Sir Charles Gairdner Hospital

Pulmonary Embolism Advanced Care Pathway

A senior clinician should be involved in the assessment of patients with pulmonary embolism, and discussion between emergency medicine, respiratory medicine, cardiothoracic surgery and interventional radiology is encouraged.
These are only guidelines, patients are unique, there is a broad and complex spectrum of presentation, and definitive evidence is limited.

Non massive & Low risk submassive PE

- *Not clinically compromised*

Low molecular weight heparin / anticoagulation

Consider discharge if no concerning features
(see list under high risk submassive PE)

Ensure appropriate follow up
(anticoag nurse / resp / +/- haematology)

Otherwise generally admit respiratory medicine

High risk submassive PE

Features from at least 2 of the below categories:

1. ***Clinical**: looks unwell or compromised, deteriorating, severe hypoxia, syncope hx*
2. ***Imaging**: large clot burden, concerning echo*
3. ***Laboratory:** Elevated lactate, BNP, troponin*

Low molecular weight heparin or intravenous heparin and close observ'n

Other options to consider:

- ½ dose systemic thrombolysis
- Surgical embolectomy
- Catheter directed lysis

Discuss with appropriate specialty:

- **Central clot** - Respiratory Medicine & Cardiothoracic surgery
- **Peripheral clot** – Respiratory Medicine & Interventional radiology
- **Plus** make ICU aware

Decision based on:

- Clot burden and location
- High versus low bleeding risk
- Clinical state and comorbidities
- Resource availability
- Patient preference

HDU / Resp HDU

Massive Pulmonary Embolism

•Ongoing hypotension with significant clinical compromise (<90mmHg or > 40 mmHg drop in systolic BP)

Low bleeding risk

Accessible PE
(≥ lobar PA involved)

- Surgical embolectomy

Peripheral PE

- Full dose tPA

High bleeding risk

Accessible PE
(≥ lobar PA involved)

- Surgical embolectomy

Peripheral PE

- Catheter directed lysis

ICU or HDU / Resp HDU

Designed in collaboration and with agreement from Emergency Medicine, Respiratory Medicine, Interventional Radiology and Cardiothoracic Surgery
Reference: Modified from the EMCrit.org website May 2015. http://i2.wp.com/emcrit.org/wp-content/uploads/2014/07/Orens-PE-Algo.jpg

For Review 2020
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Pulmonary Embolism Advanced Care Pathway – additional information

High bleeding risk and contraindications to thrombolysis

Absolute

- Known allergy / hypersensitivity / adverse reaction to thrombolytics or allergy to Gentamicin (a trace residue from the manufacturing process)
- Active or recent internal bleeding within 14 days (excludes menstruation)
- Significant closed head, facial or other severe trauma within past 3 months
- Suspected aortic dissection or pericarditis
- Prior intracranial haemorrhage within past 6 months
- Ischaemic stroke within 3 months or previous haemorrhagic stroke
- Known structural cerebral vascular lesion (AVM or aneurysm)
- Known malignant intracranial or intraspinal neoplasm
- Known severe bleeding disorder
- Recent (within past 2 months) intracranial or intraspinal surgery)

Relative

- Age more than 75 years
- Current anticoagulant use (if on warfarin only thrombolyse if INR <2.0)
- Non compressible vascular puncture within past 10 days
- Recent major surgery (within 3 weeks)
- Traumatic or prolonged CPR (for more than 10 minutes)
- Recent internal bleeding (within 2-4 weeks)
- History severe chronic poorly controlled
- Hypertension
- Uncontrolled hypertension on presentation (Systolic >180 or diastolic >110mmHg)
- Ischaemic stroke over 3 months ago
- Dementia or known intracranial pathology
- Pregnancy or recent delivery
- Reduced GCS
- Haemorrhagic ophthalmic conditions
- Active peptic ulcer or other ulcerative conditions (i.e. Crohn's disease)
- Advanced kidney or liver disease
- Prior Streptokinase / Alteplase / Reteplase

Consideration of imaging for source of PE and need for IVC filter

- In patients with suspected massive or high risk submassive PE, CTPA with concurrent CTV down to popliteal veins is recommended.
- Where CTV is not prospectively performed ultrasound of the lower limbs is an alternative and strongly recommended if considering major Rx (lysis, cath, embolectomy).
- IVC filter is placed in patients who have undergone surgical pulmonary embolectomy and in whom there remains significant lower limb thrombus.
- IVC filter is considered in patients with submassive PE, in whom there remains significant lower limb thrombus, particularly if it appears unstable.
- Advice on the use of TED stockings is available on the SCGH ED DVT pathway

Administration of thrombolysis for pulmonary embolism

Full dose thrombolysis

Alteplase (tPA)

> 65kg 10mg IV bolus, followed by 90mg IV infusion over 2 hours

< 65kg adjust dose so it does not exceed 1.5mg/kg; give 10mg IV bolus then the remainder of the dose over 2 hours

Half dose thrombolysis

Alteplase (tPA)

> 65kg 10mg IV bolus, followed by 40mg IV infusion over 2 hours

< 65kg adjust dose so it does not exceed 0.75mg/kg; give 10mg IV bolus then the remainder of the dose over 2 hours

Follow the Alteplase 2 hour infusion with anticoagulation with unfractionated heparin via IV infusion as per anticoagulation chart protocol.

Catheter directed thrombolysis

Alteplase (tPA) as directed by interventional radiology