

Please note this is an EXAMPLE NURSING TIP SHEET and is to serve as an educational and organizational resource only. **Please always follow the policies and procedures for your institution and practice. Please always follow treating physician's orders.**

Nursing Tip: Bedside Care of the Percutaneous Lung HDR Brachytherapy Patient

I. Clinical Assessment & Diagnostic Precision

- **Multisystem Evaluation:** Perform physiological and psychosocial assessment, with a focused emphasis on:
 - **Ventilatory Dynamics:** Rate, rhythm, accessory muscle use, and oxygen saturation SpO₂.
 - **Pulmonary System:** Presence of cough, hemoptysis, or increasing secretions.
 - **Neurological Vigilance:** Assessment of baseline and post-procedure mental status (especially if conscious sedation or analgesia was utilized).
- **Complication Recognition:** Demonstrates expert-level identification of early-stage Pneumothorax (e.g., diminished breath sounds, pleuritic chest pain, tracheal deviation).
- **Nursing Diagnosis:** Synthesizes assessment data to formulate prioritized nursing diagnoses (e.g., impaired gas exchange, risk for ineffective airway clearance, acute respiratory distress).

II. Therapeutic Interventions & Safety Infrastructure

- **Equipment Proficiency:** Validates the operational readiness and location of critical thoracic care resources:
 - **Emergency Airway Cart:** Including suction, bag-valve-mask (BVM), and advanced airway adjuncts.
 - **Thoracic Drainage Supplies:** Knowledge of chest tube insertion kits and advanced chest drainage systems
- **Standardized Protocols:** Executes physician-led standing orders including:
 - **Metabolic Status:** NPO maintenance and titration of balanced crystalloid IV fluids.
 - **Activity Restrictions:** Strict adherence to prescribed bedrest and specific head of bed (HOB) elevation to optimize lung expansion.
 - **VTE Prophylaxis:** Consistent application of mechanical and pharmacological prophylaxis unless contraindicated.

III. High-Dose Radiation (HDR) Clinical Workflow

- **Multidisciplinary Coordination:** Facilitates seamless communication between Pulmonology, Interventional Radiology, Radiation Oncology, Medical Physics and Nurses.
- **Procedural Continuum:** Demonstrates mastery of the lung HDR workflow:
 - **Pre-Procedural:** Patient optimization and consent verification.

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- **Catheter Integrity:** Assistance with percutaneous catheter placement and CT simulation confirmation.
- **Treatment Phase:** Monitoring patient stability during HDR delivery.
- **Post-Treatment:** Safe catheter removal and intensive post-procedural recovery.

IV. Specialized Pulmonary Monitoring

- **Respiratory Surveillance:** Critically monitors for acute iatrogenic complications:
 - **Hemothorax/Pneumothorax:** Frequent auscultation and monitoring for sudden desaturation or shortness of breath
 - **Airway Patency:** Recognition of bronchospasm, stridor, or mechanical obstruction.
 - **Hemoptysis Management:** Quantification of blood-streaked sputum and immediate escalation for frank hemorrhage.
- **Fluid Balance:** Rigorous documentation of intake and output (I&O) to prevent pulmonary edema or fluid overload.

V. Professional Documentation & Handoff

- **EMR Excellence:** Provides real-time, accurate documentation within the Electronic Health Record (CareConnect/EMR):
 - **Intervention Mapping:** Detailed recording of positioning, suctioning frequency, and dyspnea-relief measures.
 - **Communication Log:** Precise documentation of physician notifications and subsequent orders.
- **Continuity of Care:** Delivers a structured SBAR (Situation, Background, Assessment, Recommendation) handoff, highlighting catheter dwell time and any respiratory deviations.

The Golden Rule of Lung HDR: Anticipate, don't react. Because percutaneous lung catheters pierce the pleura, the risk of a "silent" pneumothorax is ever-present. Maintain a "low threshold" for escalation if the patient reports new-onset pleuritic pain or increased work of breathing.

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Clinical "Red Flag" Cheat Sheet: Lung HDR Brachytherapy

Immediate Action Required: Assess → Stabilize → Escalate

1. The "Silent" Pneumothorax (PTX)

Percutaneous catheters breach the pleural space; air leak is the most common complication.

- **Signs:** Sudden onset of pleuritic chest pain, tachypnea (>24breaths/min), or a new "dry" cough.
- **Late Signs:** Tracheal deviation, absent breath sounds on the affected side, or subcutaneous emphysema (crepitus/crunching) around the insertion site.
- **Action:** Notify Radiation Oncology and Pulmonology immediately. Prepare for a Stat portable Chest X-ray.

2. Hemoptysis & Airway Hemorrhage

Trauma to bronchial vessels or the lung parenchyma can cause acute bleeding.

- **Minor:** Blood-streaked sputum (Monitor closely).
- **Major (Red Flag):** bright red blood or "gurgling" respiratory sounds.
- **Action:** Position the patient "**Bleeding Side Down**" to protect the unaffected lung. Ensure high-flow suction is functional. Call a Rapid Response if the airway is threatened.

3. Acute Bronchospasm or Airway Obstruction

The catheter or radiation-induced inflammation can trigger reactive airway disease.

- **Signs:** Audible wheezing, stridor (high-pitched inspiratory sound), or "silent chest" (no air movement despite effort).
- **Action:** Assess for anaphylaxis if medications were recently given. Administer rescue bronchodilators per standing orders and notify the provider.

4. Hemodynamic Instability (The "Vagal" or Bleed)

Hypotension may indicate a vasovagal response to the procedure or an internal hemothorax.

- **Signs:** MAP <65 mmHg, tachycardia, or sudden pallor/diaphoresis.
- **Action:** Bolus balanced crystalloids (e.g. Lactated Ringer's) as ordered. If hypotension is accompanied by muffled heart sounds, consider the rare risk of pericardial involvement.

5. Catheter Displacement or "Tugging"

The HDR source travels through the catheter; geometry must be perfect.

- **Signs:** The catheter appears longer at the skin site than previously documented, or the patient reports sharp pain during source travel.
- **Action: Stop the treatment.** Do not attempt to push the catheter back in. Notify Physics and Radiation Oncology to recalibrate or verify placement.

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Quick Intervention Checklist (The "ABC" of Lung HDR)

Assessment	Intervention
Airway	Is the patient speaking? Is there stridor or frank blood?
Breathing	Check SpO2. Is the trachea midline? Auscultate for PTX.
Circulation	Check BP and HR. Is the IV patent for fluid resuscitation?
Drains/Lines	Is the catheter dressing occlusive? Any new swelling at the site?