



**SNS COLLEGE OF ALLIED HEALTH SCIENCES**  
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**DEPARTMENT OF PHYSICIAN ASSISTANT**

**COURSE NAME: PULMONOLOGY**

**TOPIC :- PLEURAL EFFUSION**

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# INTRODUCTION



- Pleural effusion is a medical condition characterized by the accumulation of excess fluid between the pleura, which is the lining surrounding the lungs.
- This condition can cause symptoms such as chest pain, shortness of breath, and coughing. Pleural effusion is significant because it can be a sign of underlying medical conditions such as infections, malignancies, or other underlying medical conditions.
- In severe cases, it can lead to respiratory distress and other complications that require prompt medical attention.



# CAUSES OF PLEURAL EFFUSION



<b>Congestive heart failure</b>	transudate	<ul style="list-style-type: none"><li>– history of heart disease</li><li>– edema, hypoxia</li></ul>
<b>Cancer</b>	exudate	<ul style="list-style-type: none"><li>– history of cancer (lung, breast, lymphoma)</li><li>– intrathoracic mass</li></ul>
<b>Bacterial pneumonia</b>	exudate	<ul style="list-style-type: none"><li>– cough</li><li>– fever</li><li>– infiltrate</li></ul>
<b>Pulmonary embolism</b>	transudate or exudate	<ul style="list-style-type: none"><li>– dyspnea</li><li>– immobilization</li><li>– pleuritic chest pain</li></ul>



# CAUSES



- 1. Infections:** Pleural effusion can be caused by bacterial, viral, or fungal infections, such as pneumonia, tuberculosis, or HIV/AIDS.
- 2. Malignancies:** Cancer cells can spread to the pleura and cause the accumulation of fluid. This is commonly seen in lung cancer, breast cancer, and lymphoma.
- 3. Cardiac conditions:** Pleural effusion can occur due to heart failure or other cardiac conditions that cause fluid buildup in the body.
- 4. Pulmonary diseases:** Chronic obstructive pulmonary disease (COPD), interstitial lung disease (ILD), and other respiratory diseases can lead to pleural effusion.

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# CAUSES



**5. Medications:** Certain medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs) and chemotherapy drugs, can cause pleural effusion as a side effect.

**6. Trauma:** Pleural effusion can occur due to chest injuries or surgeries that damage the pleura.

**7. Miscellaneous causes:** Other causes of pleural effusion include autoimmune disorders, metabolic disorders, and genetic conditions



# TYPES OF PLEURAL EFFUSION



Type of effusion	Pathogenesis	Causes
<b>Transudate</b> Less than 30g protein/litre	Increased hydrostatic pressure	Cardiac failure
	Decreased oncotic pressure	Vena caval obstruction Hypoalbuminemia
<b>Exudate</b> More than 30g protein/litre	Infections	Bacterial, including TB Other organisms
	Neoplasm	Metastatic carcinoma Primary carcinoma of lung Mesothelioma of pleura
	Pulmonary infarction	Thromboembolic disease
	Autoimmune disease	Rheumatoid disease Systemic lupus erythematosus
	Abdominal disease	Pancreatitis Subphrenic abscess Meigs' syndrome



# DIAGNOSIS



Light's Criteria for Pleural Effusions		
	Transudate	Exudate
Protein (pleural/serum)	$\leq 0.5$	$> 0.5$
LDH (pleural/serum)	$\leq 0.6$ Pleural LDH $\leq$ two-thirds upper limit of normal serum LDH	$> 0.6$ Pleural LDH $>$ two-thirds upper limit of normal serum LDH
Common Causes	<p>Hypalbuminemia (cirrhosis, nephrotic syndrome)</p> <p>Congestive Heart Failure</p> <p>Conductive Pericarditis</p>	<p>Autoimmune Disease</p> <p>Esophageal Rupture</p> <p>Infection (TB, fungal, parapneumonic, empyema)</p> <p>Malignancy</p> <p>Pancreatitis</p> <p>Post-CABG</p>



# DIAGNOSIS



## Box 2 Light's criteria

- ▶ Pleural fluid is an exudate if one or more of the following criteria are met:
- ▶ Pleural fluid protein divided by serum protein is  $>0.5$
- ▶ Pleural fluid lactate dehydrogenase (LDH) divided by serum LDH is  $>0.6$
- ▶ Pleural fluid LDH  $>2/3$  the upper limits of laboratory normal value for serum LDH.





# DIAGNOSIS



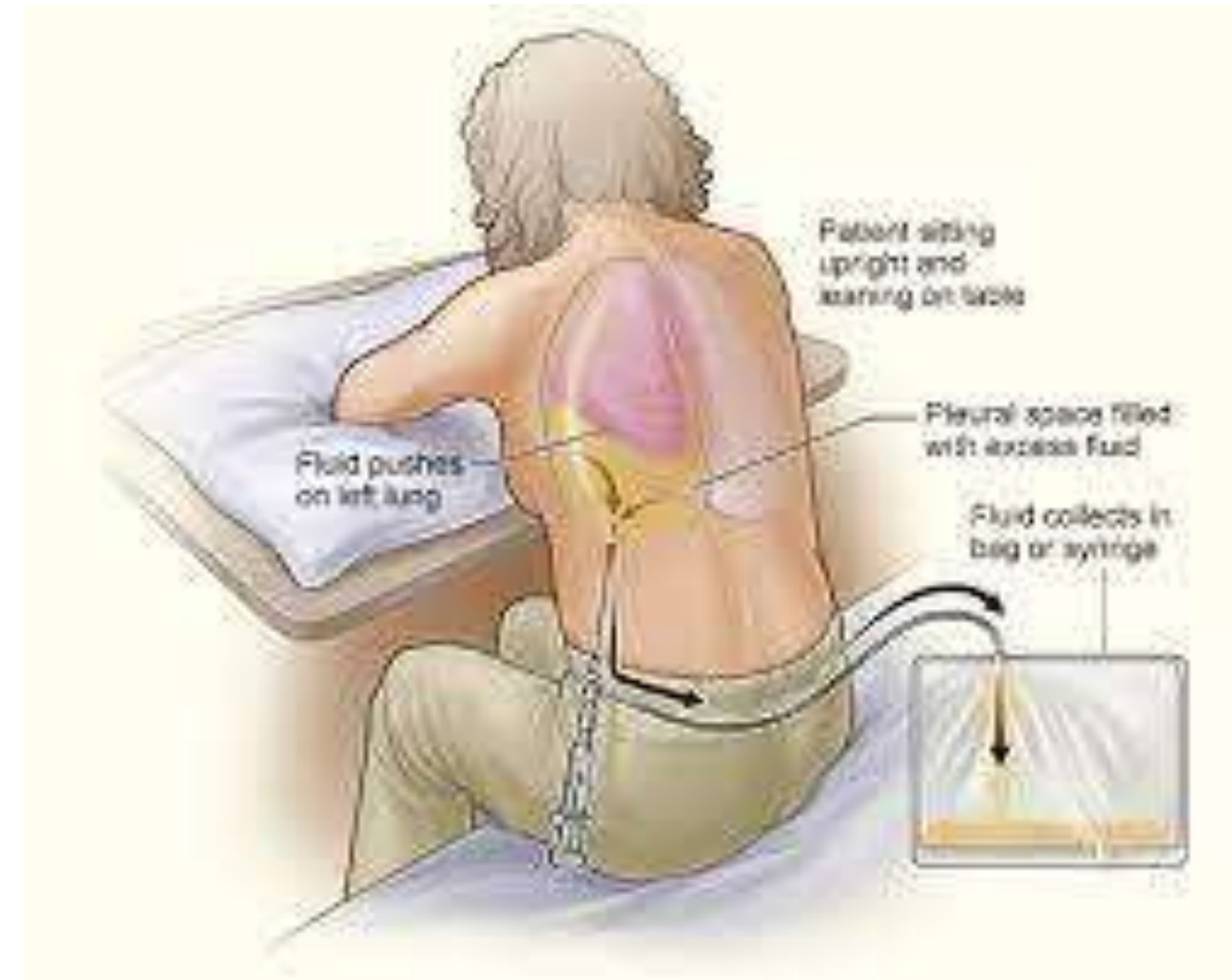
- Chest X-rays are a common initial diagnostic test for pleural effusion. They can help to identify the presence of fluid in the pleural space, as well as any underlying lung or heart conditions that may be contributing to the effusion.
- CT scans provide more detailed images of the chest and can help to distinguish between different types of pleural effusions, such as transudative (caused by fluid buildup due to underlying medical conditions) or exudative (caused by inflammation or infection).
- Ultrasound imaging is a non-invasive diagnostic test that can be used to confirm the presence of pleural effusion and determine its size and location. It can also help to guide the placement of a chest tube, which is a surgical procedure used to drain excess fluid from the pleural space.
- By using a combination of these diagnostic tests, healthcare providers can better understand the cause and severity of pleural effusion, which can inform treatment decisions and help to improve overall patient outcomes.



# TREATMENT



**1. Draining the fluid:** This is the most common treatment for pleural effusion. A procedure called thoracentesis is performed to remove the excess fluid from the pleural cavity using a needle or a catheter. This helps to relieve symptoms like shortness of breath and chest pain.





# TREATMENT



**2. Medications:** Certain medications can help to reduce inflammation and prevent further fluid buildup in the pleural cavity. Nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids are commonly prescribed for this purpose.

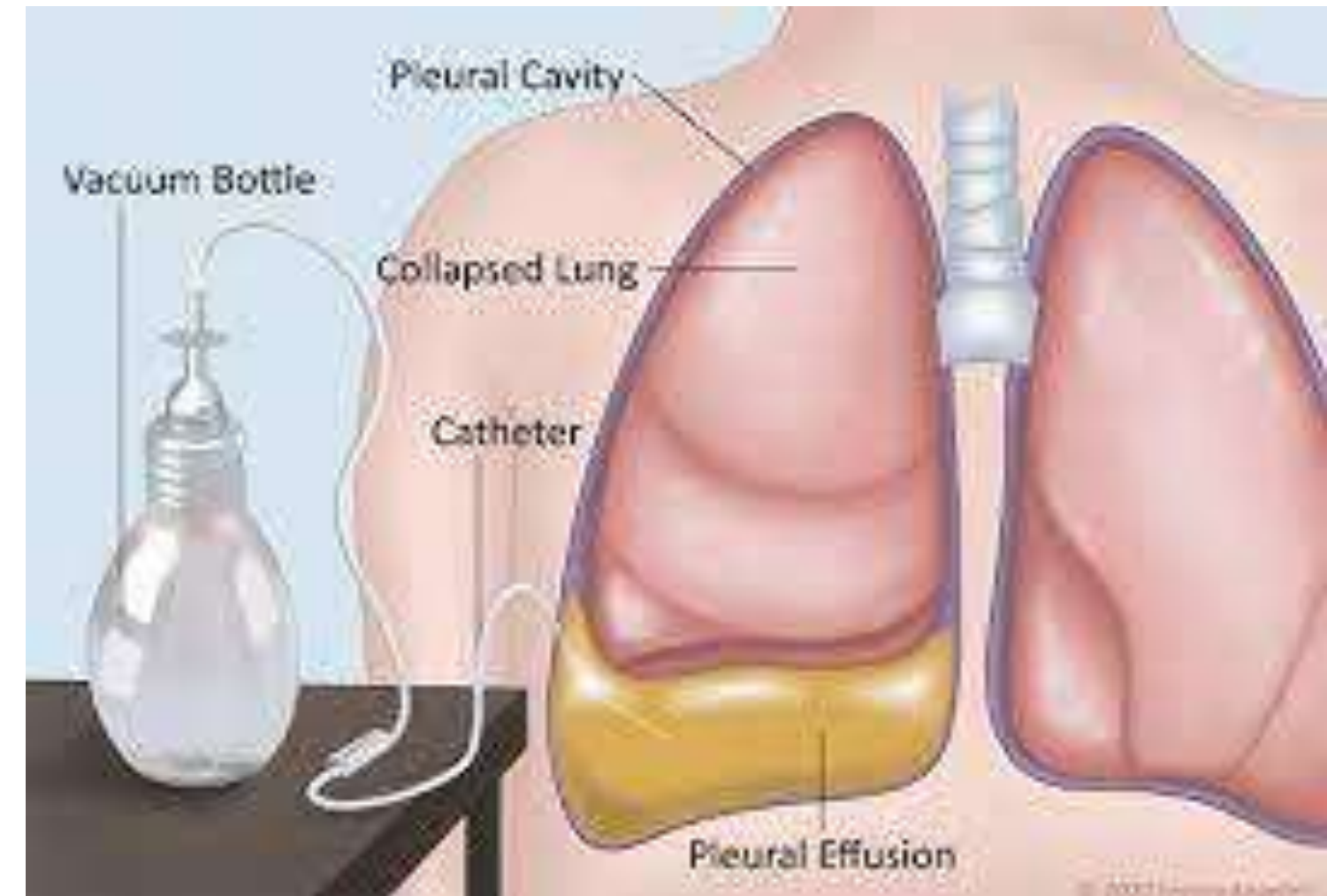




# TREATMENT



**3. Catheter placement:** In some cases, a small tube called a chest tube may be inserted into the pleural cavity to drain the fluid continuously. This is called pleural catheter drainage and helps to prevent fluid buildup and relieve symptoms.

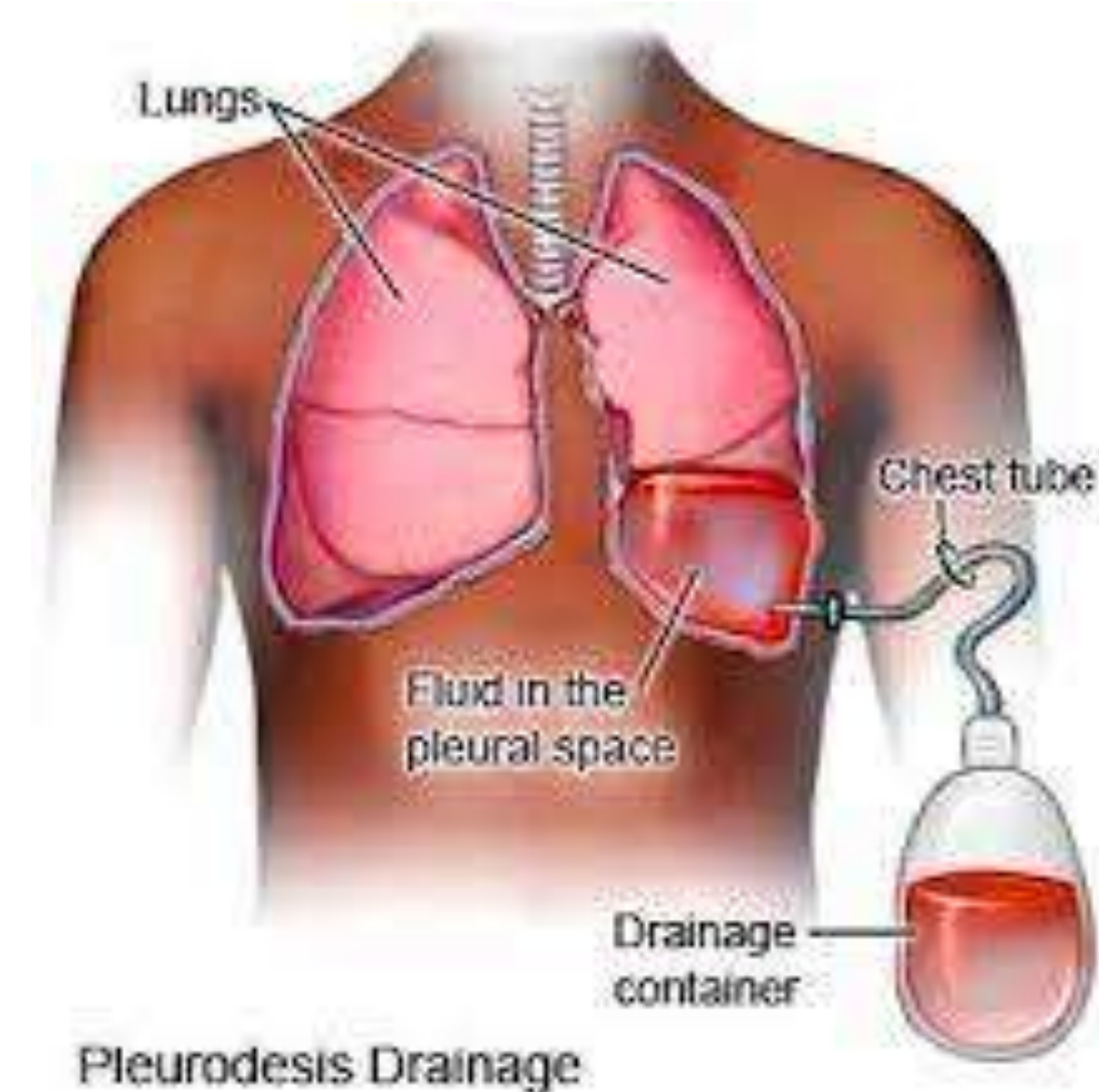




# TREATMENT



**4. Pleurodesis:** This is a procedure that involves irritating the pleural lining to cause it to stick together, preventing further fluid buildup. This can be done using chemicals or talc powder, which are injected into the pleural cavity during a procedure called chemical pleurodesis.

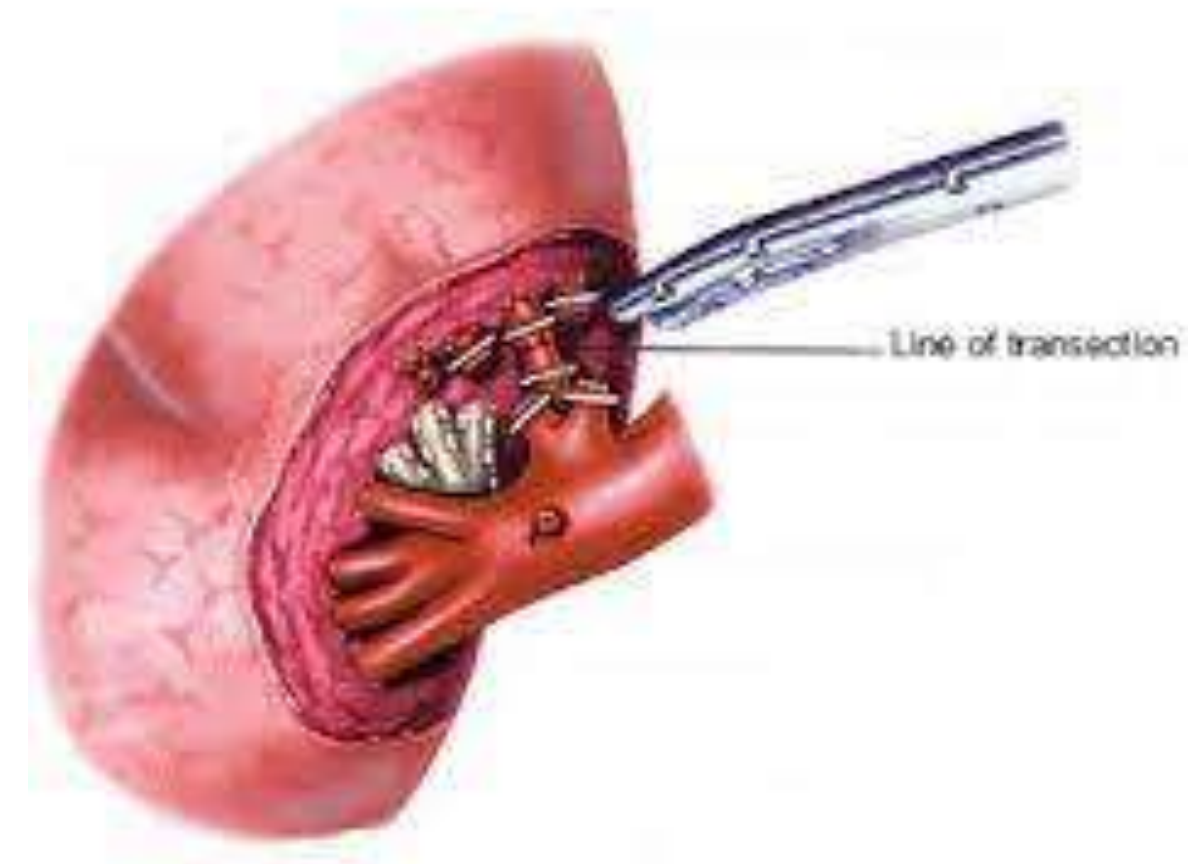




# TREATMENT



**5. Surgery:** In severe cases, surgery may be necessary to remove the affected lung tissue or to implant a device called a pleuroperitoneal shunt, which allows excess fluid to drain into the abdomen instead of the chest cavity.





**THANK YOU**