Pulmonary Embolism
Ambulatory Care Pathway

Staff should also be familiar with the Trust Intranet Guideline:
''Pulmonary Embolism (PE) – Investigation and Management''

Consultant	Affix patient label or NHS Number:…….. Trust Number:…….. Surname:……. Forename:…….. Date of Birth:……... Address……..….
Date	
Time	

Where should patients be managed?

RAMAC (open daily 08:00 to 22:00)

- Ext 43813 for DMH ; …….. for UHND Extn:36850

Outside these hours patients may be seen in A+E with follow-up in RAMAC

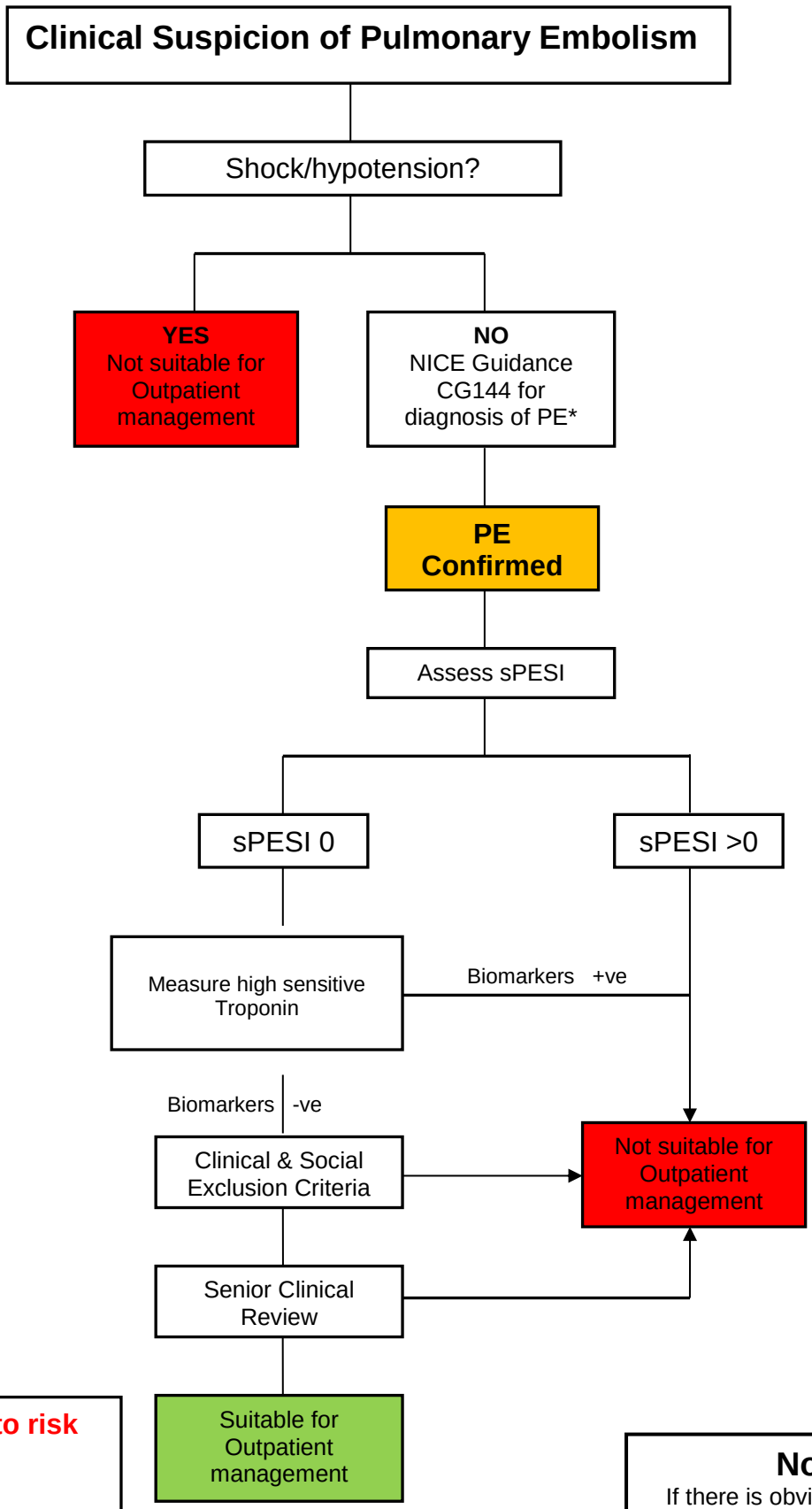
Exclusion Criteria

- Haemodynamic instability (HR>110; SBP<100mmHg, oxygen saturations <92% on air)
- Active bleeding or risk of major bleeding (eg, recent GI bleed or surgery, previous intracranial bleeding, uncontrolled hypertension)
- Severe pain or other medical comorbidities requiring hospital admission
- Chronic Kidney Disease (CKD) stage 4 or 5 or severe liver disease
- Heparin Induced Thrombocytopenia within the last year and where there is no alternative to repeating heparin treatment, or on full dose anticoagulation at time of the PE
- Social reasons which may include inability to return home, inadequate care at home or concerns over compliance
- Pregnancy and up to 6 weeks post-partum, d/w consultant (please refer to trust guideline ''VTE in Pregnancy and Puerperium'' and d/w obstetrics)

For inpatient management transfer AMU

Accountability

Full Name	Designation	Signature	Initials



Calculate sPESI score to risk stratify (see page 5)

sPESI 0	Safe for ambulatory
sPESI ≥1	Potentially ambulatory (d/w senior)
sPESI ≥3	Admit

CTPA*(see notes)
Treatment dose of LMWH if not same day CTPA

Notes

If there is obvious evidence of DVT (eg red, swollen leg), ultrasound of legs would be performed instead of CTPA, if proximal DVT present no further imaging required as PE is therefore assumed to exist. **If calf vein only proceed to CTPA, as will determine duration of Rx.**

Addressograph

Clinical Assessment

Temp	Pulse	BP	RR	Sats	Weight (kg)

Calf circumference (cm)	Left	Right

Presenting History

Past Medical History

Medication

Known Allergies	Drug Sensitivities

Social History

Examination Findings

2 Level Wells Score	
Clinical Feature	**Score**
Clinical signs/ symptoms DVT	3
PE most likely diagnosis	3
HR >100	1.5
Immobilisation for more than 3 days or surgery in previous 4 weeks	1.5
PMH PE/ DVT	1.5
Haemoptysis	1
Malignancy (on treatment, treated in last 6 months, or palliative)	1
Total Score	
PE Likely >4	
PE Unlikely 1-4	

Addressograph

Investigation Results	
Na	Hb
K	WCC
Urea	Plt
Creat	MCV
Bil	Coag
Alk Phos	Troponin
ALT	Creatinine Clearance
CRP	
D-dimer	Pregnancy Test (compulsory woman of childbearing age prescribed anti-coagulants)
CXR	ECG
ABG (if clinically indicated)	

sPESI Score (1 point each)	
Age >80	
Active Cancer	
Chronic cardio-respiratory disease	
Pulse rate >110	
Systolic BP <90	
Oxygen sats <90%	
Total Score	

CTPA/VQ/USS Result
NB. If calf vein DVT only on USS proceed to CTPA

PE not Confirmed
Final diagnosis and management:

PE Confirmed – please continue pathway
If sPESI score ≥1 check troponin If troponin raised ADMIT – request echo unless RV strain seen on CTPA

Addressograph

Unprovoked PE

All patients with an unprovoked proximal DVT or PE should have the following performed **IN ADDITION** to a complete history and physical examination to assess for evidence of underlying malignancy.
Consider further urgent imaging if high suspicion, Very high D-dimer, bilateral DVT or early VTE recurrence

Investigation	**Result/ Plan**
FBC,U&E, LFT, Calcium	
Urinalysis	
CXR	
Prostate examination in men >40 (+/- PSA)	
Breast examination in women >50	
In discharge letter please highlight to GP to check mammography and cervical screening up to date	

Oncology Patients

Therapeutic LMWH is treatment of choice for VTE in patients with cancer. Offer LMWH to patients with active cancer and confirmed DVT or PE, and continue the LMWH for 6 months. At 6 months, assess the risks and benefits of continuing anticoagulation.

Treatment plan for patients with a confirmed PE

3 months anticoagulation provoked	
3 months minimum unprovoked	

Prior to commencing anticoagulation please consider:

- FBC
- Coagulation screen
- Renal function (CrCl should be checked; if less than 50ml/min consult senior doctor)
- LFT's
- U&E's

<u>If abnormal please discuss with senior doctor.</u>

Please tick which regimen is to be initiated.

LMWH	
Warfarin (with bridging LMWH)	
DOAC (see Appendix1)	

Prescribe LMWH. Name of LMWH used:	**Tick when completed**
Dose at Dose =	
Prescribe 7 full doses (minimum) and arrange supply.	
Supply sharps bin	
Education: • Patient/ relative to administer if appropriate. Supply information leaflet and instructions **OR** • Contact district nurses and fax separate DN summary form	
If on other anticoagulant/antiplatelet discuss with senior doctor. May need to be stopped.	
Inform GP and any other physicians actively involved in the patient's care	

Prescribe Warfarin (with bridging LMWH)	**Tick when completed**
Load warfarin as per "Oral Anticoagulation with Warfarin- Adult management guideline"	
Supply LMWH as above.	
Supply warfarin and yellow book.	
Counsel as appropriate.	
Refer to anticoagulation clinic (DMH 44580 or BAH 53118)	
Check for drug interactions. If on other anticoagulant/antiplatelet discuss with senior doctor. May need to be stopped.	
Inform GP and any other physicians actively involved in the patient's care	

Prescribe DOAC. Name of DOAC used:	**Tick when completed**
Dose: depends on the agent (a loading dose may be required)	
No significant other co-morbidities • Abnormal renal or liver function must be discussed with senior doctor	
Check for drug interactions. If on other anticoagulant/antiplatelet discuss with senior doctor. May need to be stopped.	
Prescribe for 7 days (minimum) and arrange supply	
Provide patient information leaflet, counselling and alert card	

Addressograph

Referrals	Tick when completed
Please refer to the Consultant Respiratory Physician clinic all PEs If active cancer please refer back to oncologist.	
Respiratory secretaries (DMH) – fax ……..: UHND – fax ……..	
Refer to anticoagulation clinic - For on-going warfarin treatment.	

Further Notes

Further Notes

APPENDIX 1

Summary table of DOACs for Treatment and Prevention of Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE)

	APIXABAN (ELIQUIS®)	DABIGATRAN (PRADAXA®)	EDOXABAN (LIXIANA®)	RIVAROXABAN (XARELTO®)
Mechanism of Action	Direct factor Xa inhibitor	Direct thrombin inhibitor	Direct factor Xa inhibitor	Direct factor Xa inhibitor
Dose for Treatment of DVT/PE	10mg twice daily for 7 days, then 5 mg twice daily	150mg twice daily following treatment with a parenteral anticoagulant for at least 5 days	60 mg edoxaban once daily following initial use of parenteral anticoagulant for at least 5 days	15mg twice daily for 21 days, then 20 mg daily with food to aid absorption
Dose in Secondary Prevention of DVT/PE	2.5 mg twice daily following completion of 6 months anticoagulant treatment	150 mg twice daily	60 mg once daily	20 mg daily with food to aid absorption
Dose in Renal Impairment	Do not use if CrCl <15ml/min* Use with caution if CrCl 15-29ml/min*	Do not use if CrCl less than 30ml/min* Consider dose reduction 110mg BD if CrCl 30-50ml/min*	If CrCl 15-50 ml /min then consider 30 mg once daily Do not use if CrCl less than 15ml/min*	If CrCl 15-49 ml /min then consider 15mg OD with food if assessed bleeding risk outweighs risk of recurrent DVT and PE. Do not use if CrCl less than 15ml/min*
Hepatic Impairment	Not recommended in severe hepatic impairment as requires hepatic metabolism. Contraindicated in hepatic disease associated with coagulopathy	Not recommended in patients with elevated liver enzymes >2 upper limit of normal. Contraindicated in patients with hepatic impairment or liver disease expected to impact on survival.	Not recommended in severe hepatic impairment as requires hepatic metabolism. Contraindicated in hepatic disease associated with coagulopathy	Use with caution as requires hepatic metabolism. Contraindicated in hepatic disease associated with coagulopathy
Contraindications	▪Hypersensitivity ▪A lesion or condition, if considered a significant risk factor for major bleeding ▪Active bleeding ▪Hepatic disease or impairment ▪Anticoagulant in use (except during switching -see below) ▪Prosthetic heart valves ▪Pregnancy and breastfeeding	▪Hypersensitivity ▪A lesion or condition, if considered a significant risk factor for major bleeding ▪Active bleeding ▪Hepatic disease associated with coagulopathy and clinically relevant bleeding risk ▪Anticoagulant in use (except during switching -see below) ▪Prosthetic heart valves ▪Pregnancy and breastfeeding	▪Hypersensitivity ▪A lesion or condition, if considered a ▪significant risk factor for major bleeding ▪Active clinically significant bleeding ▪Hepatic disease associated with coagulopathy and clinically relevant bleeding risk ▪Anticoagulant in use (except during switching - see below) ▪Prosthetic heart valves ▪Pregnancy and breastfeeding	▪Hypersensitivity ▪A lesion or condition, if considered a significant risk factor for major bleeding ▪Active bleeding ▪Hepatic disease associated with coagulopathy and clinically relevant bleeding risk ▪Anticoagulant in use (except during switching - see below) ▪Uncontrolled severe hypertension ▪Prosthetic heart valves ▪Pregnancy and breastfeeding
Extremes of BMI	If <50kg or >100-120kg** then exposure of DOAC is variable by 20-30%. It is recommended that at these body weights the Cockcroft and Gault formula is used to calculate CrCl rather than eGFR			
Pharmaceutical Issues	May be dispersed in water Stable in dosette boxes	Capsules can only be stored in original packaging thus not suitable for dosette boxes	Stable in dosette boxes	May be dispersed in water Stable in dosette boxes
Switching from Warfarin	Stop warfarin and start apixaban once INR is less than 2	Stop warfarin and start dabigatran once INR less than 2	Stop warfarin and start edoxaban once the INR is 2.5 or less	Stop warfarin and start rivaroxaban once INR 2.5 or less (not forgetting higher initial dosing when within three weeks of an acute event)
Switching to Warfarin	Co-administer apixaban and warfarin for 2 days. After 2 days, check INR prior to next apixaban dose and continue until INR 2 or greater	Start warfarin 2 days (CrCl 30-49ml/min) or 3 days (CrCl 50ml/min or above) before stopping dabigatran	Co-administer edoxaban*** and warfarin until INR 2 or greater, for up to a maximum of 14 days. During this time, frequently check INR immediately prior to edoxaban dose.	Co-administer rivaroxaban and warfarin until INR 2 or greater