

Evaluation of the 2026 AHA/ACC Acute Pulmonary Embolism Clinical Categories and comparison with the 2019 ESC Classification in a tertiary care cohort

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Introduction: The 2026 AHA/ACC acute pulmonary embolism (PE) guidelines stratify severity using clinical (sub-)categories and a respiratory modifier. We aimed to evaluate the new categories in a PE cohort regarding mortality, management, and differences to the 2019 ESC classification.

Method: The categories were applied to a retrospective cohort (01/2016-12/2019) of patients with acute PE at the Medical University of Vienna (Austria). Data was collected manually from electronic health records.

Results: Among 969 PE events (median age 63 years [IQR 50–74]; 50.3% female; central PE 23.9%, subsegmental PE 11.9%; mostly hemodynamically stable with a heart rate < 100 bpm in 65.0% and a systolic blood pressure > 100 mmHg in 88.8%), the category distribution was: A (asymptomatic/incidental) 3.4%, B (low clinical severity) 31.0%, C (elevated clinical severity) 52.9%, D (incipient cardiopulmonary failure) 5.8%, and E (overt cardiopulmonary failure) 6.9%. Thirty-day mortality was 3.0%, 0%, 7.2%, 7.1%, and 37.3%, respectively (Table 1). Thrombolysis and embolectomy were almost exclusively used in categories C to E (C: 2.5%, D: 28.6%, E: 46.3%). No consistent mortality gradient was observed across subcategories 1-3, whereas the respiratory modifier was associated with higher mortality. The most important difference to the 2019 ESC classification was observed in intermediate-high risk patients, of which 16.9% were recategorized into category A/B. Using the Hestia criteria or the Bova score (instead of the sPESI score) as basis for the categorization led to a less coherent risk separation.

Conclusion: The 2026 AHA/ACC PE guideline provides mostly valid risk stratification, i.e., patients of higher risk categories have a higher mortality risk or receive advanced therapies more often. However, the limited differences in subcategory outcomes suggest that the increased complexity of the new system may be of limited clinical utility. The respiratory modifier shows promising potential for refined risk categorization.

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Table 1: Outcomes and management of patients with acute PE.

2026 AHA/ACC stratification (sPESI-based)					
	A N = 33 3.4%	B N = 300 31.0%	C N = 513 52.9%	D N = 56 5.8%	E N = 67 6.9%
Management					
Admitted	12 (36.4%)	173 (57.7%)	291 (56.7%)	44 (78.6%)	33 (49.3%)
Home treatment	2 (6.1%)	101 (33.7%)	53 (10.3%)	0 (0.0%)	0 (0.0%)
Hospitalized at diagnosis	19 (57.6%)	26 (8.7%)	169 (32.9%)	12 (21.4%)	34 (50.7%)
Thrombolysis/Embolectomy	0 (0.0%)	2 (0.7%)	13 (2.5%)	16 (28.6%)	31 (46.3%)
Days admitted due to PE	11.5 (5.0, 24.0)	6.0 (4.0, 8.0)	7.0 (5.0, 11.0)	9.0 (7.0, 13.5)	5.0 (0.0, 19.0)
Death (30 days)	1 (3.0%)	0 (0.0%)	37 (7.2%)	4 (7.1%)	25 (37.3%)
p-value ^a		vs. C: <0.001 vs. D: <0.001	vs. B: <0.001	vs. B: <0.001	vs. A-D: <0.001
2026 AHA/ACC stratification (Bova-based)					
	A N = 33 3.4 %	B N = 788 81.3 %	C N = 39 4.0 %	D N = 42 4.3 %	E N = 67 6.9 %
Management					
Admitted	12 (36.4%)	445 (56.5%)	30 (76.9%)	33 (78.6%)	33 (49.3%)
Home treatment	2 (6.1%)	153 (19.4%)	1 (2.6%)	0 (0.0%)	0 (0.0%)
Hospitalized at diagnosis	19 (57.6%)	190 (24.1%)	8 (20.5%)	9 (21.4%)	34 (50.7%)
Thrombolysis/Embolectomy	0 (0.0%)	13 (1.6%)	4 (10.3%)	14 (33.3%)	31 (46.3%)
Days admitted due to PE	11.5 (5.0, 24.0)	7.0 (4.0, 10.0)	7.0 (6.0, 10.0)	8.0 (7.0, 12.0)	5.0 (0.0, 19.0)
Death (30 days)	1 (3.0%)	33 (4.2%)	6 (15.4%)	2 (4.8%)	25 (37.3%)
p-value ^a		vs. C: 0.008	vs. B: 0.008		vs. A-D: <0.05
2026 AHA/ACC stratification (Hestia-based)					
	A N = 33 3.4%	B N = 220 22.7%	C N = 587 60.6%	D N = 62 6.4%	E N = 67 6.9%
Management					
Admitted	12 (36.4%)	83 (37.7%)	375 (63.9%)	50 (80.6%)	33 (49.3%)
Home treatment	2 (6.1%)	134 (60.9%)	20 (3.4%)	0 (0.0%)	0 (0.0%)
Hospitalized at diagnosis	19 (57.6%)	3 (1.4%)	192 (32.7%)	12 (19.4%)	34 (50.7%)

Thrombolysis/ Embolectomy	0 (0.0%)	0 (0.0%)	15 (2.6%)	16 (25.8%)	31 (46.3%)
Days admitted due to PE	11.5 (5.0, 24.0)	5.0 (1.0, 7.0)	7.0 (5.0, 10.0)	9.0 (7.0, 13.0)	5.0 (0.0, 19.0)
Death (30 days)	1 (3.0%)	1 (0.5%)	36 (6.1%)	4 (6.5%)	25 (37.3%)
p-value ^a		vs. C: <0.001 vs. D: 0.009	vs. B: <0.001	vs. B: 0.009	vs. A-D: <0.001
2019 ESC classification					
	Low N = 209 21.6%	Intermediate-low N = 505 52.1%	Intermediate-high N = 189 19.5%	High N = 66 6.8%	
Management					
Admitted	98 (46.9%)	264 (52.3%)	158 (83.6%)	33 (50.0%)	
Home treatment	87 (41.6%)	68 (13.5%)	1 (0.5%)	0 (0.0%)	
Hospitalized at diagnosis	24 (11.5%)	173 (34.3%)	30 (15.9%)	33 (50.0%)	
Thrombolysis/ Embolectomy	0 (0.0%)	6 (1.2%)	26 (13.8%)	30 (45.5%)	
Days admitted due to PE	5.0 (3.0, 7.0)	7.0 (4.0, 11.0)	8.0 (6.0, 11.0)	5.0 (0.0, 24.0)	
Death (30 days)	0 (0.0%)	29 (5.7%)	14 (7.4%)	24 (36.4%)	
p-value ^a	vs. other: <0.001	vs. int.-high: 0.479 vs. other: <0.001	vs. int.-low: 0.479 vs. other: <0.001	vs. other: <0.001	

Results are presented using the median and interquartile range (IQR, 25th to 75th percentile) for continuous variables and frequencies (percentages) for categorical variables. Categories are based on the 2026 AHA/ACC Acute PE Clinical Categories.³ ^aOverall Fisher-Freeman-Halton p-value across all categories: <0.001; post-hoc between-group pairwise comparisons were conducted using the Fisher exact test, significant results (p < 0.05) are displayed, the other pairwise comparisons were non-significant. int., intermediate; NT-proBNP, N-terminal pro-B-type natriuretic peptide; PE, pulmonary embolism; RV, right ventricle/ventricular; VTE, venous thromboembolism.