

PLEURAL EFFUSION

DISEASE / PATHOLOGY

- Excess fluid in pleural space between visceral and parietal pleura.
- Fluid compresses lung tissue, limiting expansion and causing impaired ventilation.
- Transudate: systemic fluid pressure problem, commonly heart failure/cirrhosis/nephrotic syndrome.
- Exudate: local inflammation/injury, commonly pneumonia, malignancy, PE, TB, autoimmune disease.
- Large or rapidly accumulating effusions can cause respiratory compromise.

RISK FACTORS

- Heart failure is a common cause of bilateral transudative effusions.
- Pneumonia, malignancy, pulmonary embolism, TB, pancreatitis, autoimmune disease.
- Cirrhosis, nephrotic syndrome, renal failure, hypoalbuminemia.
- Recent thoracic surgery/trauma or indwelling central venous devices.
- Medication/radiation causes are less common but testable when history fits.

SIGNS AND SYMPTOMS

- Dyspnea, pleuritic chest pain, dry cough, decreased activity tolerance.
- Assessment: decreased/absent breath sounds, dullness to percussion, decreased tactile fremitus.
- Large effusion: tachypnea, hypoxemia, asymmetric chest expansion, tracheal shift away if massive.
- Infection/empyema cues: fever, chills, purulent fluid, elevated WBC.
- Urgent: severe respiratory distress, cyanosis, hypotension, or mediastinal shift.

DIAGNOSTIC TESTING

- Chest x-ray/ultrasound detect fluid; ultrasound guides thoracentesis and reduces complications.
- Thoracentesis for new/unexplained or symptomatic effusion; fluid studies identify cause.
- Pleural fluid: protein/LDH differentiate transudate vs exudate; culture, pH, glucose, cytology as ordered.
- CT may evaluate malignancy, PE, loculation, or unclear cause.
- After thoracentesis: monitor breath sounds, SpO2, puncture site, and pneumothorax symptoms.

TREATMENT

- Assess first: respiratory distress, SpO2, breath sounds, pain, hemodynamic stability.
- Treat underlying cause: diuretics for HF, antibiotics for infection, anticoagulation for PE if ordered.
- Therapeutic thoracentesis for symptomatic relief; chest tube for empyema/complicated effusion.
- Position upright before procedure; obtain consent, baseline vitals, and verify anticoagulant status/labs per policy.
- Report immediately: sudden chest pain, severe cough, dyspnea, decreased BP, or absent breath sounds after drainage.
- Need-to-know: do not drain too rapidly/too much without order due to re-expansion pulmonary edema risk.

PATIENT EDUCATION

- Use incentive spirometry/deep breathing as prescribed after drainage; change positions to promote expansion.
- Take cause-specific meds exactly: diuretics, antibiotics, anticoagulants, or cancer-related therapy.
- Daily weights/low sodium if heart failure related; report rapid weight gain or swelling.
- Keep thoracentesis/chest tube site clean and dry; report redness, drainage, fever, or worsening pain.
- Call provider for return of dyspnea, fever, chest pain, cough, dizziness, or new oxygen requirement.
- Emergency: severe shortness of breath, blue lips, fainting, or sharp chest pain after procedure.

ADDITIONAL NOTES:

- Exam trap: pleural effusion causes decreased tactile fremitus; pneumonia consolidation increases it.
- Priority after thoracentesis: assess for pneumothorax/respiratory distress.
- Transudate = pressure problem; exudate = inflammation/injury problem.