hypafix) to secure the occlusive dressing. Once the occlusive dressing is secure, the patient may resume mechanical ventilation.
15. If chest tubes are bifurcated, see **Appendix D, E and F**. Repeat for each chest tube.
16. **Mark the date of the chest tube removal on the dressing.**
17. Post-removal monitoring:
    A. Immediately auscultate over the dressing at the exit site to assess for an air leak.
    B. Immediately and during the first few hours after removal, assess the patient for unstable vital signs, low oxygen saturation, diminished or absent breath sounds, or respiratory distress (pneumothorax, mediastinal shift).
    C. Check the dressing for drainage and reinforce/replace as necessary.
    D. Report the appearance of subcutaneous emphysema or sanguineous drainage to the physician.
18. Document the removal and patient's tolerance in the nursing notes.
19. Dispose of the chest tube, tubing and drainage container in a biohazardous waste receptacle.
19. Remove the dressing in 48 hours and change PRN. If changed within 48 hours of removal, replace the dressing with a Vaseline occlusive dressing secured with cloth tape (Medipore/Hypafix).