PULMONARY EMBOLISM

Diagnose · risk-stratify · treat by severity

STRATIFY
then treat

DIAGNOSE: Wells / PERC to gauge probability. Low + D-dimer negative = excluded. Otherwise CTPA (V/Q if contrast contraindicated). Unstable → bedside echo for RV strain.

RISK STRATIFY · DRIVES TREATMENT

haemodynamics > RV > biomarkers

Class	Features	Treatment
HIGH (massive)	Shock or SBP < 90 / sustained drop	REPERFUSE: systemic thrombolysis (or embolectomy) + anticoagulation
INTERMEDIATE-HIGH	RV dysfunction AND positive troponin	Anticoagulate + MONITOR closely; rescue lysis if deteriorates
INTERMEDIATE-LOW	RV dysfunction OR troponin (one)	Anticoagulate; admit
LOW	No RV strain, normal biomarkers, sPESI 0	Anticoagulate; consider outpatient (Hestia)

ANTICOAGULATE

start on clinical suspicion

- **DOAC first-line -** apixaban / rivaroxaban (no bridging) for most stable PE
- **LMWH -** cancer, pregnancy; bridge to warfarin if DOAC unsuitable
- **UFH infusion -** if thrombolysis likely, haemodynamic instability, or renal failure
- **Start early -** give heparin while awaiting imaging if high probability

REPERFUSE · HIGH-RISK

- **Thrombolysis -** alteplase 100 mg over 2 h (10 mg bolus + 90 mg); 50 mg if high bleeding risk
- **Cardiac arrest -** suspected PE: alteplase 50 mg bolus, continue CPR 60-90 min
- **Catheter / surgery -** embolectomy if lysis fails or contraindicated
- **IVC filter -** only if anticoagulation is contraindicated

SUPPORT THE RV: cautious fluids (over-filling worsens RV failure) · norepinephrine for hypotension · avoid intubation if possible (can precipitate arrest); if needed, minimise sedation-induced hypotension.

CONFIRM & ASSESS THE RV

risk stratification detail

PROBABILITY

Wells / PERC to gauge likelihood; D-dimer only when probability is LOW (it rules out, not in).

IMAGING

CTPA is first-line; V/Q scan if contrast is contraindicated, in renal failure or pregnancy.

RV STRAIN

Echo: dilated / hypokinetic RV, McConnell sign, septal bowing. ECG S1Q3T3; raised troponin / BNP.

DURATION & SPECIAL SITUATIONS: provoked → 3 months · unprovoked / cancer / recurrent → extended · pregnancy → LMWH (no DOAC) · renal failure or peri-thrombolysis → UFH · low-risk (Hestia / sPESI 0) → consider outpatient treatment.

PEARLS & PITFALLS

- Haemodynamic instability defines high-risk PE and mandates reperfusion - do not just anticoagulate.
- The failing RV hates fluid - give cautiously, use norepinephrine, and avoid intubation if you can.
- Intermediate-high PE (RV strain + troponin) needs close monitoring for rescue thrombolysis.
- Start heparin on strong clinical suspicion; do not wait for the CTPA in an unstable patient.

References: ESC Acute PE 2019 · CHEST VTE 2021 · PEITHO 2014 · Wells / PERC / sPESI.

Educational aid; verify doses against local protocol and patient factors.