Acute Pulmonary Embolism

AHA/ACC clinical risk categories, anticoagulation therapy, hemodynamic support, and advanced reperfusion strategies.

2026 AHA/ACC
Acute Pulmonary Embolism Guideline
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COR — I · Recommended | IIa · Reasonable | IIb · May Consider | III · No Benefit / Harm

1 AHA/ACC Acute PE Clinical Categories

Category/subcategory selected by most severe indicator; "R" modifier added for prominent hypoxemia/tachypnea

CATEGORY	DEFINITION
A	Subclinical — incidental, asymptomatic PE
B	Symptomatic PE, **low** clinical severity score (PESI I–II, sPESI=0, Hestia=0)
C	Symptomatic PE, **elevated** severity score (PESI III–V, sPESI≥1, Hestia≥1); subcategories by troponin/RV dysfunction on imaging
D	Incipient cardiopulmonary failure — normotensive shock; D1 transient/fluid-responsive hypotension, D2 hypoperfusion marker present
E	Cardiopulmonary failure — E1 persistent hypotension/cardiogenic shock (SCAI C), E2 refractory shock or cardiac arrest

2 Anticoagulation Therapy

GENERAL PRINCIPLES

- **I** B-R — No absolute contraindication — anticoagulation should be **initiated** to reduce recurrent VTE/death.
- **I** B-R — Categories C1–E1 requiring parenteral therapy — **LMWH** over UFH to reduce recurrent VTE/major bleeding.
- **I** B-R — Eligible for oral anticoagulation — **DOACs** recommended over VKA unless contraindicated.
- **IIa** C-EO — Suspected PE, Category C2 or higher, low bleeding risk — reasonable to give therapeutic anticoagulation while imaging delayed.

SPECIAL POPULATIONS

- **IIa** B-NR — **Obesity** (BMI >30) — DOAC over VKA reasonable.
- **I** A — Thrombotic **antiphospholipid syndrome** — VKA preferred over DOAC.
- **I** A — Mild-mod **CKD** (stage 2–3) — DOAC over VKA to reduce major bleeding.
- **I** C-LD — **Pregnancy** — LMWH or UFH recommended; **breastfeeding** — LMWH, UFH, or warfarin preferred over DOAC.
- **III** Harm · C-LD — **Pregnancy** — DOACs and warfarin potentially harmful (miscarriage/fetal anomalies).

3 Hemodynamic Pharmacotherapy & Sedation

- **I** C-LD — Cardiogenic shock (Categories D2–E2) — **vasopressors/inotropes** recommended to improve cardiac output/perfusion.
- **IIb** B-R — Categories C2–E — **inhaled pulmonary vasodilators** may be considered to reduce RV afterload.
- **I** C-LD — Categories C–E requiring sedation for intubation — supportive therapies (vasopressors/inotropes/VA-ECMO) should be available.

4 Systemic Thrombolysis

Standard-dose rt-PA 100mg over 2h; low-dose 25–50mg may reduce bleeding risk

- **IIa** C-LD — Categories E1–2, acceptable bleeding risk — thrombolysis + anticoagulation reasonable over anticoagulation alone to reduce mortality/recurrent PE.
- **IIb** C-LD — Categories D1–2, acceptable bleeding risk — may be considered to prevent further deterioration.
- **IIb** C-LD — Category C3 — benefit over anticoagulation alone is **uncertain**.
- **III** Harm · B-R — **Categories A1–C2** — should **not** be used over anticoagulation alone; increased major bleeding/ICH risk.

5 Catheter-Directed Thrombolysis (CDL) & IVC Filter

CDL

- **IIa** C-LD — Category E1 — CDL + anticoagulation reasonable to prevent further deterioration/early mortality.
- **IIb** B-NR — Categories D1–2, advanced therapy considered — CDL + anticoagulation may be considered.
- **IIb** C-LD — Categories C2–3 — benefit over anticoagulation alone is unclear.
- **III** NB · B-NR — Reduced dose **<5mg alteplase per PA** during CDL — not recommended over standard dosing.

INFERIOR VENA CAVA FILTER

- **I** B-R — Cannot tolerate anticoagulation, filter deemed necessary — **retrievable** filters recommended over permanent.
- **I** C-LD — Retrievable filter in place — **retrieval** attempted once PE risk decreases and anticoagulation is tolerated.
- **IIa** B-R — Cannot tolerate anticoagulation — IVC filter can be useful to reduce short-term recurrent PE.
- **IIb** C-LD — Categories D–E undergoing advanced intervention — benefit of concurrent filter **uncertain**.

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