

## Guideline for the Peri-Operative Management of Hip fractures in Older Patients.

Document Owner:	Dr Junaid Hashmi ( Anaesthesia Consultant)		
Approved by:			
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Approvers:	PRINT NAME	SIGNATURE
	Dr Junaid Hashmi	
	Prof Michael Staunton	M Staunton
	Dr Helen O'Brien	
	Dr Dinesh Kuriakose	D Kuriakose

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### 1.0 Initiation

#### 1.1 Purpose, Objectives and Outcome

- 1.1.1 The HSE RCSI Hospitals Group, Our Lady of Lourdes Hospital, Operating Theatre Staff are committed to providing the highest standard of Peri- Operative care, based on current best practice, to our patients with the aim of minimizing risk and improving patient care and outcomes (HSE, 2019).
- 1.1.2 Multi-disciplinary care is integral to the management of acute hip fracture in older patients. This care needs to be coordinated in order to ensure surgery within 48 hours of admission for such patients (IHFS2).
- 1.1.3 The purpose of this policy is to have a formal, standardised institutional hip fracture care pathways for Peri-operative care of acute hip fracture patients, with a view to facilitate surgery within 48 hours of admission.

## **1.2** Scope

- 1.2.1 This guideline applies to all clinicians involved with the Peri-operative care of older patients with acute hip fracture.

## **1.3** Roles and Responsibility

- 1.3.1 It will be the responsibility of the Clinical Leads of Department of Anaesthesia, Orthopaedics, Orthogeriatrics, Haematology and the Hip Fracture Committee to ensure that the respective clinical staff are aware of the guideline.
- 1.3.2 Electronic copy of the guideline will be emailed to all the concerned staff and additional laminated copies of the guideline will be kept in Orthopaedic Trauma theatre 3.

## 2.0 Procedure

All patients with hip fracture who are medically fit should have surgery within 48 hours of admission. (Irish Hip Fracture Standard 2)

### Pre-operative Evaluation and Optimisation

- **Echocardiography Indications**

Pre-operative ECHO should be considered in the following patients:

- Acute decompensated CCF resulting in the patient being unfit for surgery.
- Possible acute coronary syndrome to assess for regional wall motion abnormality in the setting of an ischaemic ECG, Troponin rise +/- chest pain.
- A clinical scenario in which at least 2 Anaesthesia Consultants agree for the need for an ECHO.

**(In the absence of an ECHO, AAGBI guidelines favour not delaying surgery pending the ECHO and proceeding to surgery with modification towards general anaesthesia and invasive blood pressure monitoring)**

- **FBC**

Pre-operative transfusion should be considered if **Hb is < 9g/dl, or if Hb is < 10g/dl** with a history of ischaemic heart disease.

1 unit of RCC should be transfused at a time, with a repeat FBC to be done after each unit.

- **Atrial Fibrillation**

Patients should have a **Heart Rate < 100/min.**

(Treat low Potassium, Magnesium, Hypovolaemia, Sepsis, Pain and Hypoxaemia).

- **Anti-Coagulants & Neuraxial Block Interval**
  - Recommended time interval before a neuraxial block.

Drug	Elimination half-life	Time to Neuraxial Block *
<b>Antiplatelet drugs</b>		
Aspirin	Irreversible effect on platelets	Proceed with surgery
Dipyridamole*	2-3 h	<b>24 hours</b>
Clopidogrel*	Irreversible effect on platelets	<b>5-7 days</b> (Consider platelet transfusion if concerns regarding bleeding)
Ticagrelor*	8–12 h	<b>5-7 days</b>  (Consider platelet transfusion if concerned about risk of bleeding)
Prasugrel*	2-15 hours	<b>7-10 days</b>  (Consider platelet transfusion if concerned about risk of bleeding)
<b>Anticoagulants</b>		
Unfractionated i.v. heparin*	1–2 h	<b>4 hours</b>  (Provided APTTr <1.5)
Low molecular weight heparin subcutaneous (prophylactic dose)*	3–7 h	<b>12 hours</b>
Low molecular weight	3–7 h	<b>24 hours</b>

heparin subcutaneous (therapeutic dose)*		(Monitor blood loss)
Warfarin*	4–5 days	<b>5 days and INR &lt; 1.5</b>
Dabigatran*	15–17 h	<ul style="list-style-type: none"> <li>- Review renal function</li> <li>- <b>48-72 hours</b> if eGFR &gt; 60 ** (mL/min)</li> <li>- <b>96 hours</b> if eGFR &lt; 60 ** (mL/min)</li> </ul>
Rivaroxaban* Apixaban* Edoxaban*	12 h	<p><b>48-72 hours</b></p> <ul style="list-style-type: none"> <li>- Review renal function</li> <li>- 48 h if eGFR &gt; 60 ** (mL/min)</li> <li>- 72 h if eGFR &lt; 60 ** (mL/min)</li> </ul>

\* All patients should be individually assessed and their risks considered by the anaesthetic team providing Peri-operative care. **After individual assessment and multidisciplinary discussion, it may be appropriate to proceed with early surgery under general anaesthesia, rather than delay surgery to facilitate neuraxial anaesthesia.**

**\*\* Follow Cockcroft-Gault calculation.**

## DOACs

-Do not provide bridging therapy with therapeutic low molecular weight heparin if stopping DOACs.

-Consider restarting DOAC 24-72 hours after surgery if there is adequate hemostasis and an epidural or continuous peripheral nerve block catheter is not present.

-From Day 2 post -op DOAC should be recommenced at usual dose with LMWH prophylaxis, before re-initiating.

- Stop LMWH once DOAC has been recommenced.

## **Warfarin**

-Consider reversal of Warfarin as outlined below if proceeding with emergency/ urgent surgery <48 hours:

-STOP Warfarin

-Reverse warfarin with vitamin K 10 mg IV as soon as possible after admission and repeat INR after 4 h. Noting that full reversal with normalisation of INR will take 24 hours. Vitamin K effect only starts to become apparent at 6h.

-Consider repeating vitamin K. Check INR after 6h: repeat the dose if necessary; each time check INR after 6h. Maximum dose = 40mg/24h.

-Consider prothrombin complex concentrate (PCC) for immediate reversal. (Note this is prothrombotic and caution should be exerted in cases of recent vascular occlusive episode). If PCC is given INR can be checked 1 hour after infusion is completed.

-Consider tranexamic acid.

-Consider restarting warfarin 12-24 hours after surgery if there is adequate haemostasis and an epidural or continuous peripheral nerve block catheter is not present.

- If Warfarin is being used for mechanical valve refer to local bridging protocol and consider discussion with Clinical Haematology if additional input required.

-Restart therapeutic heparin (unfractionated or low molecular weight) 24-72 hours after surgery if there is adequate haemostasis. Continue therapeutic heparin until the INR is  $\geq 2.0$ . Prophylactic

LMWH may be considered on the first post-operative day if there is adequate haemostasis, at least 6-12 hours post-op and >12 hours since removal of an epidural catheter.

**- Please contact Haematology for advice if patient has metal valve or recent DVT/ PE (within 3 months) or Complex Coagulopathy.**

**- If recent Myocardial Infarction or cardiac stenting, or stroke/ TIA (within 3 months to 1 year), please discuss holding this medication with Cardiology, Stroke team, Anaesthesia & Haematology. These medications may need to be continued & surgery performed under GA with accepted increased risk of bleeding complications.**



### **Intra-operative Management**

- For all patients (GA or Spinal)
  - Avoid hypotension and maintain MAP>65mmHg ( consider phenylephrine infusion)
  - Consider an arterial line for high risk patients and where a cemented prosthesis is used.
- Avoid long acting sedatives and benzodiazepines.
- Consider use of Tranexamic Acid 1g I.V intra-op. ( if no contra-indication)
- Peripheral nerve blocks may be used to supplement general or spinal anaesthesia. (Their administration before positioning for spinal anaesthesia may reduce the need for additional sedation or intravenous analgesia).
- Beware of bone cement implantation syndrome and consider uncemented implant in high risk patients.

## **Post-Operative Management**

- Point of care haemoglobin check for all patients in recovery – check FBC,  
If < 10 g/dl, **transfuse early specially if Hb < 9 or Hb <10 in high risk cases** (e.g. ischaemic heart disease).
- Wean vasopressor infusion as tolerated.
- Give multimodal post-op analgesia and appropriate anti-emetics & laxatives.
- Please refer to Analgesic pathway for Orthopaedic patients.
- Prescribe IV fluids.
- Appropriate Thrombo-prophylaxis.
- Involve critical care team early for high risk patients.

**Acceptable reasons for delaying surgery:**

- *Haemoglobin < 8 g.dl<sup>-1</sup>*
  - Assess reason for low Hb & consider prompt transfusion. Reassess fitness for surgery following transfusion.
  
- *Plasma sodium concentration < 120 or > 150 mmol.l<sup>-1</sup> and potassium concentration < 2.8*
  - Investigate the cause of the electrolyte abnormality and treat. If Hypokalaemia replace Potassium and correct if Hyperkalaemia – see hospital guideline. Seek Endocrinology consultation if Na < 124.
  
- *Uncontrolled diabetes.*
  - Consider Insulin infusion for surgery and Diabetes Nurse/ Endocrinology consultation. If evidence of DKA: DKA protocol and urgent Endocrinology consultation.
  
- *Uncontrolled or acute onset left ventricular failure.*
  - Urgent ECHO, Cardiology consultation and treatment.
  
- *Correctable cardiac arrhythmia with a ventricular rate > 120.min<sup>-1</sup>*
  - Ensure monitoring, Cardiology consultation and treatment.
  
- *Respiratory tract infection with sepsis*
  - Ensure prompt treatment as per sepsis guidelines.
  
- *Reversible coagulopathy*
  - Consider Haematology consultation.

DELAY IN HIP FRACTURE SURGERY >48 HOURS IS ASSOCIATED WITH INCREASED 30-DAY AND 1 YEAR MORTALITY IN THIS COHORT.

### **3.0 Governance and Approval**

This PPPG was developed in line with Policies and Procedures Development, Review, Approval and Communication (2020).

### **4.0 Communications and Dissemination**

This guideline was circulated to the multi-disciplinary team (Department of Anaesthesia, Prof M. Staunton, Dr Helen O'Brien and Dr Jeremy Sargent) for review.

The final draft with the necessary recommendations was reviewed and approved by the above mentioned multi-disciplinary team.

These guidelines will be updated every three years or more frequently if practice requires.

### **5.0 Implementation Plan**

All clinical staff involved with the Peri-operative care of acute hip fracture patients will be made aware about this guideline by the Hip Fracture Committee.

### **6.0 Monitoring, Audit and Evaluation**

The PPPG will be reviewed every 3 years or as evidence requires and audited at an appropriate time after the PPPG has been disseminated and implemented – this revision and audit date will be agreed by the committee developing the PPPG at the time of final sign off.

## 7.0 References

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## 8.0 APPENDICES

### 8.1 Appendix 1: Members of the working group/PPPG Development Team.

Please list all members of the working group (and title) involved in the development of the document.

Name:	Title:
Dr Junaid Hashmi	Consultant Anaesthesia
Prof Michael Staunton	Consultant Anaesthesia
Dr Jeremy Sargent	Consultant Haematology
Dr Helen O'Brien	Consultant Orthogeriatrics Medicine
Dr Dinesh Kuriakose	Consultant Anaesthesia





