30-Day Outcome Measures

CASCADE Launch Event

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Steering Committee | University of Birmingham
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**

*Record Home Page*

- *Record "1" is a new Record ID.* To create the record and begin entering data for it, click any gray status icon below.

The grid below displays the form-by-form progress of data entered for the currently selected record. You may click on the colored status icons to access that form/event.

**Legend for status icons:**
- Incomplete
- Incomplete (no data saved)
- Unverified
- Complete

**NEW Record ID 1**

<table>
<thead>
<tr>
<th>REDCap iD</th>
<th>NHS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>735 087 674</td>
</tr>
<tr>
<td>2</td>
<td>384 985 784</td>
</tr>
<tr>
<td>3</td>
<td>089 683 832</td>
</tr>
</tbody>
</table>
# Datapoints

<table>
<thead>
<tr>
<th>Cardiovascular complications within 30 days (Tick all that apply)</th>
<th>30-day Follow-up</th>
<th>30-day Postoperative COVID status (Radiological or swab diagnosis)</th>
<th>Postoperative outpatient VTE prophylaxis duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datapoints</td>
<td></td>
<td><strong>Datapoints</strong></td>
<td></td>
</tr>
<tr>
<td>[ ] None</td>
<td>□ Clinical non-major bleeding</td>
<td>□ Yes, preop (30 days prior admission) □ Yes, postop</td>
<td>_ _ days</td>
</tr>
<tr>
<td>□ Myocardial infarction □ Myocardial injury</td>
<td>□ Major bleeding □ None</td>
<td><strong>If preop:</strong> Symptomatic? □ Yes □ No</td>
<td></td>
</tr>
<tr>
<td>□ Non-fatal cardiac arrest</td>
<td>Postoperative outpatient VTE prophylaxis</td>
<td>□ If preop: Vaccinated? □ Partial □ Full □ No</td>
<td></td>
</tr>
<tr>
<td>□ Coronary revascularisation</td>
<td>□ Postoperative length of stay</td>
<td><strong>If readmission,</strong> what was Hb</td>
<td></td>
</tr>
<tr>
<td>□ PE (symptomatic non-fatal / asymptomatic)</td>
<td>□ Highest 30-day complication grade</td>
<td>□ _ _ g/L □ Not available</td>
<td></td>
</tr>
<tr>
<td>□ DVT (proximal / distal; if either symptomatic / asymptomatic)</td>
<td>□ 30-day Reoperation</td>
<td>□ If readmission, anaemia intervention</td>
<td></td>
</tr>
<tr>
<td>□ New onset AF</td>
<td>□ 30-day readmission</td>
<td>□ None</td>
<td></td>
</tr>
<tr>
<td>□ Stroke</td>
<td></td>
<td>□ Iron (Oral / IV ?)</td>
<td></td>
</tr>
<tr>
<td><strong>Please state postop day event occurred:</strong> _ _ day</td>
<td></td>
<td>□ RBC transfusion (if RBC: □ 1 □ 2 □ 3 □ 4 □ ≥5 units)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 Infarction

- Serum troponin > 99th percentile of the upper limit
  - Asymptomatic
    - Any symptoms of: neck, jaw, shoulder or arm pain, tachycardia, nausea, vomiting, sweating, fatigue
  - No ECG changes
    - Any ischaemic changes or new pathological Q waves
  - No imaging evidence (if performed)
    - Any evidence of coronary thrombus (angiography) or ischaemia (e.g. echocardiography)

Myocardial injury

Myocardial infarction
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

Cardiac arrest due to cardiac cause

Resuscitation

Non-fatal (successful)

Non-fatal cardiac arrest

Myocardial infarction

Subsequent death

Cardiac death

Yes

No
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

<table>
<thead>
<tr>
<th>Deep Vein Thrombosis</th>
<th>Pulmonary Embolism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrombus in a deep vein, mostly found in legs, possible also in the pelvis or arms.</td>
<td>Embolus (mobile clot) that travels from peripheral veins through the right side of the heart into pulmonary circulation.</td>
</tr>
</tbody>
</table>
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 compression ultrasonography

• 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 of pulmonary embolism requires any one of the 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

<table>
<thead>
<tr>
<th>Major Bleeding</th>
<th>Non-major Bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td><strong>Clinically-relevant bleeding</strong></td>
</tr>
<tr>
<td>- Clinically-obvious bleeding</td>
<td>- Doesn’t fit criteria of major bleeding</td>
</tr>
<tr>
<td>- Hb decreased by &gt;2g/dL</td>
<td></td>
</tr>
<tr>
<td>- Needs &gt;2 units of packed RBC transfusion</td>
<td></td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td><strong>Hospital admission</strong></td>
</tr>
<tr>
<td>Urgent intervention</td>
<td>- Medical treatment</td>
</tr>
<tr>
<td></td>
<td>- Change of antithrombotic therapy</td>
</tr>
</tbody>
</table>
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
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!

CArdioSCuIAr outcomes after major abDominal surgEry

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

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