Team Name: Staff Development/Infection Prevention & Control Team Lead: Director-Staff Development/Infection Prevention & Control Approved by: Regional Lead – Acute Care & Chief Nursing Officer	Reference Number: CLI.4510.PL.011 Program Area: Acute Care Policy Section: Across Hospital Units
Issue Date: November 29, 2021 Review Date: Revision Date:	Subject: Chest Tubes and Chest Drainage Systems

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POLICY SUBJECT:
Chest Tubes and Chest Drainage Systems

PURPOSE:
To provide evidence based standardized guidance on the insertion, maintenance and removal of chest tubes and chest tube drainage systems in Southern Health-Santé Sud.

BOARD POLICY REFERENCE:
Executive Limitation (EL-02) Treatment of Clients

POLICY:
The insertion and removal of chest tubes will be performed by an authorized health care provider. General maintenance of chest tubes and chest tube drainage systems, as well as assistance with insertion and removal will be performed by nurses.

DEFINITIONS:

Hemothorax: The collection of blood in the pleural space and can result from trauma to the organs, vessels and other structures of the chest and abdomen.

Pleural Effusion: The abnormal collection of fluid in the pleural space due to causes including malignancy, pulmonary embolism, heart failure, pneumonia and cirrhosis.

Pneumothorax (Closed): The collection of air in the pleural space where the chest wall remains intact but air is able to enter the pleural space through the lung.

Pneumothorax (Open): The collection of air in the pleural space where the chest wall and pleural space have been penetrated and allow air to enter the pleural space.

Pneumothorax (Spontaneous): The collection of air in the pleural space that presents without a precipitating external event in the absence of clinical lung disease.

Pneumothorax (Tension): Occurs when air entering the pleural space is unable to escape and accumulates until the lung collapses and causes compression of the heart and great vessels in the mediastinum and potentially collapses the opposite lung. This is a life-threatening emergency requiring prompt intervention.

IMPORTANT POINTS TO CONSIDER:

- The thoracic cavity is normally a closed space. Two membranes exist within this space, the visceral pleura which covers each lung and the parietal pleura which lines the inner chest wall. The space between the visceral pleura and the parietal pleura is referred to as the pleural space. Disruptions due to causes such as injury, disease, or surgery can result in a loss of negative pressure and entry of air or fluid into the pleural space. This causes the lung to collapse and necessitates the insertion of a chest tube to drain the air or fluid and facilitate lung re-expansion.
- A one-way valve or collection chamber with a one-way seal must be attached to a chest tube at all times to ensure removal of air and/or fluid from the pleural space and to prevent entry of atmospheric air into the pleural space, as ordered by authorized health care provider.
- Clamping of the chest tube is generally contraindicated due to the risk of developing a tension pneumothorax, and should only be done temporarily for measures such as changing the drainage system, evaluating a new air leak, or as ordered by the authorized health care provider.
- Other methods of occluding the chest tube (such as a three-way stopcock) are to be avoided to prevent unintentional occlusion of the chest tube drainage and development of a tension pneumothorax.
- Milking or stripping the entire length of tubing increases intrathoracic pressure and can cause lung tissue damage. This practice is to be avoided.
- *Elsevier Clinical Skills* provides information for adult, pediatric and neonatal care.
- For information on Thoracentesis Catheters, refer to regional policy *Thoracentesis Catheter: Intermittent Drainage of Pleural Fluid and Care Of (Long Term)* CLI.5910.PL.009.

PROCEDURE:

1. Chest Tube Insertion
   Refer to *Elsevier Clinical Skills* *Chest Tube Insertion: Assisting*
2. Chest Tube Maintenance

2.1. Routine Monitoring/Troubleshooting

- Assess the patient every one to four hours and PRN. Check for: Fluctuation in tubing/air leak meter, output, color of drainage, air leak present (FOCA). Also perform vital signs and chest assessment and check suction if ordered.
- Encourage deep breathing and coughing every hour while awake.
- Assess site and change dressing daily and PRN.
- Check for: Displaced tube, obstruction, pneumothorax, equipment failure (DOPE) and vital signs for concerns regarding patient's condition or chest tube drainage.
- Notify physician if initial drainage is greater than 1500 mL and if there is continued blood loss greater than 200 mL/hour for two to four hours, and if patient is showing signs of respiratory distress, chest pain, tachycardia, dizziness or uncontrolled pain.

2.2. Chest Drain Valve

Refer to *Elsevier Clinical Skills* *Chest Drain Valves*

2.3. Closed Drainage System

Refer to *Elsevier Clinical Skills* *Chest Tube: Closed Drainage System Management* and *Chest Tube: Closed Drainage Systems*

3. Chest Tube Removal
   Refer to *Elsevier Clinical Skills* *Chest Tube Removal* Quick Sheet
4. Patient Education
   Refer to *Elsevier Clinical Skills Patient Education:* *Chest Tube Insertion*
   Refer to *Elsevier Clinical Skills Patient Education:* *Chest Tube One-Way Valve Home Guide*

EQUIPMENT/SUPPLIES:

- Chest tube insertion kit
- Dressing supplies
- Closed drainage system and/or one-way valve

REFERENCES:

CLI.5910.PL.009 Thoracentesis Catheter: Intermittent Drainage of Pleural Fluid and care Of (Long Term)

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South Eastman Health. (2009). *Chest drainage: Pleur-Evac (Sahara): Insertion, maintenance and removal.* Policy# AC-C007

Water, J. (2017). Chest tube placement (assist). *Procedure manual for high acuity, progressive, and critical care* (7th ed., pp. 178-183). St Louis, MI: Elsevier.