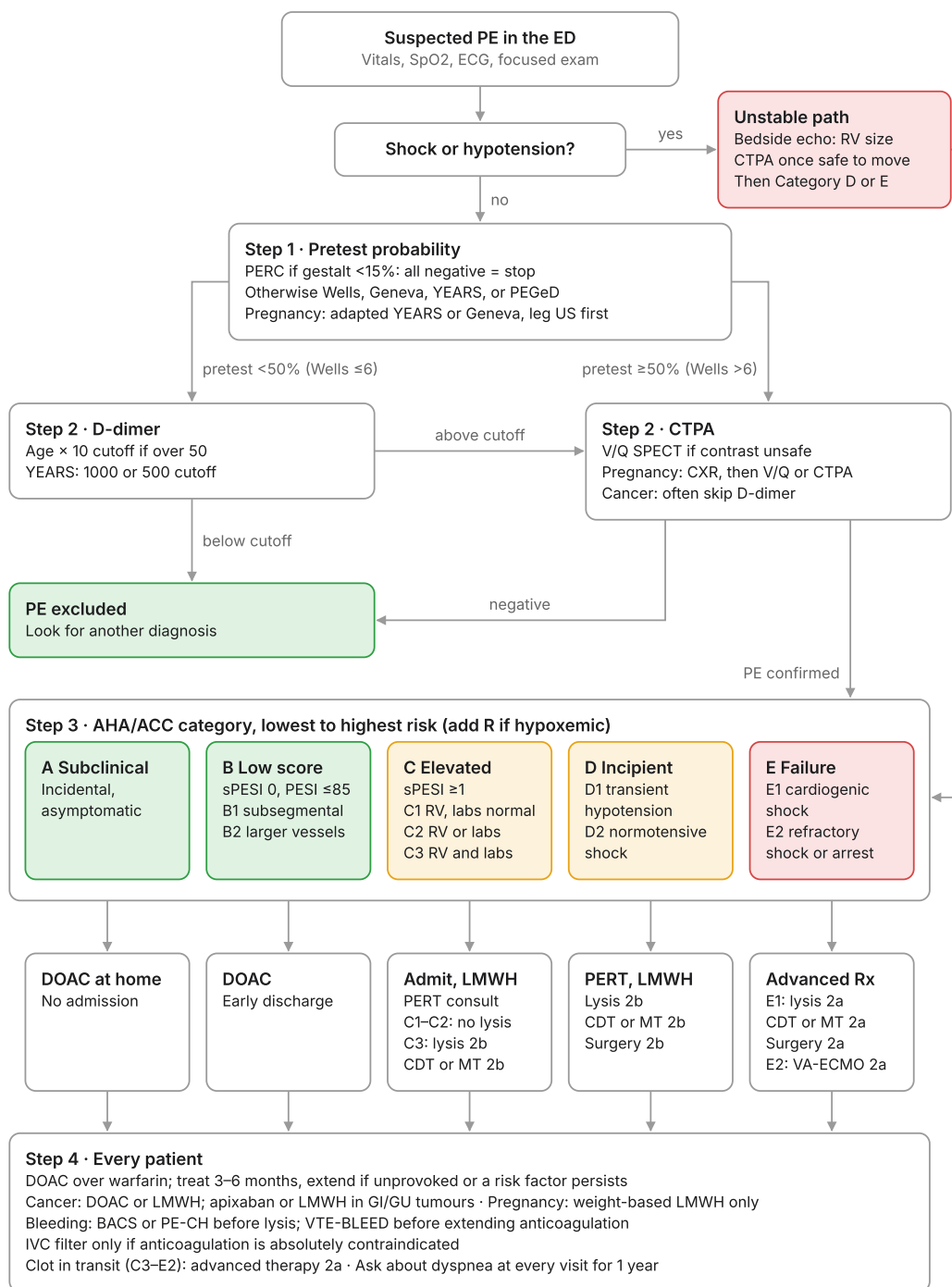


Acute PE Pathway: ED to Treatment (2026 AHA/ACC)

October 11, 2026 · Ali Araghi, MD

Pathway at a glance

Probability picks the test; the A-E category picks the treatment



Read top to bottom. Pretest probability chooses between D-dimer and CTPA; once PE is confirmed, the A–E category sets disposition, anticoagulant, and whether advanced therapy is on the table. Numbers like 2a and 2b are 2026 guideline classes of recommendation.

How to use the pathway

Work the chart top to bottom: probability, test, category, treatment. Recalculate the category whenever the patient changes; it is a moving label, not an admission stamp.

Step 1 — Pretest probability (before any test is ordered)

If the patient is hypotensive or in shock, skip scoring: go to bedside echo and CTPA once stable enough to travel (see Step 3, Category D/E). Otherwise, estimate probability with gestalt plus one validated rule.

Tool	Use it when	Output that matters
PERC (8 items, all must be negative)	Gestalt already low (<15%)	All negative → PE excluded, no D-dimer
Wells (3-tier)	Default for most ED patients	<2 low, 2–6 moderate, >6 high
Wells (2-tier)	When pairing with D-dimer	≤4 unlikely, >4 likely
Simplified revised Geneva	Prefer fully objective items	0–2 unlikely, ≥3 likely
YEARS (3 items)	Built-in D-dimer threshold	0 items vs ≥1 item sets the cutoff
PEGeD	Wells-based variable threshold	Low C-PTP → cutoff 1000; moderate → 500

The guideline frames the branch point as pretest probability below or above 50%. In practice, low or moderate Wells (≤6) sits below that line; high Wells (>6) or strong gestalt sits above it and goes straight to imaging. In high-probability patients with low bleeding risk, start anticoagulation while awaiting CTPA.

Step 2 — D-dimer or straight to imaging

Pretest <50% (low/moderate): order a high-sensitivity D-dimer and read it against an adjusted cutoff, as the guideline endorses age-adjusted D-dimer, YEARS, or both.

- Age-adjusted: age × 10 ng/mL FEU for patients over 50 (500 ng/mL otherwise).
- YEARS: no items (DVT signs, hemoptysis, PE most likely) → exclude if <1000 ng/mL; ≥1 item → exclude if <500 ng/mL.
- Below cutoff → PE excluded, look for another diagnosis. Above cutoff → CTPA.

Pretest ≥50% (high): skip D-dimer, go to CTPA. A negative D-dimer does not safely exclude PE here.

Imaging: CTPA is preferred. If contrast is contraindicated (allergy, severe kidney injury), use V/Q SPECT. A non-diagnostic study in a high-probability patient needs a second test (leg compression ultrasound or V/Q).

Cancer: D-dimer is usually elevated, so it rules out far fewer patients; many with active cancer go directly to CTPA. Incidental PE on a staging scan is Category A and is still treated.

Pregnancy: standard thresholds are not validated, because D-dimer rises through gestation. Use a pregnancy-adapted pathway:

1. Leg symptoms → compression ultrasound first; a proximal DVT confirms VTE without chest imaging.
2. Pregnancy-adapted YEARS (Artemis) or pregnancy-adapted Geneva with D-dimer, using the YEARS 1000/500 thresholds.
3. Imaging still needed → chest X-ray; normal film favours perfusion (V/Q) scan, abnormal film favours CTPA. Both carry fetal doses well below harm thresholds; do not withhold imaging.

Step 3 — Assign the AHA/ACC category (A–E)

Once PE is confirmed, ask four questions in order: Is there shock or hypotension? Is the severity score low? Is the RV abnormal? Is troponin or BNP abnormal?

Category	Defining features	Severity score / tests
A — Subclinical	Incidental, asymptomatic	None needed
B1 / B2 — Symptomatic, low severity	Subsegmental (B1) or larger (B2)	PESI ≤85, sPESI 0, or Bova ≤4
C1 — Elevated severity	Normal RV and biomarkers	PESI >85, sPESI ≥1, or Bova >4
C2	Abnormal RV or one abnormal biomarker	Echo or CT RV/LV ratio; troponin, BNP
C3	Abnormal RV and ≥1 abnormal biomarker	Same
D1 — Transient hypotension	SBP <90 or drop >40 mm Hg, <15 min or fluid-responsive	Bedside BP trend
D2 — Normotensive shock	Any of: lactate >2, AKI, urine <0.5 mL/kg/h, altered mental status, CI <2.2, MAP <60	Lactate, SCAI stage, CPES score
E1 — Cardiogenic shock	Recurrent or persistent hypotension with shock	—
E2 — Refractory shock or arrest	Shock despite support, or cardiac arrest	—

Respiratory modifier (R): append R for C (SpO₂ <90%, RR ≥30, or needs oxygen), D (>6 L nasal cannula or non-rebreather), or E (hypoxemic or ventilatory failure). Example: C3R. It flags severe PE with a preserved blood pressure.

Score choice: sPESI is fastest at triage. Note that active cancer alone gives sPESI 1, so a symptomatic cancer patient will usually land in C; Bova adds RV and troponin data for C2/C3 separation. Categories C–E trigger a PERT call (Class 1).

Step 4 — Anticoagulate, matched to category and patient

- **A–B:** start a DOAC; home treatment or early discharge is reasonable. Use Hestia if unsure about outpatient safety.
- **C–E (hospitalized):** LMWH over UFH (Class 1). Choose UFH when advanced therapy, a procedure, or severe renal failure is likely, since it can be stopped quickly.
- **Oral phase:** DOAC over warfarin (Class 1) unless contraindicated (mechanical valve, antiphospholipid syndrome, severe renal failure).
- **Duration:** at least 3–6 months. Extend if the PE was unprovoked or a risk factor persists.
- **Absolute contraindication to anticoagulation:** IVC filter is reasonable; retrieve it once anticoagulation can start.

Cancer: apixaban, edoxaban, rivaroxaban, or LMWH. Prefer apixaban or LMWH in luminal GI or GU tumours, where the other DOACs raise bleeding. Check drug interactions with chemotherapy. Continue while cancer is active.

Pregnancy: weight-based LMWH throughout pregnancy and at least 6 weeks postpartum (3 months total minimum). DOACs and warfarin are not used during pregnancy; warfarin and LMWH are compatible with breastfeeding.

Bleeding risk: assess it twice.

- Before thrombolysis: screen absolute contraindications (prior intracranial bleed, ischemic stroke within 3 months, intracranial tumour, recent brain or spine surgery or head trauma, active bleeding). BACS and PE-CH estimate bleeding and intracranial haemorrhage risk after lysis.
- For extended anticoagulation: VTE-BLEED (validated for patients on stable anticoagulation) helps weigh continuing beyond 3–6 months. HAS-BLED was built for atrial fibrillation, not VTE.

Step 5 — Advanced therapy: who, which, and how strongly

Advanced therapy is a decision for C3 and above, made with the PERT. Class of recommendation (COR) per the 2026 guideline:

Category	Systemic lysis	Catheter-directed lysis	Mechanical thrombectomy	Surgical embolectomy	Other
A–C2	3: Harm	—	—	—	Anticoagulation alone
C2–C3	C3: 2b (uncertain)	2b, benefit unclear	2b, benefit unclear	—	Monitor for deterioration
D1–D2	2b	2b	2b	2b	Catheter or surgical options may be chosen over lysis to cut bleeding (2b)
E1	2a	2a	2a	2a	Vasopressor or inotrope support
E2	2a	—	—	3: No benefit over others unless on MCS	VA-ECMO 2a; added therapy on ECMO 2b
Clot in transit (C3–E2)	Advanced therapy over anticoagulation alone: 2a				

Choosing among them:

- **Systemic lysis** is the fastest option in E1–E2 with acceptable bleeding risk. Lower-dose regimens may be considered to reduce bleeding (2b).
- **Catheter-directed lysis or mechanical thrombectomy** fit patients with higher bleeding risk, failed lysis, or D-category illness where a smaller drug dose is preferred. Neither has proven superior to the other in C2–D2 (2b).
- **Mechanical thrombectomy** avoids lytic drug entirely, so it is the catheter choice when lysis is contraindicated.
- **Surgical embolectomy** suits failed or contraindicated lysis, large clot in transit, or a surgical candidate at high intracranial bleeding risk, where expertise exists.
- **VA-ECMO** is reasonable for E2 refractory shock or arrest when resources exist.

Follow-up and caveats

Ask about dyspnea and functional limits at every visit for at least one year to screen for chronic thromboembolic pulmonary disease.

The category scheme, classes of recommendation, and management steps come from the two attached summaries. The pregnancy pathways, cancer DOAC choice, and bleeding scores (BACS, PE-CH, VTE-BLEED, Hestia, PEGeD) come from other validated literature, not from those summaries; confirm thresholds against the full guideline before local adoption. Results from HI-PEITHO, PRAGUE-26, and PEITHO-3 may shift the C3–D recommendations.

Sources

- Creager MA, et al. 2026 AHA/ACC/ACCP/ACEP/CHEST/SCAI/SHM/SIR/SVM/SVN Guideline for Acute PE. J Am Coll Cardiol 2026;87(13):1626–1710.
- Dudzinski DM, et al. 2026 Acute PE Guideline-at-a-Glance. J Am Coll Cardiol 2026;87(13):1620–1625.
- Bikdeli B. AHA/ACC Guideline on Pulmonary Embolism (review). NEJM Journal Watch, 2026.