ACUTE PULMONARY EMBOLISM (PE)

INITIATE ANTICOAGULANTS

Low Risk PE
- Stable vitals
- No O₂ requirement
- Normal Ti/BNP

Sub-massive PE
- CTA/TTE with RV/LV>0.9
- Ti> 500ng/l
- BNP>90pg/ml

Massive PE
- HR>SBP
- Vasopressor requirement
- History of syncope
- Lactic acid > 2, SvO₂ <65
- Oliguria

Consider inpatient admission observation vs outpatient follow-up in 1-2 days

Low Risk Submassive PE
- Short of breath, stable vital signs
- Proximal PE
  - RV/LV>0.9 on CT or TTE
  - OR
  - Increase Ti or BNP

High Risk Submassive PE
- Tachycardia, Hypoxia
- Positive Ti and BNP
- AND
  - RV/LV>0.9 on CT or TTE
  - Proximal PE on CT

Consider early consultation with an intermediate-risk center and consider transfer per healthcare system referral process

Consult High Risk or ECMO Center for possible transfer

• High Risk Center Criteria: 24hr on call radiologist, intensivist in hospital 24/7, advanced heart failure cardiologist, VA ECMO capable
• Intermediate Risk Center Criteria: 24/7 radiology coverage, critical care coverage, an ICU, interventional radiologist, vascular surgeon or cardiologist willing to do CDL
• Low Risk Center Criteria: Do not meet above criteria, account for 40-60% of hospitalizations, average mortality 1%

BNP = brain natriuretic peptide; CDL=catheter directed thrombolysis; CTA=CT Angiography; LV=left ventricle; PERT=pulmonary embolism response team; RV=right ventricle; SBP=systolic blood pressure; STE=systemic thrombolysis; Ti=high sensitivity troponin; TE=transthoracic echocardiogram

Regional Pulmonary Embolism Guidelines
v_Final, January 2023
STRAC REGIONAL ECMO CONSULTATION GUIDELINES

Early recognition of disease severity and request for consultation is essential to maximize outcomes for patients who may benefit from ECMO. Please refer ANY patient (pediatric or adult) meeting ANY one of the below criteria.

**CONSIDERATIONS FOR ECMO CONSULTATION**

<table>
<thead>
<tr>
<th>Cardiac Considerations:</th>
<th>(cardiogenic shock, AMI, acute decompensated heart failure, refractory ventricular arrhythmia, pulmonary embolism)</th>
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<tbody>
<tr>
<td>• Hypotension despite 1 pressor (secondary to cardiac dysfunction, not septic shock)</td>
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<tr>
<td>• Lactate &gt; 2.5</td>
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<tr>
<td>• Decreased urine output (&lt; 30 mL/hr) despite medical optimization</td>
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<tr>
<th>Pulmonary Considerations:</th>
<th>(ARDS, hypercapneic respiratory failure, PE)</th>
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<tbody>
<tr>
<td>• PaO₂:FiO₂ Ratio &lt;150</td>
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<tr>
<td>• pH &lt;7.25 and/or PaCO₂ &gt; 60 for &gt; 4 hrs</td>
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<tr>
<td>• High ventilator support: PIP &gt; 30, PEEP &gt; 10, or FiO₂ &gt; 0.6</td>
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<td>• Active air leak (pneumothorax/pneumomediastinum) despite lung protective mechanical ventilation settings</td>
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*These conditions are not all inclusive. They are recommendations for early consultation with an ECMO Center, not necessarily indications for ECMO.

**RELATIVE ECMO EXCLUSION CRITERIA:**

- Severe neurologic injury/neurodegenerative conditions
- Intracranial bleeding or neurosurgical procedures within the last 5 days
- Mechanical Ventilation >10 days on PEEP > 10, PIP > 30, MAP > 25, FiO₂ > 0.6
- Active, uncontrolled bleeding
- Malignancy with poor prognosis

**STRAC ECMO Referral Centers:**

<table>
<thead>
<tr>
<th>Children’s Hospital of San Antonio (CHoSA)</th>
<th>Brooke Army Medical Center</th>
<th>Methodist Hospital</th>
<th>University Health</th>
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<tbody>
<tr>
<td>877-255-5439</td>
<td>210-916-ECMO (3266)</td>
<td>210-575-ECMO (3266)</td>
<td>210-844-2347</td>
</tr>
<tr>
<td>Pediatric Only</td>
<td>Adult (includes Civilians)</td>
<td>Adult and Pediatric</td>
<td>Adult and Pediatric</td>
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<tr>
<td>Conventional transport capable</td>
<td>ECMO transport capable</td>
<td>ECMO transport capable</td>
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