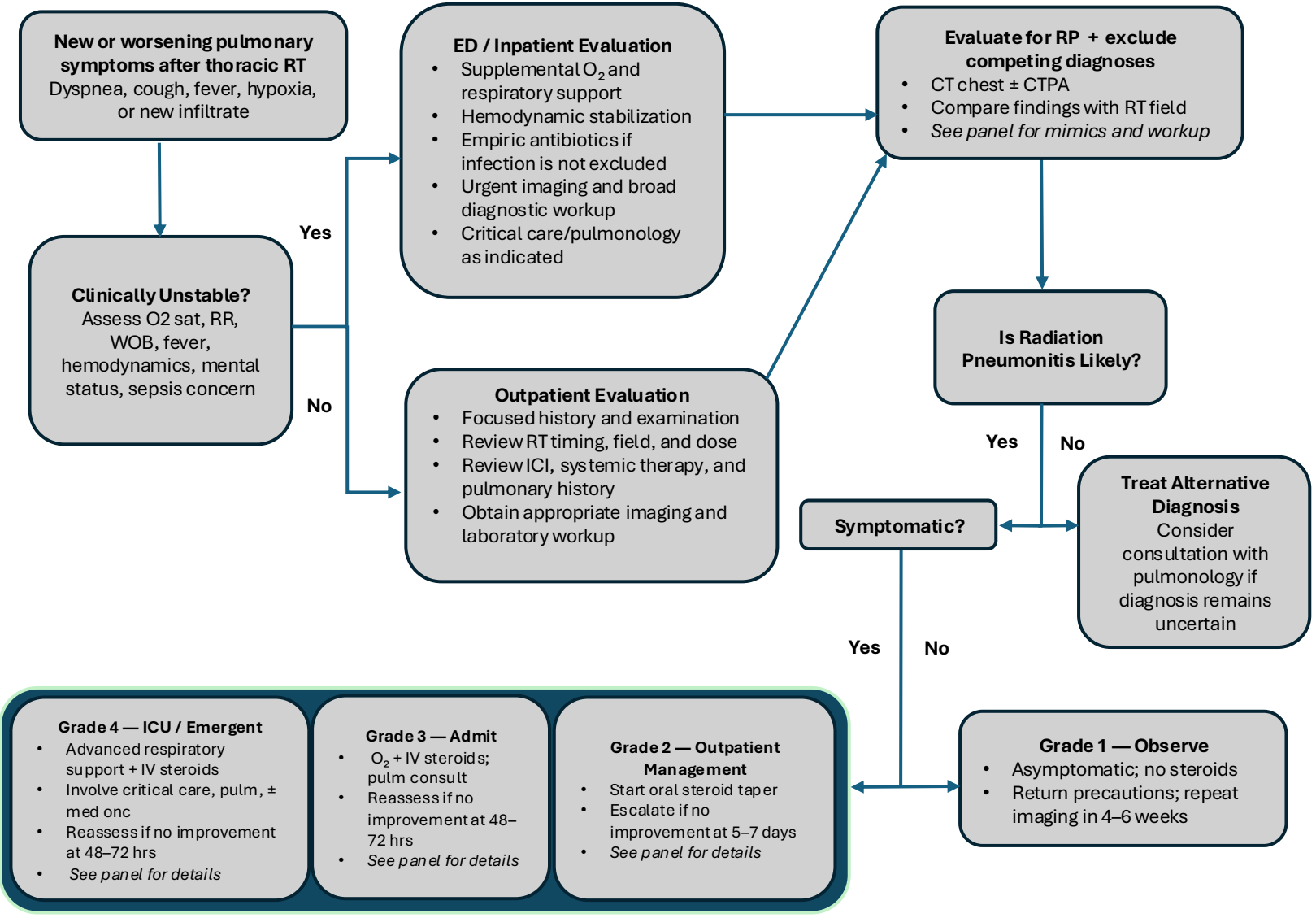
Radiation Pneumonitis

Buclez P, Neibart S, Thoonkuzhy M, Wuu YR. Radiation Oncology On-Call Handbook: Radiation Pneumonitis. Association of Residents in Radiation Oncology. 2026.

Chief complaint: new or worsening dyspnea, dry cough, low-grade fever, hypoxia, or new pulmonary infiltrate in a patient with a history of thoracic radiation therapy



Clinical Context:
- Radiation pneumonitis typically presents 1–6 mos. after thoracic RT; peak incidence around 3 mos.
- Most cases are Grade 1–2
- RP is a diagnosis of exclusion
- Compare the distribution of imaging abnormalities with the RT field and dose distribution

Grading (CTCAE v5.0):
- **Grade 1:** Asymptomatic; radiographic findings only
- **Grade 2:** Symptomatic; medical intervention indicated; limits instrumental ADL
- **Grade 3:** Severe symptoms; oxygen indicated; limits self-care ADL
- **Grade 4:** Life-threatening respiratory compromise; urgent intervention required

Important Mimics:
- **Pneumonia:** Fever, productive cough, positive infectious testing or non-field infiltrate
- **Pulmonary embolism:** Sudden onset, pleuritic pain, tachycardia, leg swelling
- **CHF/fluid overload:** Orthopnea, edema, bilateral findings, elevated BNP
- **Atelectasis/lobar collapse:** Volume loss or airway obstruction on imaging
- **Tumor recurrence/progression:** Progressive mass or nodularity
- **ICI/drug pneumonitis:** Recent exposure with abnormalities extending beyond the RT field

Diagnostic Workup:
- **History:** RT field, dose, and timing; ICI/systemic therapy; COPD, ILD, prior RP, smoking, baseline O_2, and recent corticosteroid taper.
- **Imaging:** CT chest with contrast; CTPA if PE is suspected; compare with prior imaging and the RT field.
- **Laboratory evaluation:** CBC/CMP; CRP or procalcitonin as clinically appropriate; BNP if cardiac disease is suspected; viral testing, cultures, and urine antigens if febrile or ill.

Management:
- **Grade 1:** Observe. No steroids. Return precautions, outpatient f/u, repeat imaging 4–6 wks.
- **Grade 2:** Prednisone 40-60 mg/day (0.5–1 mg/kg/day); taper by 10 mg every 2 weeks over ≥8 weeks; avoid rapid taper. Consider PPI, glucose monitoring, Ca/Vit D. PJP ppx if ≥20 mg/day × ≥4 weeks or immunocompromised. Empiric ABx if infection not excluded. Hold ICI if applicable. F/u q3–7d; repeat CT 3–4 wks. Worsening or no improvement at 5–7d → escalate to Gr 3.
- **Grade 3:** Admit. IV methylprednisolone 1–2 mg/kg/day. If improving, transition to oral and taper. Pulm consult. BAL if dx uncertain. No improvement 48–72h → reassess diagnosis; consider specialist-directed escalation (e.g., IVIG, tocilizumab).
- **Grade 4:** ICU. IV methylprednisolone 1–2 mg/kg/day; higher dosing or pulse-dose to be considered. Critical care + pulm + med onc. No improvement 48–72h → reassess diagnosis; consider specialist-directed escalation (e.g., IVIG, tocilizumab).

ICI considerations:
- RP and ICI pneumonitis may be clinically indistinguishable
- Hold ICI for Grade ≥2 and involve medical oncology early
- Grade 2 ICI rechallenge may be considered after improvement to ≤ Grade 1 and completion of the corticosteroid taper; Grade 3–4 ICI pneumonitis generally warrants permanent discontinuation

Pulmonology consultation:
- Consult for Grade ≥3, diagnostic uncertainty, or steroid-refractory disease

Expected course:
- Clinical improvement typically occurs within approximately 1 week; Imaging may lag 4–6 weeks
- If symptoms recur during taper, return to the previous effective dose and taper more slowly