

Prognostic Performance of the 2026 AHA/ACC Pulmonary Embolism Clinical Classification: A Cohort Study

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Background

The 2026 American Heart Association/American College of Cardiology (AHA/ACC) framework offers new stratification for acute pulmonary embolism (PE), yet its prognostic performance in independent cohorts remains poorly validated. We evaluated the association between AHA/ACC clinical categories and mortality and the incremental prognostic value of respiratory impairment.

Methods

We conducted a retrospective, single-center cohort study of patients with acute PE. Patients were assigned to AHA/ACC clinical categories A–E according to available clinical and hemodynamic data. The primary outcome was 30-day all-cause mortality. Discriminatory performance was assessed using the area under the receiver operating characteristic curve (AUC). In an exploratory complete-case analysis, we evaluated whether adding respiratory severity improved discrimination beyond the AHA/ACC classification.

Results

Of 414 patients with acute PE, 301 (72.7%) could be assigned to an AHA/ACC clinical category. Overall, 25 patients (8.3%) died within 30 days. Mortality was 1.9% in category A (1/53), 0% in B (0/65), 1.3% in C (1/79), 4.8% in D (3/62), and 47.6% in E (20/42). The AHA/ACC classification demonstrated good overall discrimination for 30-day mortality (AUC 0.892, 95% CI 0.816–0.968. Category E accounted for 80% of deaths among classified patients, with 9 of the 20 deaths (45.0%) attributed to PE. Within this category, mortality was 7.1% (1/14) among patients with shock without cardiac arrest and 67.9% (19/28) among those with cardiac arrest, with or without shock (table). In an exploratory analysis of 188 patients with available respiratory classification (24 deaths), adding respiratory severity did not significantly improve discrimination (AUC 0.877 vs. 0.884; Δ AUC +0.007; $p=0.568$).

Conclusions

The 2026 AHA/ACC clinical classification demonstrated good overall discrimination for 30-day mortality in patients with acute PE, largely driven by the identification of patients in category E, particularly those with cardiac arrest. Further studies are needed to assess the prognostic performance of the classification across the full spectrum of PE severity.

Characteristic	A (n=53)	B (n=65)	C (n=79)	D (n=62)	E (n=42)
Age, years	73 (56–79)	62 (51–72)	76 (63–84)	77 (64–83)	77 (62–83)
Female sex	22/52 (42.3%)	25/64 (39.1%)	53/78 (67.9%)	35/62 (56.5%)	25/42 (59.5%)
Heart failure	3/53 (5.7%)	0/65 (0%)	6/79 (7.6%)	7/61 (11.5%)	7/42 (16.7%)
Chronic obstructive pulmonary disease (COPD)	4/53 (7.5%)	0/65 (0%)	12/79 (15.2%)	11/62 (17.7%)	1/42 (2.4%)
Active cancer	25/53 (47.2%)	0/65 (0%)	16/79 (20.3%)	19/61 (31.1%)	9/40 (22.5%)
Metastatic cancer	10/50 (20.0%)	0/65 (0%)	9/78 (11.5%)	13/62 (21.0%)	5/42 (11.9%)
Right ventricular dysfunction (RVD)	20/33 (60.6%)	30/54 (55.6%)	50/63 (79.4%)	37/56 (66.1%)	29/33 (87.9%)
Shock	0/51 (0%)	0/65 (0%)	0/78 (0%)	0/61 (0%)	18/41 (43.9%)
Cardiac arrest	0/51 (0%)	0/65 (0%)	0/78 (0%)	0/61 (0%)	28/42 (66.7%)
Systemic thrombolysis	0/51 (0%)	3/65 (4.6%)	6/79 (7.6%)	9/60 (15.0%)	14/41 (34.1%)
30-day all-cause mortality	1/53 (1.9%)	0/65 (0%)	1/79 (1.3%)	3/62 (4.8%)	20/42 (47.6%)