30-Day Outcome Measures

CASCADE Launch Event

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Steering Committee | University of Birmingham

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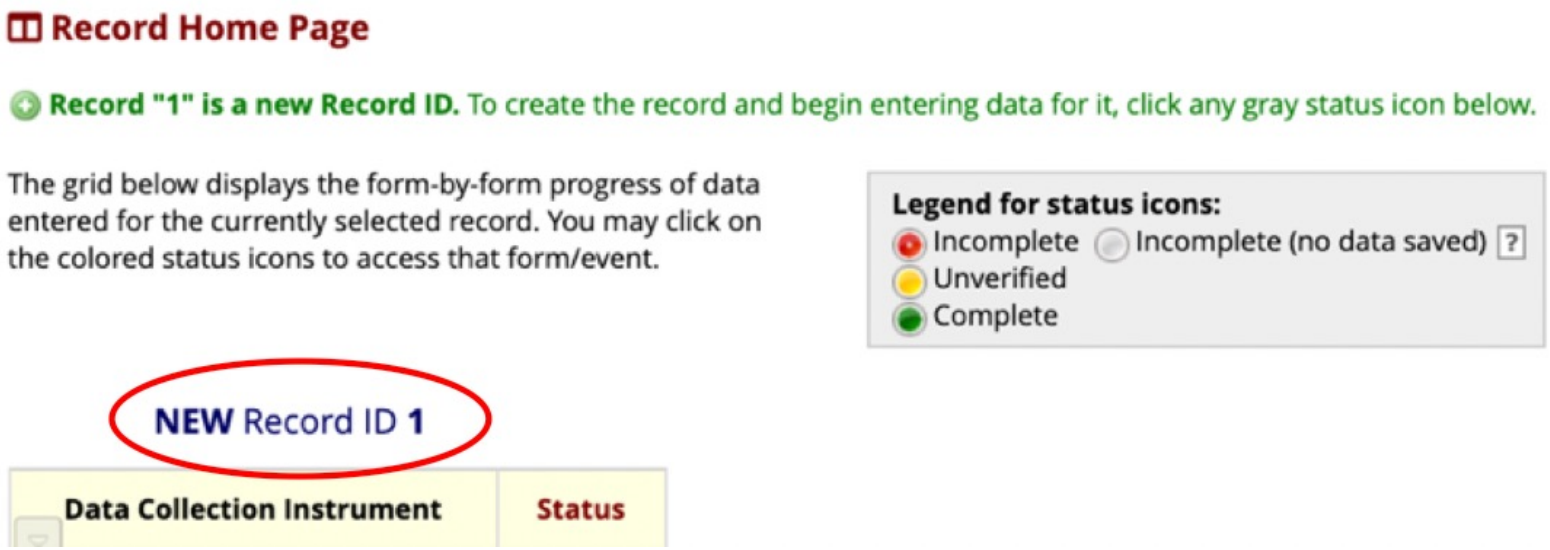
30-Day Follow-up

30-day Follow-up

- Performed in line with current routine practice
- No additional telephone, in-person or questionnaire-based follow-up is required.
- Data can be found in in-patient notes, clinical electronic systems or outpatient letters.

REDCap ID – Patient ID key



REDCap iD	NHS Number
1	735 087 674
2	384 985 784
3	089 683 832

Datapoints

30-day Follow-up					
Cardiovascular complications within 30 days *(Tick all that apply)*	☐ None ☐ Myocardial infarction ☐ Myocardial injury ☐ Non-fatal cardiac arrest ☐ Coronary revascularisation ☐ PE (symptomatic non-fatal / asymptomatic) ☐ DVT (proximal / distal; if either symptomatic / asymptomatic) ☐ New onset AF ☐ Stroke Please state postop day event occurred: _ _ day	Bleeding complication within 30 days			☐ Clinical non-major bleeding ☐ Major bleeding ☐ None Postop day occurred: _ _ day
		Post-operative length of stay			_ _ days
		Highest 30-day complication grade			☐ None ☐ I ☐ II ☐ III ☐ IV ☐ V (**if V:** Cardiac / PE / noncardiac?)
		30-day Reoperation			☐ Yes ☐ No
		30-day readmission			☐ No ☐ Yes(planned/unplanned?) **If yes**: what was grade of complication: ☐ None ☐ I ☐ II ☐ III ☐ IV ☐ V
30-day postoperative COVID status *(Radiological or swab diagnosis)*	☐ None ☐ Yes, preop (30 days prior admission) ☐ Yes, postop **If preop**: Symptomatic? ☐ Yes ☐ No **If preop**: Vaccinated? ☐ Partial ☐ Full ☐ No	**If readmission**, what was Hb	☐ _ _ _ g/L ☐ Not available	**If readmission**, anaemia intervention	☐ None ☐ Iron (Oral / IV ?) ☐ RBC transfusion (**if RBC**: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐≥5 units)
Postoperative outpatient VTE prophylaxis duration	_ _ days	Postoperative outpatient VTE prophylaxis			☐ None ☐ LMWH ☐ Warfarin ☐ DOACs (**if DOAC**: ☐ dabigatran ☐ rivaroxaban ☐ apixaban ☐ edoxaban ☐ betrixaban)

Cardiovascular Outcomes

Cardiac

Myocardial Ischaemia

Cardiac death

Non-fatal cardiac arrest

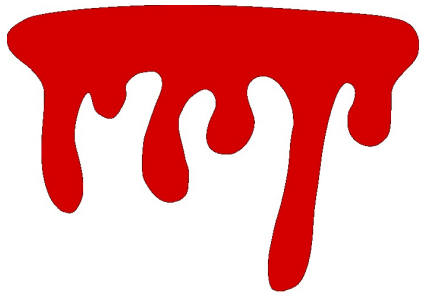
Atrial fibrillation

Thromboembolic

Pulmonary embolism

Deep vein thrombosis

Thromboembolic Stroke



Bleeding

Major Bleeding

Non-Major bleeding

Cardiac Outcomes

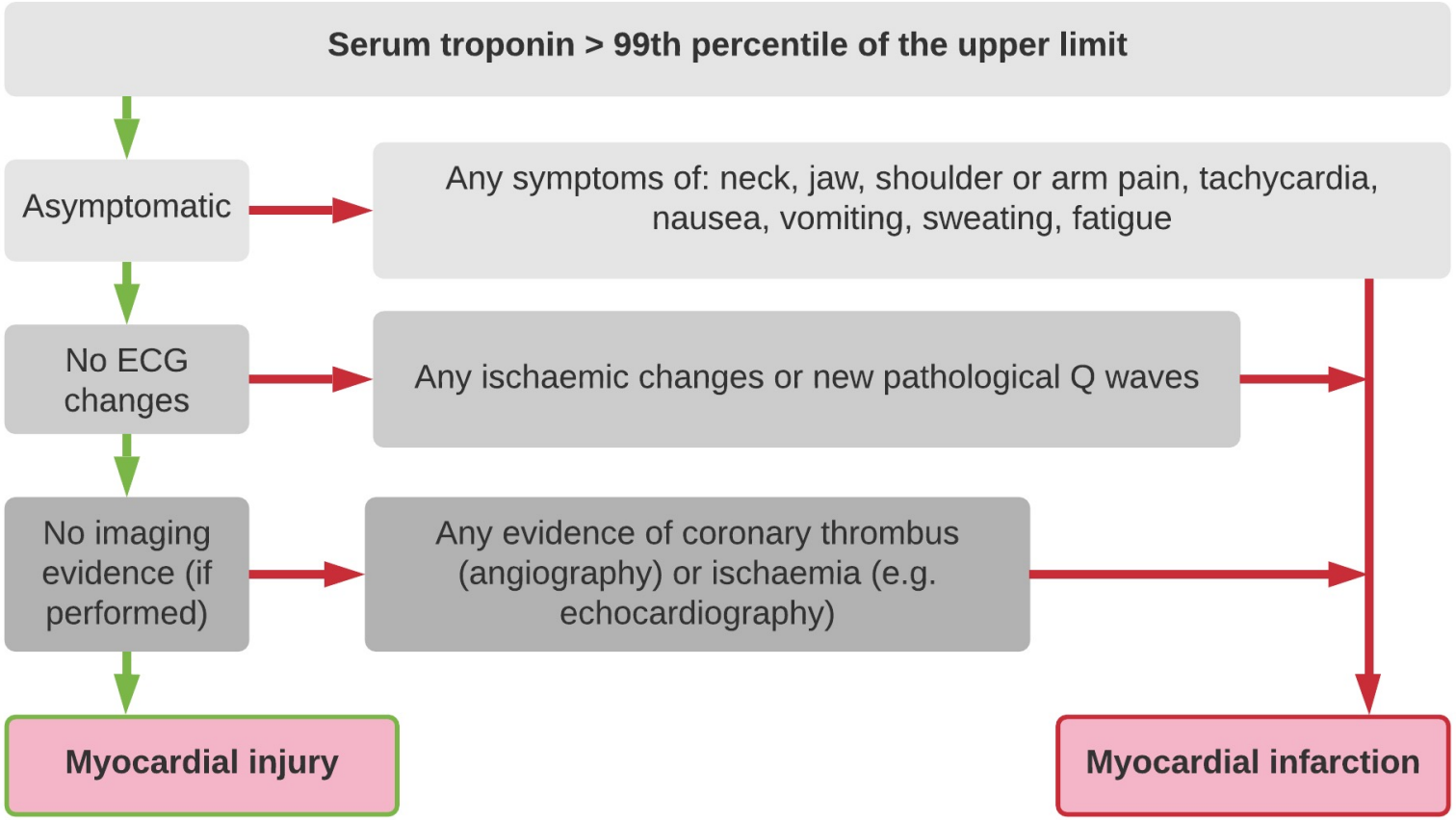
Atrial fibrillation

Myocardial Ischaemia

Non-fatal cardiac arrest and Cardiac Death

Myocardial Ischaemia

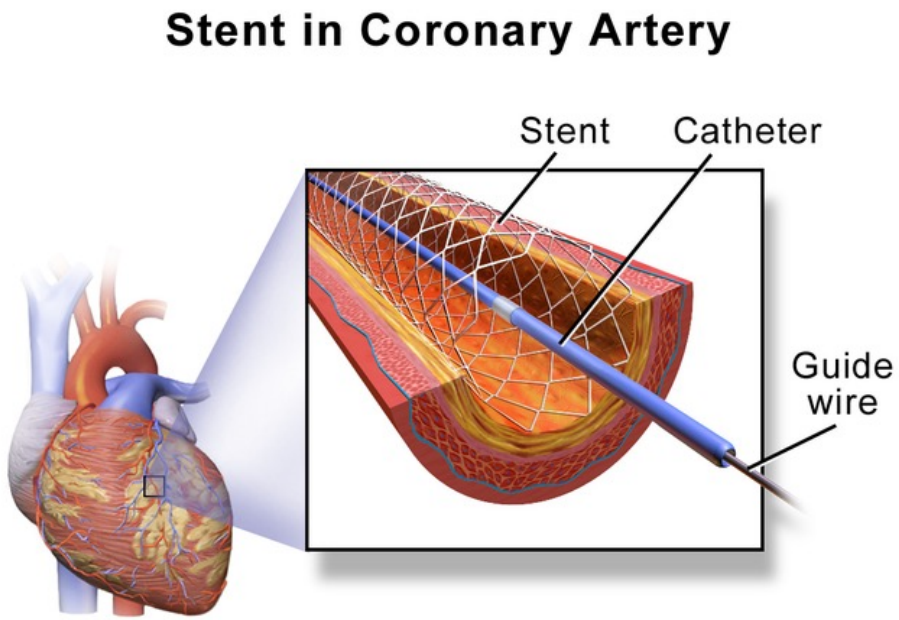
Myocardial Injury & Myocardial Infaction



Myocardial Ischaemia

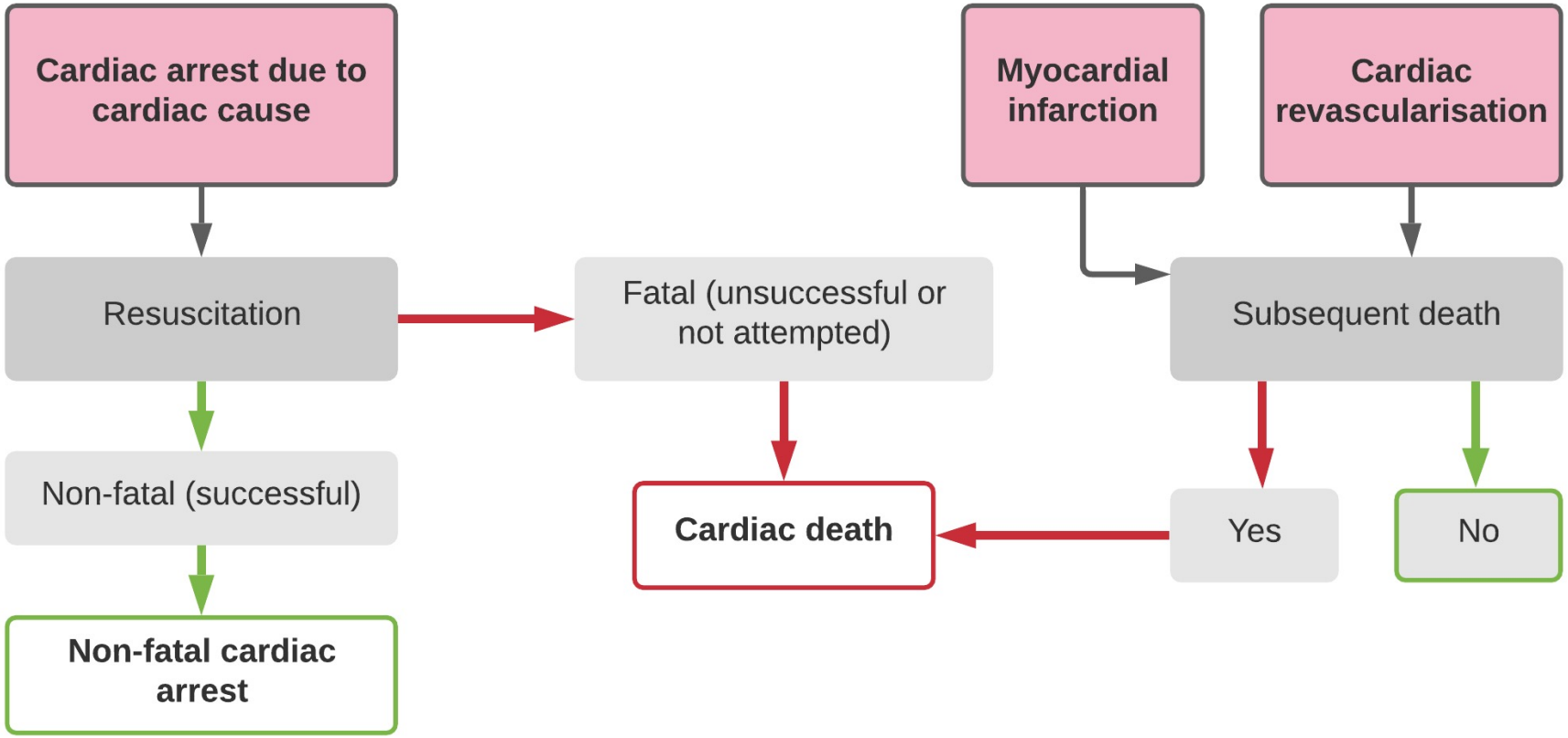
Coronary Revascularisation

Cardiac revascularisation was defined as percutaneous coronary intervention or coronary artery bypass graft surgery within 30 days of the surgery.



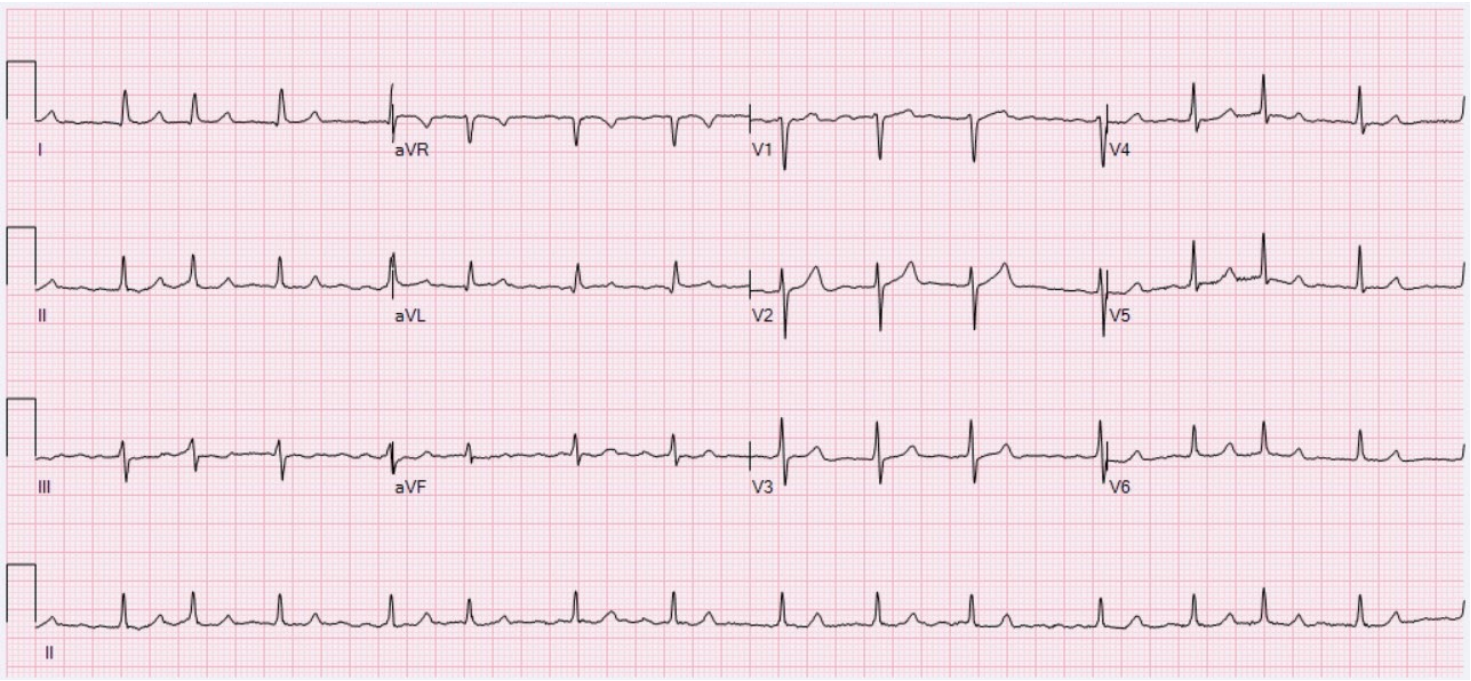
Cardiac arrest and Cardiac Death

Cardiac death & Non-fatal cardiac arrest



Atrial fibrillation

- New onset of irregularly irregular heart rate in the absence of P waves
- Lasting at least 30s or for the duration of the ECG recording (if <30 s)



Thromboembolic

Deep Venous Thrombosis

Pulmonary Embolism

Thromboembolic Stroke

Venous Thromboembolism

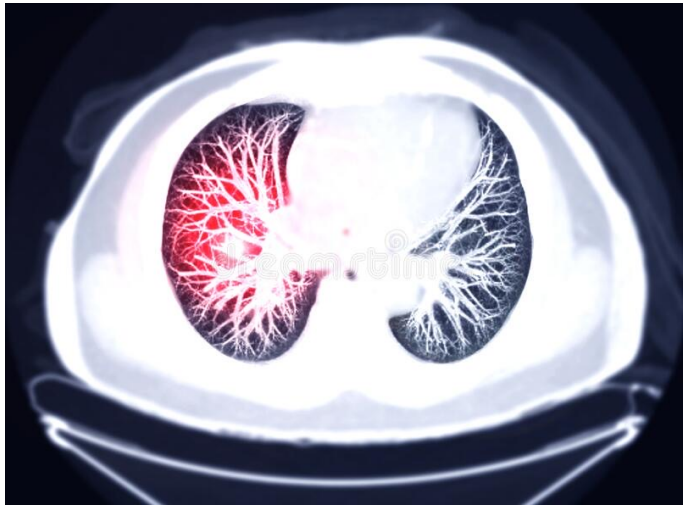
Definition: A blood clot (thrombus) originated in the venous circulation.

Virchow's Triad: Three risk factors that increase the risk of a VTE.

1. Hypercoagulable state
2. Venous stasis
3. Endothelial damage

Types of VTE

Deep Vein Thrombosis	Pulmonary Embolism
Thrombus in a deep vein, mostly found in legs, possible also in the pelvis or arms.	Embolus (mobile clot) that travels from peripheral veins through the right side of the heart into pulmonary circulation.



Deep Venous Thrombosis

Presentation: In the affected leg

- Pain
- Swelling
- Redness
- Warmth

May be asymptomatic.

Diagnosis - Deep Venous Thrombosis

Diagnosis of DVT requires any one of the following:

- A persistent intraluminal filling defect on contrast venography
- Non-compressibility of one or more venous segments on B-mode compressionultrasonography
- A clearly defined intraluminal filling defect on contrast enhanced CT
- No use: D-Dimers

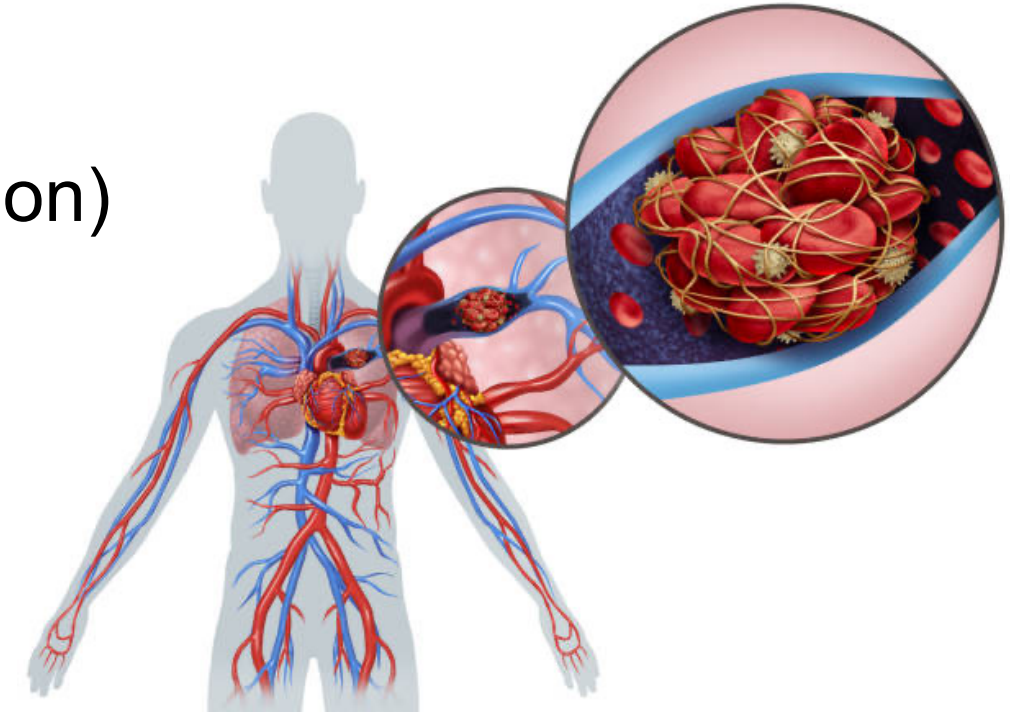
Appendix
D
in protocol

Pulmonary Embolism

Presentation:

- **Wide range from asymptomatic to life threatening**

- Shortness of breath
- Tachycardia
- Pleuritic chest pain (worse on inspiration)
- Cough, may be bloody
- Lightheadedness
- Diaphoresis (sweating)



Diagnosis - Pulmonary Embolism

Appendix D in protocol

Diagnosis of pulmonary embolism requires any one of following:

- A high probability ventilation/perfusion lung scan
- An intraluminal filling defect of segmental or larger artery on a helical CT scan
- An intraluminal filling defect on pulmonary angiography
  - **(CTPA positive for PE)**
- A positive diagnostic test for deep venous thrombosis (e.g. positive compression ultrasound) and one of the following:
  - Non-diagnostic (i.e. low or intermediate probability) ventilation/perfusion lung scan
  - Non-diagnostic (i.e. sub-segmental defects or technically inadequate study) helical CT scan

Thromboembolic Stroke

A thrombotic complication mostly associated with atrial fibrillation.

Definition: a thrombus that embolizes a brain artery.

Complications:

- Ischemia – decreased oxygen delivery to tissue
- -> Necrosis – tissue death

Symptoms must endure >24 hours.

Transient Ischemic Attack: when symptoms last for <24 hours.

Bleeding Complications

Bleeding Complications

When anticoagulation therapy is used, bleeding is an important safety outcome.

Clinically-relevant bleeding must have at least 1 of the following:

1. Needs medical attention
2. Needs a change in antithrombotic therapy
3. Causes clinical consequences

Bleeding Types

	Major Bleeding	Non-major Bleeding
Definition	- Clinically-obvious bleeding - Hb decreased by >2g/dL - Needs >2 units of packed RBC transfusion	- Clinically-relevant bleeding - Doesn't fit criteria of major bleeding
Treatment	Urgent intervention	- Hospital admission - Medical treatment - Change of antithrombotic therapy

Examples for non-major bleedings

- Multiple-source bleeding
- (Spontaneous) haematoma
- Intramuscular haematoma without compartment syndrome
- excessive wound haematoma not requiring draining or puncture
- macroscopic haematuria
- epistaxis or gingival bleeding

Appendix
D
in protocol

Where to find in CASCADE protocol

- CRF gives an overview on obtained datasets
- Definition of cardiovascular complications: *Appendix D(A) (p. 33)*
- Definition of bleeding complications: *Appendix D(B) (p. 37)*
- Do not hesitate to ask your fellows or supervisors!

Thank you!

CArdiovaSCulAr outcomes after major abDominal surgEry

A student-led observational prospective audit of postoperative cardiovascular complication after major abdominal surgery

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