

**American College of Radiology**  
**ACR Appropriateness Criteria®**

## Management of Acute Pulmonary Embolism

**Variant 1: Adult. Extensive acute bilateral central pulmonary emboli. Sustained hypotension for more than 15 minutes. Initial therapy.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Anticoagulation	Usually appropriate	Limited	N/A	N/A	9	9	0	0	0	0	1	1	2	2	8
		References		Study Quality											
		10 (34352279)		4											
Systemic thrombolysis	Usually appropriate	Limited	N/A	N/A	8	8	0	0	0	0	1	0	5	4	4
		References		Study Quality											
		22 (25631770)		4											
		21 (24917641)		Not Assessed											
Surgical embolectomy pulmonary artery	Usually appropriate	Strong	N/A	N/A	7	7	0	0	0	0	1	1	4	3	1
		References		Study Quality											
		20 (32199827)		2											
		19 (35487534)		Good											
		18 (26077690)		2											
Catheter-directed therapy pulmonary artery	Usually appropriate	Strong	N/A	N/A	7	7	0	0	1	0	1	5	2	2	3
		References		Study Quality											
		14 (35588898)		1											
		13 (36349702)		2											

[illegible]

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Anticoagulation	Usually appropriate	Limited	N/A	N/A	9	9	0	0	0	0	0	0	2	2	10
		References	Study Quality												
		10 (34352279)	4												
Catheter-directed therapy pulmonary artery	Usually appropriate	Strong	N/A	N/A	8	8	0	0	0	0	0	0	3	6	5
		References	Study Quality												
		28 (36210021)	2												
		27 (33454291)	2												
		26 (31072507)	2												
		25 (34167677)	1												
		24 (30025734)	1												
		23 (24226805)	1												
		14 (35588898)	1												
		13 (36349702)	2												
		12 (26315743)	2												
		11 (25856269)	2												

Surgical embolectomy pulmonary artery	May be appropriate (Disagreement)	Expert Opinion	N/A	N/A	5	5	0	0	2	1	5	1	0	1	0
		References		Study Quality											
		30 (29659045)		2											
		29 (26165484)		3											
Systemic thrombolysis	Usually not appropriate	Strong	N/A	N/A	3	3	0	3	3	0	4	0	0	0	0
		References		Study Quality											
		32 (28335835)		1											
		31 (24716681)		1											
		22 (25631770)		4											
		21 (24917641)		Not Assessed											
Extracorporeal membrane oxygenation	Usually not appropriate	Expert Consensus	N/A	N/A	2	2	5	3	5	0	0	1	0	0	0

**Variant 3: Adult. Acute bilateral pulmonary emboli. RV/LV ratio less than 0.9 on CTA. No right heart strain on echocardiogram. Normal troponin level. No hypotension. Initial therapy.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Anticoagulation	Usually appropriate	Limited	N/A	N/A	9	9	0	0	0	0	0	0	0	2	12
		References		Study Quality											
		10 (34352279)		4											
		33 (29498138)		Not Assessed											
Catheter-directed therapy pulmonary artery	Usually not appropriate	Expert Consensus	N/A	N/A	3	3	4	1	6	1	0	2	0	0	0
Systemic thrombolysis	Usually not appropriate	Expert Consensus	N/A	N/A	1	1	10	2	0	0	1	0	0	1	0

Extracorporeal membrane oxygenation	Usually not appropriate	Expert Consensus	N/A	N/A	1	1	11	3	0	0	0	0	0	0	0
Surgical embolectomy pulmonary artery	Usually not appropriate	Limited	N/A	N/A	1	1	10	3	1	0	0	0	0	0	0

References	Study Quality
34 (21481423)	2

**Variant 4: Adult. Acute saddle pulmonary embolism. Normal RV/LV ratio on CTA. Normal troponin level. No hypotension. Initial therapy.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Anticoagulation	Usually appropriate	Limited	N/A	N/A	9	9	0	0	0	0	0	0	0	2	12

References	Study Quality
10 (34352279)	4

Catheter-directed therapy pulmonary artery	Usually not appropriate	Expert Consensus	N/A	N/A	3	3	2	3	4	0	1	0	0	0	0
Systemic thrombolysis	Usually not appropriate	Expert Consensus	N/A	N/A	2	2	5	3	2	0	0	0	0	0	0
Extracorporeal membrane oxygenation	Usually not appropriate	Expert Consensus	N/A	N/A	1	1	9	3	1	1	0	0	0	0	0
Surgical embolectomy pulmonary artery	Usually not appropriate	Limited	N/A	N/A	1	1	8	2	3	0	0	0	0	1	0

References	Study Quality
34 (21481423)	2

**Variant 5: Adult. Acute bilateral central pulmonary emboli. Evidence of right heart failure on echocardiogram. Sustained a syncopal event with head trauma and acute intracranial hemorrhage. Initial therapy.**



Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
		References		Study Quality											
		51 (36384306)		4											
		50 (30373436)		2											
		49 (29111332)		4											
		48 (25832601)		4											
		47 (28011316)		2											
Surgical embolectomy right heart	Usually appropriate	Limited	N/A	N/A	7	7	0	0	0	0	0	1	6	2	1
		References		Study Quality											
		53 (36661312)		2											
Catheter-directed therapy right heart	Usually appropriate	Limited	N/A	N/A	7	7	0	0	0	0	4	1	4	1	0
		References		Study Quality											
		52 (35722436)		4											
Systemic thrombolysis	May be appropriate	Limited	N/A	N/A	6	6	0	0	0	0	3	3	2	2	0
		References		Study Quality											
		51 (36384306)		4											
		50 (30373436)		2											
		49 (29111332)		4											
		48 (25832601)		4											
Extracorporeal membrane oxygenation	May be appropriate	Expert Consensus	N/A	N/A	5	5	0	0	0	0	7	3	0	0	0

## Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

**Appropriateness Category:** The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

**SOE:** Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality:** The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

**RRL:** Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

**Rating:** The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Median:** The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Final tabulations:** A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at [www.acr.org/ac](http://www.acr.org/ac).