

Pulmonary Embolism: Evidence-Based Pocket Guide 2025

Block 1: Diagnosis



PERC Rule: Rule-Out PE without D-dimer in Low-Risk Patients

- ✓ Age < 50
- ✓ Pulse < 100 bpm
- ✓ SaO₂ > 94% on room air
- ✓ No unilateral leg swelling
- ✓ No hemoptysis
- ✓ No recent trauma or surgery
- ✓ No prior PE/DVT
- ✓ No hormone use

If clinician gestalt for PE is low and **ALL 8** criteria are met, no further testing is needed.



Wells Score for PE (Simplified Two-Tier)

A validated score to determine pretest probability (PTP) and guide diagnostic testing.



Non-High PTP (Score ≤ 6): PE can be ruled out with a negative D-dimer.



High PTP (Score > 6): Requires pulmonary vascular imaging (e.g., CTPA).



Age-Adjusted D-dimer Cutoff

For patients >50 years old with non-high PTP, this formula increases specificity and reduces unnecessary imaging.

$$\text{Patient Age} \times 10 \text{ ng/mL}$$

Block 2: Risk Stratification



Defining Hemodynamic Instability

The key criterion for classifying a patient as "High Risk".
Definition: Systolic Blood Pressure (SBP) < 90 mmHg for > 15 minutes, not caused by dysrhythmia or other etiology.



Risk Category Comparison

	Risk Category	Criteria
⚠️	High Risk (Massive)	Hemodynamically unstable (SBP < 90 mmHg for > 15 min).
⚠️	Intermediate Risk (Submassive)	Hemodynamically stable AND evidence of RV dysfunction (e.g., RV strain on CT/echo) OR positive cardiac troponin.
✓	Low Risk	Hemodynamically stable AND no evidence of RV dysfunction AND negative troponin.

Block 3: Treatment Algorithm



Low-Risk PE Treatment

- Candidates for outpatient management. Initiate anticoagulation, often with a DOAC.
- **Action:** Consider discharge if Hestia Criteria are met (e.g., SBP > 100, no active bleeding, no O₂ requirement, CrCl > 30).



Intermediate-Risk PE Treatment

- Requires hospital admission for anticoagulation and close monitoring.
- **Action:** Admit to a monitored bed. Reserve thrombolysis for rescue therapy in case of hemodynamic deterioration.



High-Risk PE Treatment

- Life-threatening condition requiring immediate intervention to restore perfusion.
- **Action:** Systemic thrombolysis or thromboembolectomy is recommended unless contraindicated. Admit to ICU.

Block 4: Drug Dosing & Contraindications



Thrombolysis: Alteplase (rtPA)

For high-risk PE. Dosing differs for cardiac arrest situations.

- **Standard Dose:** 100 mg IV infusion over 2 hours.
- **Cardiac Arrest Dose:** 50 mg IV bolus.



Absolute Contraindications to Thrombolysis ⚠️

- Active hemorrhage
- GI bleeding within previous 30 days
- Surgery opening the skull or spinal canal within the previous 14 days
- Recent major trauma



Anticoagulant Initial Dosing Regimens

Anticoagulant	Initial Dosing Regimen (from Table 74.3)
Enoxaparin (LMWH)	1 mg/kg every 12h OR 1.5 mg/kg every 24h (Subcutaneous)
Apixaban (DOAC)	10 mg by mouth every 12h for 7 days, then 5 mg every 12h.
Rivaroxaban (DOAC)	15 mg by mouth every 12h for 21 days (with food).