15. Pulmonary Embolism Algorithm

This clinical pathway is intended to supplement, rather than substitute for, professional judgment and may be changed depending upon a patient's individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

Clinical features suggestive of Pulmonary Embolism

- Monitor, support ABCs in **Resuscitation room (ER)**. Be prepared to provide CPR, Defibrillation and **?Thrombolysis**[1]
- Obtain/review 12-lead ECG – Consider ACS – **See 12. STEMI Algorithm**
  Features of PE on ECG; Sinus Tachycardia, T wave inversion in III & V1, V3 or S1, Q3, T3 pattern. A normal ECG can be seen in 30% of patients
- Check vital signs (BP, PR, RR, SPO_2, T°C, **RBS**)
- Start Oxygen **IF** $SPO_2 < 94\%$ or if patient is dyspnoeic. Maintain $SPO_2 \geq 94\%$
- Establish IV Access and send blood samples for **FBC, UEC, VBG, Coagulation screen & hsTroponin T** (**See 13. NSTEMI/UA Algorithm** for interpretation)
- Perform brief, targeted history, physical exam

Clinical Gestalt or Validated clinical decision support tool (**Wells score)**

Criteria	Points
Suspected DVT	3.0
An alternative diagnosis is less likely than PE	3.0
Hear Rate >100bpm	1.5
Immobilisation or surgery in the previous 4 weeks	1.5
Previous DVT/PE	1.5
Haemoptysis	1.0
Malignancy (on treatment, treated in the last 6 months, or palliative)	1.0

Score Range (Points)	Probability of PE (%)	Interpretation of Risk
0-4	7.8 (5.9 – 10.1)	Low Probability
> 4	40.7 (34.9 – 46.5)	Moderate to High Probability

Haemodynamically stable, Low Probability for PE

Pulmonary Embolism Rule-Out Criteria (PERC)

1. Is the patient > 49 years of age?
2. Is the pulse rate > 99 beats per minute?
3. Is the pulse oximetry reading < 95% while the patient breathes room air?
4. Is there a present history of haemoptysis?
5. Is the patient receiving exogenous oestrogen?
6. Does the patient have a prior diagnosis of venous thromboembolism?
7. Has the patient had recent surgery or trauma requiring endotracheal intubation or hospitalization in the previous 4 weeks?
8. Does the patient have unilateral leg swelling (visual observation of asymmetry of the calves)?

Any of the above criteria present?

Yes / **No**

CTPA* — **Negative** → PE safely excluded consider other diagnosis

Positive

- Begin anticoagulation therapy
- **Consult a Physician**

Moderate to High Probability for PE

Shock or Hypotension?

Yes / **No**

Bedside Echocardiogram
Presence of RV dilatation, septal shift, or right heart thrombus?

Yes / **No**

- Begin anticoagulation
- Consider **Thrombolysis**[1]
- **Admit to ICU**

Administer IV fluids & resuscitate. Shock or Hypotension corrected following initial resuscitation?

Yes → **CTPA*** — **Negative** → PE safely excluded consider other diagnosis

Positive

- Begin anticoagulation therapy
- Admit to ICU or floor as indicated

[1]Indications for Thrombolysis in PE
(rule out contraindication to Thrombolysis)

- Cardiac Arrest
- SBP <90 mmHg for >15 minutes, if not caused by new-onset arrhythmia, hypovolaemia, or sepsis

Streptokinase	250 000 IU over 30 minutes then 100 000 IU/h over 12–24 hours
	Accelerated regimen: 1.5 million IU over 2 hours
Alteplase	100 mg over 2 hours; or
	Cardiac Arrest: 50mg IV bolus

*** Compression ultrasound of lower extremities** can be performed as the initial diagnostic imaging modality in any of the following situations;

- patients with obvious signs of deep vein thrombosis (DVT) for whom venous ultrasound is readily available
- patients with relative contraindications for CT scan (e.g., borderline renal insufficiency, CT contrast agent allergy)
- **in pregnant patients**
- patients with a moderate to high clinical risk of PE with a negative or inconclusive CTPA or an inconclusive V/Q scan.

A **positive finding** in a patient with symptoms consistent with PE can be considered evidence for diagnosis of VTE disease and potentially eliminate the need to expose the patient to the radiation from either a CTPA or V/Q scan.