PE Triage Screening Tool

**Presenting symptom**
- Shortness of breath
- Pleuritic chest pain
- Hemoptysis
- Syncope
- Painful leg swelling

**Presenting sign**
- Hypoxemia
- Tachypnea
- Tachycardia
- Shock
- Cardiovascular collapse

**Plus ONE Risk factor**
- Central venous catheter
- Congenital heart disease
- Prothrombotic disorder
- Recent surgery
- Recent DVT
- Family or personal history of DVT or PE
- Recent immobilization
- Oral contraceptive use or pregnancy
- Acute or chronic inflammatory disorder (SLE, IBD)
- Obesity
- Recent trauma, especially with multiple fractures
- Hypercoagulable state (malignancy, nephrotic syndrome, sickle cell disease)
- Severe infection

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MD/RN SWARM

Is SWARM concerning for PE?
(1 symptom or sign + 1 risk factor)

**Time**
- 10 min
- 30 min
- 60 min
- 90 min

**Urgent CT Pulmonary Angiography**

(Do not need to wait for creatinine if emergent; page nephrology if renal disease; see contrast CT pathway)

**Is CTA positive for a pulmonary embolism?**

**Start anticoagulation immediately**

Heparin BOLUS and Infusion

**Is the PE Massive or Submassive?**

**Low Risk PE**

Consult:
- Pediatric hematology

Order:
- Lower extremity US with doppler

Admit:
- Pediatric floor

**Massive or Submassive PE**

Consults:
- PICU attending AND Pediatric hematology AND Vascular surgery AND Pediatric cardiology

Order:
- Lower extremity US with doppler
- STAT ECHO
- Consider upper extremity US with doppler

Consider:
- IV alteplase (see page 2)

**Definitions**
- **Low risk PE**: acute PE without right heart dysfunction or myocardial necrosis
- **Submassive PE**: acute PE with right heart dysfunction or myocardial necrosis with normal blood pressure
- **Massive PE**: acute PE with sustained hypotension, pulselessness, or persistent profound bradycardia

**Right heart dysfunction**: right ventricle dilation (RV/LV > 0.9) or elevated BNP or elevated N-terminal pro-BNP or ECG changes [new complete or incomplete right bundle-branch block, anteroseptal ST elevation or depression, or anteroseptal T-wave inversion]

**Myocardial necrosis**: elevated troponin

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**Heparin dosing**
(see pediatric heparin power plan)

- **Neonate through 1 year**: Bolus 75 units/kg IV over 10 minutes and start 28 units/kg/hr
- **>1 year through 17 years**: Bolus 75 units/kg IV (max 10,000 units; 5,000 units if alteplase given) over 10 minutes and start 20 units/kg/hr (max 2,000 units/hr)

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**Note**: Use Adult ED PE Pathway for Patients Age ≥ 18
ABSOLUTE:
- Prior intracranial hemorrhage
- Known structural cerebral vascular lesion
- Known malignant intracranial neoplasm
- Ischemic stroke within 3 months (excluding stroke within 3 hours)
- Suspected aortic dissection
- Active bleeding or bleeding diathesis (excluding menses)
- Significant closed head trauma or facial trauma within 3 months

RELATIVE:
- Chronic, severe, poorly controlled hypertension
- Severe uncontrolled hypertension on presentation
- History of ischemic stroke more than 3 months prior
- Major surgery less than 3 weeks ago
- Traumatic or prolonged (>10 mins) CPR
- Recent internal bleeding (within the past 2-4 weeks)
- Noncompressible vascular punctures
- Recent invasive procedure
- Pregnancy
- Active peptic ulcer
- Pericarditis or pericardial fluid
- Current use of anticoagulant (e.g., warfarin) with INR > 1.7 or PT > 15 secs

For patients with submassive or massive PE: consider alteplase administration

Before giving alteplase, provider MUST:
First discuss with pediatric hematology and PICU attending
First review contraindications and obtain informed consent

Alteplase dosing (see pediatric alteplase power plan): 0.06 mg/kg/hr for 6 hours (max 16.7 mg/hr)
Note: decrease heparin infusion to 10 units/kg/hr during alteplase infusion

References

Created 4/1/21: S Skarbek-Borowska MD, A Subbaswamy MD, S Abraham MD, S Hadid, MD, RC Hellinga PharmD, R Tuuri, MD, D Jolley MD, Allison Gordon, MD