Norfolk and Norwich University Hospitals NHS Foundation Trust

James Paget University Hospitals NHS Foundation Trust

Joint Trust Guideline for the Management of Elderly Patients with Hip Fracture Prior to Surgery

"Please also consult Trust policy 14913 Proximal Femur Fractures in the elderly from 31/12/20 which expands on the topics covered in this policy document".

A clinical guideline recommended for use

In:	Orthopaedics and Trauma
By:	All medical staff involved in trauma
For:	Elderly (> 65 years) hip fracture patients prior to surgery (not for patients undergoing elective surgery)
Division responsible for document:	Surgical Division
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This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

The Trust's guidelines are made publicly available as part of the collective endeavour to continuously improve the quality of healthcare through sharing medical experience and knowledge. The Trust accepts no responsibility for any misunderstanding or misapplication of this document.

Joint Trust Guideline for the Management of Elderly Patients with Hip Fracture Prior to Surgery

Version and Document Control:

Version Number	Date of Update	Change Description	Author
4.1	29/12/2021	Changes to key people	Paul Barker

This is a Controlled Document

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Objectives

Patients with a proximal femoral fracture benefit from early surgery and mobilisation. The conduct of anaesthesia and surgery is safer in patients that have their clinical condition optimised prior to any surgical intervention. However unnecessary delay is unhelpful as it predisposes the patients to increased risk of DVT and respiratory complications.

This guideline will help junior staff on orthopaedics prepare their patients for surgery and also guide junior anaesthetic staff towards appropriate treatment and investigation. This should avoid unnecessary delay.

This guideline has been adapted from a document entitled "The A to Z of anaesthesia for elderly trauma patients Dr H S from Southampton hospital for the National Hip fracture database. It therefore follows the same format and the subjects covered are in alphabetical order

Rationale

Trauma patients are often admitted by one team and then prepared by another for theatre. This guidance standardises the preparation of these patients, and should reduce cancellations for predictable and previously recognised problems, and possibly reduce the need for urgent review by medical teams.

Broad recommendations

PLEASE NOTE: - these guidelines are not applicable to patients coming for elective surgery.

- This document has been considered by anaesthetists undertaking trauma anaesthesia and is based on a document from the national hip fracture registry.
- If you work within these guidelines, patients will **usually** be accepted for theatre.

In general the patients routine medications should continue, common exceptions are mentioned below. It is particularly important that anti Parkinsonian drugs are continued

A non-Consultant Anaesthetist should seek advice from a consultant anaesthetist prior to delaying a patient who meets these standards.

Atrial Fibrillation

All patients in AF should have a ventricular rate of less than 100 beats per minute (bpm). If control is poor:-

- Exclude or treat factors that may lead to new or fast AF. Check potassium and magnesium levels. Consider hypovolaemia, sepsis, pain, hypoxaemia.
- For previously undiagnosed AF (NNUH), sublingual digoxin gives good results and can be administered in the ward setting. The dose is 500 micrograms in the first instance and 500 micrograms 6 hours later if rate control hasn't been achieved (if renal impairment co-exists the maintenance dose of digoxin may require adjustment).
- For previously undiagnosed AF JPUH- D/w Orthogeriatrician/ medical registrar on call, consider BBlockers (Bisoprolol)

- For patients already on treatment for AF, you should consider exacerbating factors as above, and then discuss increased treatment with the ortho-geriatricians or acute physicians. If the rate is between 100 and 120 bpm, it may be possible to proceed – **please discuss with the Anaesthetist**. If the rate is over 120 bpm more treatment is usually required.

Blood tests

All elderly trauma patients need FBC and U&E, LFT and glucose.

G&S – Always order a Group and Screen on all #NOF, nailing's, major joint replacements and all fractured long bones.

N.B always check on WebICE if any antibodies are detected because if these are present you will also need to crossmatch the patient.

Cross match – only in 2 situations (as generally cross-matched blood can be obtained within 20 minutes provided a cross-matched sample is available)

Patients who are **highly likely** to need blood e.g. Hb <10 g/dL.

- If antibodies detected in the Group and screen test (check on WebICE) as their presence may significantly delay the provision of blood to hours.

If you are not sure ask a surgeon or Anaesthetist.
And ALSO:-

RECHECK the U&E as follows:

- Every 48 hours if it was normal on admission.
- Daily if it was abnormal on admission or at any stage.

Chest Infections

Chest infection should not be a reason to delay cases. Antibiotics should be started promptly. Delaying surgery to allow a chest infection to improve is usually futile as chest infections get worse, not better in the presence of proximal femoral fracture.

Patients with a chest infection can usually have a spinal anaesthetic. Exceptions to this are:

- Raised INR (more than 1.5).
- Rods or other instrumentation of the spine.
- Patient too breathless to tolerate lying at about 20 degrees from flat. Moderate and severe aortic stenosis or critical coronary artery disease.

Please let the anaesthetist know if a patient with a chest infection also has one of these conditions.

Patients with chest infections should be listed for the next available daytime slot when they can be reviewed by a senior anaesthetist who will decide whether or not to continue with the case.

Chest X-Ray

All patients with #NOF who have cardiac or respiratory comorbidities should have a chest X-ray. A supine AP film is satisfactory. A repeat X-ray to assess a chest infection is rarely of any use.

Creatinine

Clinical acceptable serum creatinine levels are between 55-120 micromol/L. Whilst a serum creatinine of > 200 micromol in a patient with chronic renal failure might not be significant, in the acute setting (and in frail individuals), it cannot be ignored. Renal impairment does not always preclude a patient from operative intervention.

- Establish whether this is an acute, chronic or acute on chronic process.
- If acute: try and establish a cause. Is there a history of fluid loss or sepsis? What is the drug history? What are the patient's co-morbidities? Avoid diclofenac and other NsAIDS.
- Common causes include hypovolaemia (pre renal), Acute Tubular Necrosis (ATN) and iatrogenic causes (renal) and obstruction (post renal).
- Management includes:
    - Fluids: can include fluid resuscitation, catheterisation and fluid balance charts.
    - Remove offending drugs.
    - Treat sepsis.
    - Correction of electrolyte disturbances: can expect acidaemia, hyperkalaemia and hyponatraemia.

All cases of renal impairment please discuss with the anaesthetist.

Diabetes

Please follow the Trust Guideline **Adults with Diabetes Undergoing Surgery and Elective Procedures** (Trustdocs ID: 1276)

The Diabetes guidelines have been written for patients having elective and planned surgery but as many trauma patients can eat and drink normally up to 6 hours (solids) and 2 hours (clear fluids) before surgery and should be able to resume normal diet soon afterwards, it maybe appropriate to manage diabetes as for planned surgery.

- If diabetes is poorly controlled, patient is unwell or fasting is likely to be prolonged patients should be managed with a VRIII (variable rate intravenous insulin infusion) with either glucose or 0.9% sodium chloride according to blood glucose readings (see Trust Guideline Adults with Diabetes Undergoing Surgery and Elective Procedures (Trustdocs ID: 1276)).
- Diabetic patients should be first on the operating list and diabetes noted on the list.
- Blood glucose should be monitored hourly while fasting in all diabetic patients.

High blood sugars are not usually a reason to delay surgery in urgent trauma patients, unless the patient is ketotic and dehydrated. You should start treatment urgently however and discuss what you are doing with the anaesthetist.

ECG

ALL elderly trauma patients need an ECG. The following rhythms are of interest:

- Atrial fibrillation – see earlier note.
- Tri-fascicular block. Discuss with cardiology or senior trauma anaesthetist ASAP.
- Complete heart block. Discuss with cardiologist or senior trauma anaesthetist ASAP.
- Both of the above are likely to need preoperative pacing.
- Multiple or multi-focal ectopics, bigeminy or trigeminy. If no history of blackouts – ensure normal K^{+}, check and correct Mg^{++}. If history of blackouts – discuss with orthogeriatrics, cardiology or senior trauma anaesthetist ASAP.
- ST Segment elevation myocardial infarction STEMI- please contact on call cardiology registrar on DECT phone ****, ST depression or T wave inversion please discuss with anaesthetist.

Echo

These remarks should not be applied to pre-assessment for elective surgery.

There are two reasons that an anaesthetist may require an echo:-

- To find the origin of a heart murmur (most importantly to exclude aortic stenosis).
- To establish LV function.

Murmurs

- Pan systolic murmurs heard at the apex (mitral regurgitation). These do not need an echo.
- Ejection systolic murmurs heard in the aortic area - ONLY need an urgent echo if there is evidence that there may be significant aortic stenosis.

This is indicated by two or more of the following, (or one of the following if severe):-

- History of angina on exertion.
- Unexplained syncope or near syncope.
- Slow rising pulse clinically (try the brachial pulse for this) –narrow pulse pressure on BP reading.
- Absent 2nd heart sound.
- LVH on the ECG in the absence of hypertension.
- CXR suggests AS (enlarged heart, post stenotic dilation slow of aorta).

LV Function

- If the patient is known to have heart failure, an echo is not needed – we will treat as reduced LV function.
- If the patient is breathless at rest or on low level exertion, the anaesthetist will need to work out whether this is due to LV failure or lung disease. If he/she cannot make this diagnosis on clinical grounds, an echo may help. These patients should be reviewed by an orthogeriatrician or senior anaesthetist as soon as possible after admission.

Please arrange the echo by contacting Echocardiography on **********, Monday to Friday, 9am-5pm.

All ECHOs requested pre-operatively must/should be done the same day. If an echo request appears to be delaying surgery, please re-discuss the need for it with a senior trauma anaesthetist.

Haemoglobin

We recommend the following guidelines for elderly trauma patients:-

- If Hb is <90g/L please transfuse up to 100g/L. (on average 1 unit of blood is expected to raise the Hb by 10g/L)
- If Hb is 90 – 99g/L *and* there is a history of ischaemic heart disease, please transfuse up to 100g/L.
- If Hb is 90 – 99g/L and there is no history of ischaemic heart disease, please order 2 units of blood to be available in theatre.
- If transfused there must be a post transfusion check Hb available.

Heparin and anticoagulants

Prophylactic sub-cutaneous low molecular weight heparin (LMWH) should be prescribed as in your department guidelines. This dose will need reducing if the patients weight is less than 50 kg or their creatinine > 200micromol/L.

Always prescribe LMWH to be given at 18:00. This is because a spinal anaesthetic cannot be performed within 12 hours of a dose. The timing of the evening dose allows a spinal to be performed at any time during the next day's operating lists.

Patient on Warfarin

- **Check INR**
  - INR should be below 2 for most operations.
  - For a spinal anaesthetic the INR must be **less than 1.5.**
- **Give all patients 5 - 10mg phytomenadione** (Vitamin K) by slow IV injection.
- Decide if patient at low risk of thrombosis or high risk of thrombosis.

High risk patients	Low risk patient
VTE within 3 months	VTE > 3 months previously
Arterial embolism of cardiac origin < 1 month	Atrial fibrillation
Mitral mechanical heart valve	Aortic mechanical valve confirm risk with cardiologist
Recurrent VTE on lifelong warfarin	
Antiphospholipid syndrome	

Low Risk patients

Pre op

Check INR within 6 hours of surgery

- <1.5 proceed.
- 1.5 – 2.0 if spinal anaesthetic planned review if op can be deferred and recheck INR 6 hours pre op; if not give Beriplex* and proceed to surgery.
- >2.0 see if surgery can be deferred if so recheck INR 6 hours pre op; if not give Beriplex*.

Post op

- Prescribe prophylactic dose LMWH daily at 18.00 hrs.
- Restart Warfarin at usual dose:
    - If return to theatre is unlikely.
    - Patient is not actively bleeding.
    - Epidural is not present.

  Otherwise OMIT until safe to restart.

High risk patients

Pre Op

Check INR after 24 hours or within 6 hours of surgery if earlier

- If INR <1.5 and
    - Surgery due in <6 hours proceed with surgery.
    - Surgery not due for >6 hours give prophylactic dose LMWH sc at 18.00 hours.

N.B if surgery likely to be delayed for more than 24 hours may have to consider starting therapeutic Dalteparin - JPUH teams to liaise with Haematologist re advice on management as NNUH policy not endorsed.

N.B if surgery likely to be delayed for more than 24 hours may have to consider starting therapeutic dose LMWH (see **Trustdocs ID: 1215**). Adult Patients Requiring Surgery or Invasive Procedure Whilst Anticoagulated with Warfarin.

If INR > 1.5 see if surgery can be deferred and recheck INR 6 hours pre op; if not give Beriplex* (NNUH) or Octiplex (JPUH).

Post OP (see Trustdocs ID: 1215**)** Adult Patients Requiring Surgery or Invasive Procedure Whilst Anticoagulated with Warfarin.

***Beriplex** dose is weight adjusted (see **Trustdocs ID: 1215**)** and arranged through Blood Bank 2906 or through switch board out of hours. N.B Beriplex is a blood product so check patient's religious beliefs before giving *Octiplex- see JPUH haematology web page.

Clopidogrel stop on admission.

Direct Oral Anticoagulants (DOAG- Dabigatran, Rivaroxaban, Apixaban, Edoxaban stop on admission. Plasma concentration can be estimated from dose of drug, approximate drug half-life and time of last dose, and patient's renal function (contact haematology or trauma anaesthetist for advice).

Intra-venous infusion

All #NOF patients need an intravenous infusion. U&E should be monitored alternate days or daily if abnormal. Intravenous fluids should be commenced in the A+E department. Hartmanns solution should suffice for most patients. Vide infra for sodium and potassium.

Pacemakers and Implantable cardiac defibrillators

A pacemaker check should usually be requested pre-op, especially if the fall is unexplained. It also helps us to know the type of pacemaker and the patient's unpaced rhythm. Please contact the pacemaker service on extension **** within normal office hours, explaining that the patient requires emergency surgery. Patients with an ICD will require input from the Pacemaker department to deactivate and reactivate their ICD

NB there is no daily pacemaker clinic at JPUH so advised management is to request advice from the cardiologist if any pacemaker malfunction is suspected. Information about the pacemaker will be required and can be obtained from the above contact if the patient is local.

Potassium

- If the potassium is less than 3.5 mmol/L there must be a daily check until it returns to normal and the cause has been stopped/treated.
- Remember you can get an instant potassium from the blood gas machine (take a heparinised venous sample).

Consider why the potassium is low, and treat the cause.

Sodium

Patients with low sodium may have impaired control of sodium and water balance in the brain. This may lead to cerebral events (including fits, brain swelling and brain damage).

Also note:

- Slow onset or chronic hyponatraemia may be compensated and safe.
- Rapid correction can be unsafe: over-rapid correction can precipitate central pontine myelinosis.

Na^+ 120 – 130 mmol/L

- Establish whether this is an acute or chronic process.
- Consider cause: Is there a history of hypovolaemia? (Diuretics, GI losses). Is the patient oedematous? (CCF or severe renal failure).
- Stop offending drugs: this may include **diuretics** and **SSRIs.**
- Avoid IV glucose.
- Please check urine and plasma osmolalities. A high urine osmolality and low plasma osmolality might be indicative of SIADH. Please contact the orthogeriatrician.

Na^+ <120 mmol/L

- All of the above plus seek orthogeriatric opinion.

Further information is available on Trust Guideline for in patient management of hyponatremia CA5102.

Special Anaesthetic review

Please note the anaesthetist will always want to be warned about patients as follows:-

- History of difficult intubation; anyone who can't open their mouth; anyone with restricted neck movement (e.g. Ankylosing spondylitis) or unstable neck (# or RA).
- Known problems with GA – malignant hyperpyrexia, suxamethonium apnoea, any unplanned ICU admission in the past.

If your patient has had relevant treatment which is documented in other notes – please **get those notes**. If the notes are not available, please ask the GP to fax a copy of their patient summary.

Contact Details

NNUH Contacts

- **Ortho-geriatrician** **********1301 (Dr Susan Lee Consultant MFE)
- **Trauma Coordinator** **********
- **Trauma theatre** **********
- **Anaesthetic Consultant** ********** or via the trauma theatre
- **Cardiology SpR** Contact switchboard for bleep number
- **Medical SpR (ward cover)** Contact switchboard for bleep number ****
- **Haematologist of the Week** Contact switchboard for number ****

JPUH Contacts

- **Ortho-geriatrician** Bleep 1996 – Dr Zaidi
- **Trauma Coordinator** Bleep 1789
- **Trauma theatre** Theatre 3 – Ext 2195

- **Anaesthetic Consultant** On call Anaesthetist of the day via switchboard
- **Medical SpR (ward cover)** Contact switchboard for bleep number
- **Haematologist of the Week** Contact switchboard for number
- **Hip Fracture Keyworker** Bleep 1993

Clinical audit standards

100% of patients shall be operated on under 36 hours of admission.

Summary of development and consultation process undertaken before registration and dissemination

This guideline was prepared by Dr Paul Barker on behalf of the departments of Anesthesia and Trauma and Orthopaedics, The guideline is based on guidance published in the National Hip Fracture Database supported by the British Orthopaedic Association and the British Geriatrics Society. It was co authored by an anaesthetist Dr Lucy White from Southampton General Hospital

During its development it has been circulated to:
Consultants in the Department of Anaesthesia
Consultants on the Orthopaedic Trauma rota via their Clinical Director
Dr Jennie Wimperis, Consultant Haematologist, Dr Susan Lee, Consultant Medicine for the Elderly, Dr Trevor Wistow, Consultant Cardiologist, Dr Leisa Freeman, Clinical Director Cardiology, Dr Hugh Wilson, Consultant Acute Medicine.

References/ source documents

This guideline is based on the guideline published in National Hip Fracture Database supported by the British Orthopaedic Association and the British Geriatrics Society. It was co authored by an anaesthetist Dr Lucy White from Southampton General Hospital

Proximal Femur Fractures In The Elderly Trustdocs Id: 14913

NICE clinical guideline 124. www.nice.org.uk/guidance/CG124

L.White. The A to Z of anaesthesia for elderly trauma patients: National Hip Fracture Database

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http://intranet/guidelines/Word%20docs/CA4030_Echocardiogram_requests_for_adults_undergoing_surgery.doc

http://intranet/ClickforClots/index.htm?p=guidelines.htm

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