Diagnostic Treatment Algorithm for Suspected or Diagnosed Submassive/Massive Pulmonary Embolism

TABLE 1
Modified Wells Criteria
Clinical Assessment for pulmonary embolism

Criterion	Points
Clinical Symptoms of DVT (leg swelling, pain with palpation)	3.0
Other Diagnosis less likely then pulmonary embolism	3.0
Heart rate > 100	1.5
Immobilization (≥ 3 days) or surgery in the previous 4 weeks	1.5
Previous DVT/PE	1.5
Hemoptysis	1.0
Malignancy	1.0
Simplified clinical probability assessment	**Score**
PE likely	>4.0
PE unlikely	≤4.0

TABLE 2
Massive PE
-Systolic arterial pressure <90 mm Hg or drop in 40 mm Hg from baseline
-Shock manifested by signs of tissue hypoperfusion
Submassive PE
-Right ventricular dysfunction or pulmonary hypertension
-Hemodynamically stable
-No evidence of shock

TABLE 3
Massive PE Protocol Members
1) On call Hematology attending or fellow(1-888-961-8802 after hours)
2) Trauma pager (258-9345) if surgery patient
3) MICU (on call fellow or attending) if medicine patient (265-5114) SICU (494-9189) if surgery patient

TABLE 4
Thrombolytic Therapy Contraindications
Absolute
History of hemorrhagic stroke
Active intracranial neoplasm
Recent (<2 months) intracranial surgery or trauma
Active or recent internal bleeding in prior 6 months
Relative
Bleeding diathesis
Uncontrolled severe hypertension
-(systolic BP >200mmHG or diastolic BP > 110mmHG)
Surgery within the previous 10 Days
Thrombocytopenia

Suspected Massive PE (As Defined by Table 1 and 2)

Immediately Administer

1) Unfractionated heparin (UH) 80 units/kg/bolus followed by 18 units/kg/hr
or
2) Lovenox 1 mg/kg SQ
-Consider renal function
-Consider need for procedures or surgery
+
3) Stabilize patient and transfer to MICU/SICU
+
4) Obtain EKG

(+) PE Likely →

Spiral Chest CT (PE Protocol CT)

(-) →
1) LE Dopplers
2)Consider Pulmonary angiogram or repeat test in 24 hours if clinical suspicion remains high

(+) →

1) Radiologist must discuss results with ordering physician or if not available:
1) ED Patient – PIC Phone (265-2PIC)
2) Surgery Patient – Trauma Chief Resident (258-9345)
3) Medicine Patient – MICU fellow or attending (265-5114)
2) **Alert massive PE protocol team (Table 3)** who will discuss case with Interventional Radiology service if indicated
3) Recommend cardiac echo

Absolute contraindication to any anticoagulation

1) IVC Filter
2) Consider Surgical Embolectomy

Order Troponin I and pro-BNP*

Submassive PE Hemodynamically Stable

1) Continue UH
or
2) Continue Lovenox
-Consider renal function
or
3) TPA 100 mg over 2 hr
-Consider contraindications (Table 4)
or
4) Catheter directed embolectomy/TPA

If clinical deterioration

Hemodynamically Unstable Massive or Submassive

1) TPA 100 mg over 2 hr
-Consider contraindications (Table 4)
or
2) Catheter Embolectomy/TPA
or
3) Surgical Embolectomy
and
4) UH/LMWH after 1,2,3
and
5) Consider IVC filter placement

***Note normal troponin I and pro-BNP values have been associated with low mortality and anticoagulation alone may be sufficient**

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