



## **Standard Of Procedure for ICD Insertion**

### **Indications:**

- Pneumothorax,
- Hemothorax,
- Pleural effusion or hydrothorax,
- Chylothorax,
- Empyema

### **Contraindications:**

- Relative contraindications to chest tube placement:
- pulmonary adhesions due to previous surgery or disease,
- Coagulopathy and
- diaphragmatic hernias

### **Consent:**

An individual risk-benefit assessment should be performed

### **Insertion technique:**

- A thoracostomy tube is placed between the anterior to the mid-axillary line in the fourth or fifth intercostal space
- tracking above the rib should be done to avoid injury to the intercostal bundle (artery, vein, nerve).
- The fourth intercostal space is normally at nipple level in males and at the inframammary fold in females.



- Ultrasound or CT is used for guidance in the placement of a chest tube for more accuracy and in difficult cases.
- Continuously monitor the patient with pulse oximetry and ECG.
- Use a strict aseptic technique by thorough hand washing with 4% CHG, use a sterile gown, gloves, mask, and cap, and drape the patient with a sterile full body drape.

### **Complications:**

- Bleeding,
- Superficial infection,
- empyema,
- Displacement of the tube, blocking of the tube,
- pulmonary edema due to re-expansion of lungs,
- Injury to the spleen or liver,
- Injury to the diaphragm,
- Injury to the heart or thoracic aorta.

### **Management of Chest Tube:**

- The system should be kept closed and below chest level always
- All the connections must be taped and the chest tube should be secured to the chest wall.
- The water seal chamber must be filled with sterile water to the level mentioned by the manufacturer.
- We should observe fluctuation(tidaling) of fluid at the level in the water chamber.



- If there is no tidaling, the system might not be patent or the patient's lung may have expanded.
- When a new air leak is noted, the chest tube, connecting tubing, and a patient's wound should be examined for any loose connections or displacement of the tube.
- The fenestrated holes should not be outside of the body.

**The chest tube can be discontinued once:**

- no air leak is visualized,
- output is serosanguinous with no signs of bleeding,
- output is less than 100 cc to 150 cc over a 24-hour period
- nonexistent or stable mild pneumothorax on chest x-ray,
- the patient is minimized on positive pressure from the ventilator.

**Considerations**

- Small thoracostomy tubes are used to treat pneumothorax and transudate
- Large chest tubes, usually 28 French or larger, are needed for the drainage of blood or pus in adults.



- Equipment for chest tube insertion.

Instrument tray

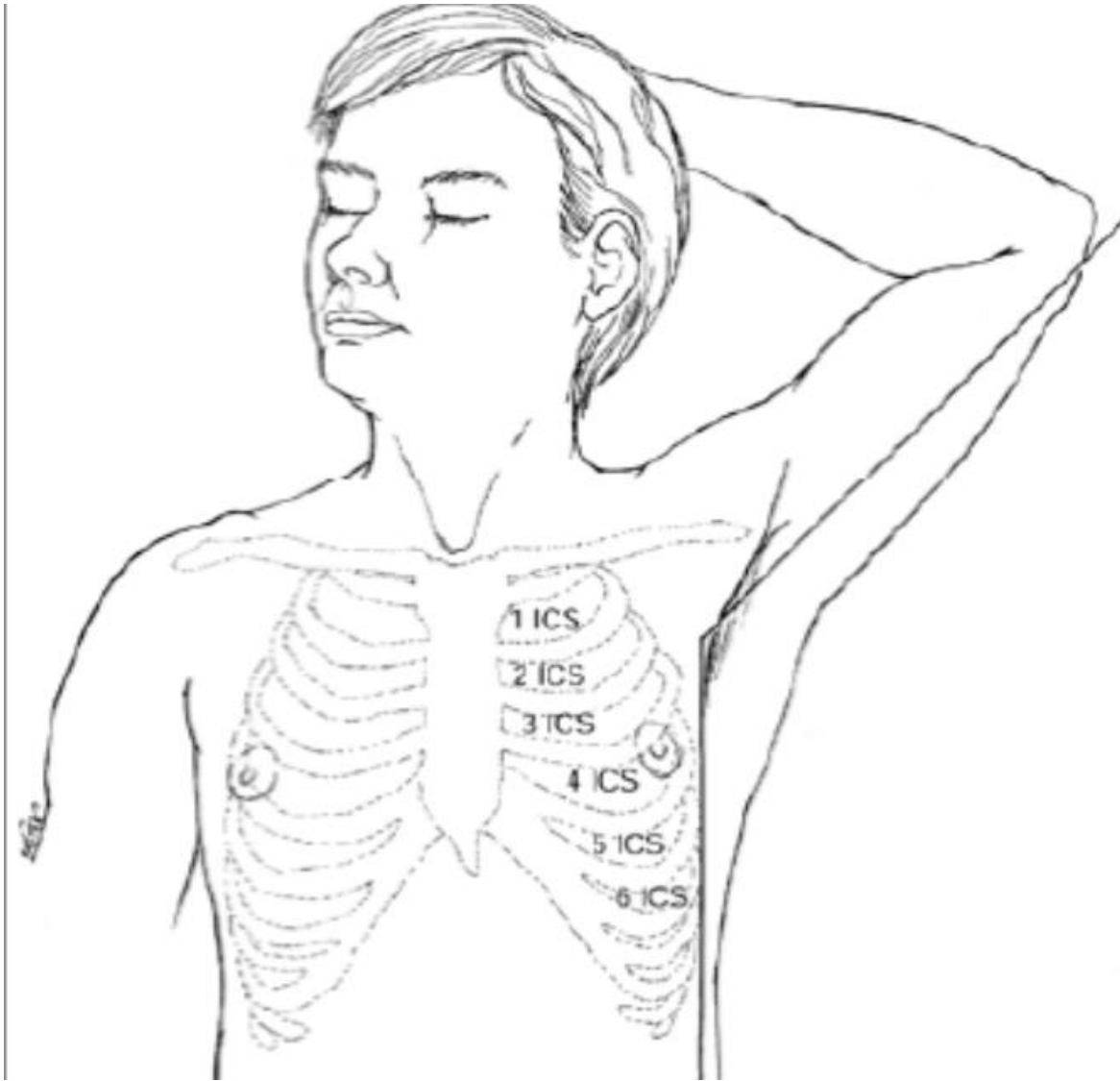
Local anesthetic (2% plain lignocaine)

Scalpel and 11no blade

Syringe and needles

Suture and gauze

ICD tube with torcher



Position for Chest tube placement



Draping for chest tube placement

# Checklist For Chest Tube Placement

		Peer 1	Peer 2	Faculty Evaluation
NPSG	Wash hands per CDC guidelines.			
	Provide patient privacy.			
NPSG	Introduce yourself.			
NPSG	Identify patient correctly using two identifiers (check to chart).			
NPSG	Verify allergy status.			
<b>General Survey</b>				
	Perform environmental safety check.			
	Ensure proper body mechanics.			
	Gather and prepare supplies, equipment, and PPE as needed.			
	Verify MD order on chart.			
	Assess need for procedure. Educate patient about the procedure.			
<b>Replacing a closed-chest drainage system</b>				
	Confirm absence of air leak by observing water-seal chamber or air-leak meter. (For air leak, do not clamp chest tube).			
	Raise bed height.			
	Don clean gloves.			
	Open and remove outer wrap of drainage system.			
	Open inner wrap: two sides, then back, then front.			
	Inspect new drainage system.			
	Obtain pre-filled syringe at the back of the closed chest drainage system.			
	Instill fluid into water-seal chamber to 2-cm mark.			
	Remove gloves, perform hand hygiene, don gloves and mask.			
	Double-clamp tube close to insertion site by placing clamps in opposite directions.			
	Disconnect end of chest tube from old system and reconnect it to new system.			
	Remove clamps from chest tube.			
	Discard old system and all waste material in appropriate receptacle.			
	Position new system on bed frame.			
	Check for fluctuation in water-seal chamber as patient breathes.			
	Assess new, closed chest drainage system to ensure proper function.			
	Observe oscillation of fluid in suction-control chamber; adjust suction source per MD order, as necessary to generate gentle bubbling.			
	Assess patient; ensure comfort.			
<b>Replacing a chest-tube insertion-site dressing</b>				
	Assess patient's pain level.			
	Raise bed height, lower head of bed.			
	Assess closed chest drainage system.			
	Don PPE (gloves and mask).			
	Position patient on unaffected side.			
	Place linen-saver pad beneath patient.			
	Remove dressing, noting color, consistency, amount of drainage on dressing.			
	Discard dressing in appropriate receptacle.			
	Observe chest tube insertion site.			
	Remove gloves, perform hand hygiene.			
	Set up sterile field. Open sterile petrolatum dressing and place it next to the sterile field.			
	Don sterile gloves.			
	Clean around insertion site with an antiseptic.			
	Place sterile petroleum gauze around the chest tube at insertion site.			
	Place drain pad across chest tube in opposite directions. Use gauze pads around chest tube to create even surface.			
	Place tape so that it adheres firmly against chest wall adjacent to chest tube. Place end of tape firmly against chest wall on opposite side of chest tube. Repeat until entire dressing is covered and sealed.			
	Assess patient; provide comfort.			
	Discard used materials.			
<b>Documentation – Chest tube insertion</b>				
	Informed consent			
	Date, time of insertion			

