Post-fall medical examination

A guide for inpatient settings

Content

Introduction

This work has been developed for organisations that provide health services for individuals receiving care in an inpatient setting. The guidance is to be used for patients **16 years or older**. It has been adapted for use for inpatient falls, and therefore scenarios involving high-energy trauma commonly encountered in emergency departments (ED) have been deliberately omitted.

The National Audit of Inpatient Falls (NAIF) is part of the Falls and Fragility Fracture Audit Programme (FFFAP) commissioned by NHS England and Wales. NAIF collects information about significant injuries sustained in inpatient settings in patients aged 65 and over, focusing on multifactorial risk assessments to optimise safe activity (MASA) and, if a fall occurs, immediate post-fall management of injuries. Post-fall management is audited against National Institute of Health and Care Excellence (NICE) quality standard 86, statements 4, 5 and 6.

Quality statement 4: Checks for injury after an inpatient fall

- Quality statement 4: Checks for injury after an inpatient fall

- Quality statement 5: Safe manual handling after an inpatient fall
- Quality statement 6: Medical examination after an inpatient fall

NAIF has already produced Supporting best and safe practice in post-fall management in inpatient settings, which is aimed at first responders to a patient who has sustained an inpatient fall. This resource provides a framework for staff to check a patient for injury and determine a safe manual handling method to move them off the floor. If an injury is suspected, quality statement 6 stipulates that a medical review is conducted within 30 minutes. These medical reviews are carried out by a wide range of healthcare professionals (HCPs), with varying degrees of experience and training in the assessment and examination of patients who have sustained traumatic injuries. These assessments are made more challenging by the fact that these patients are more likely to be older and frailer with multiple comorbidities, and already an inpatient with an acute illness.

In contrast, many emergency department trauma triage systems identify older trauma patients as requiring assessment by more experienced staff, often ST3 and above. There is increasing recognition that, until recently, existing trauma triage pathways have focused on high-energy mechanisms to identify the patients most likely to sustain major trauma. However, a fall from a height of <2 m is now the most common mechanism of injury in patients meeting the criteria for major trauma and, in those >69 years old, the most common cause of trauma-related death.[3]

Delays in identifying and managing injuries in older age groups may represent preventable harm in the patient group who are most likely to decompensate as a result. The challenge is that most inpatient falls do not result in major trauma and, in many settings, the resource is not available to trigger an inpatient trauma call for all falls.

This resource aims to provide a framework to support a systematic assessment of the patient, to promote early identification of possible injuries, and to prompt relevant and timely investigations to confirm diagnosis and enable appropriate management.

Aims:

- To minimise harm to patients from incorrect management after injurious falls.
- To provide a framework for HCPs designated to this role to systematically review patients, and to identify acute medical causes of the fall and resulting injuries.
- To ensure prompt access/referral to ongoing treatment when injury has occurred.
- To reduce variation in post-fall management within inpatient settings.

Objectives

1. To clarify what constitutes a ‘medical’ examination after an inpatient fall using existing available guidance.
2. To provide a framework to support a systematic process to help identify acute medical causes of the fall and resulting injuries.
3. To guide appropriate and timely investigations to diagnose injuries.
4. To support appropriate transfer to an appropriate site and/or access to prompt specialist input to treat injuries in accordance with current guidance.
5. To reduce variation in the treatment of injuries and to align as much as possible with guidance and standards applied to patients with similar (non-inpatient-acquired) injuries who present to the emergency department.
6. To provide guidance on training and competencies required to conduct a medical review of an inpatient fall.

Who is this resource for?

This resource is designed primarily for the use of HCPs whose scope of practice includes examining patients who have sustained an inpatient fall, including (but not limited to):

- doctors, especially resident doctors
- advance nurse practitioners / clinical nurse specialists
- allied healthcare professionals
- other autonomous practitioners with appropriate level of skills and competency to perform post-fall examinations.

Those with a responsibility for delivering safe and effective care in inpatient settings should be aware of this resource, including:

- Executive and non-executive board members with responsibilities including falls
- Divisional Clinical Directors and appropriate Associate Medical Directors
- Trust safety and quality leads including falls lead
- Falls steering group members, falls coordinators, falls practitioners and falls champions
- Clinical leaders including matrons, ward managers and service/departmental leads
- Education leaders including education and training leads, practice development nurses, moving and handling trainers
- Patient experience leads
- Those who hold clinical responsibility for patients

Explanatory notes for post-fall medical examination

1. Initial referral

1.1 Information

When called about a patient who has had an inpatient fall, try to elicit the information that will allow you to prioritise the review appropriately and to communicate relevant instructions to the staff while awaiting your review.

An example of SBAR handover giving the relevant information:

- **Situation:** 'I am the nurse in charge on X ward, and one of our patients, Mrs Smith, has had an unwitnessed fall and was found on the floor by her bedside 15 minutes ago.'
- **Background:** 'She is an 80-year-old woman, admitted with a community-acquired pneumonia and has been delirious on the ward. She is on prophylactic dalteparin and clopidogrel.'
- **Assessment:** 'We have done a set of obs – NEWS2 score, BM and GCS [give values] – and assessed her from head to toe. She appears to be in pain around her right hip. I am concerned that she may have broken her right hip. We have moved her to the bed using flat lifting equipment. I have given her the PRN paracetamol that is already on her drug chart.'
- **Recommendation:** 'Please can you assess her urgently within 30 minutes? Is there anything else you want me to do in the meantime?'

1.2 Response times

NEWS2 response times[4]:

- Scoring 7 or more - immediate review and continuous monitoring
- Scoring 5 or more – urgent response
- Scoring 3 in one parameter – nurse to inform medical team who will review and decide frequency of monitoring, consider sepsis
- Scoring 1-4 – registered nurse to review
- Scoring 0 – routine observations

Falls response times according to NICE quality standard 86[1]:

- Within 30 minutes if injury suspected
- Within 12 hours if no injury suspected (local policies may stipulate more urgent response)

1.3 Instructions to give to the nurse

Depending on NEWS2 score, ask for appropriate frequency of observations and escalate following your local escalation policy if required, eg to outreach team, medical emergency team (MET) call.

Remember that in an unwitnessed fall, possible head injury must be considered – ask for neurological observations and check for anticoagulant therapy status (described in section 4.1.v).

Consider what analgesia is required and could be given while waiting for your review. The expectation is that pain relief is given within 30 minutes of injury. If nurses are reporting significant pain, the patient needs an urgent review.

2. On arrival to the ward

Undertake a dynamic risk assessment of the environment

Assess where the patient is:

- If the patient is still on the floor, conduct an initial assessment (post-fall check - link to best and safe practice appendix 1)
- Before moving the patient from the floor, discuss and agree with staff present the safest moving and handling method to use (link to appendix 1)

Do you have enough help for the current situation?

3. The primary survey

Many patients who fall are not critically unwell and the temptation will be to skip aspects of the assessment to maximise efficiency. The primary survey is intended to identify life-threatening conditions and ensure that these are treated in a prioritised sequence. It is possible to conduct this assessment at speed and several steps may be able to be performed simultaneously. Even if the patient is clinically stable, it is advisable to retain a structured approach to the assessment, to ensure that significant findings are not missed and to accurately reflect and document the clinical state of the patient; this allows comparison if the patient were to deteriorate at a later stage.

Is the patient responsive? If confirmed cardio-respiratory arrest, commence CPR (taking into account DNACPR status)

A – Airway (with C-spine immobilization)

- Talk to the patient, can they talk back? Can they give an account of what happened?
- Are you concerned about the C-spine (obvious head injury, neck pain, mechanism of injury)? If so, call for more help, immobilise C-spine by holding head until help arrives (see section 4.3.iii) then continue assessment
- Chin lift and jaw thrust can be performed without hyperextending the neck

B – Breathing

- Respiratory rate, oxygen saturation (sats)
- Apply O2 if target sats not reached
- Assess for obvious injuries, increased work of breathing, expansion, asymmetrical or abnormal breathing, auscultate for air entry / added sounds

C – Cardiovascular

- Pulse – rate, rhythm, skin perfusion
- Blood pressure (BP)
- Do you need intravenous (IV) access/bloods?
- In the context of trauma with major haemorrhage, control of bleeding is key and should take priority. Local protocols for major haemorrhage should be followed
- Consider fluid challenge if signs of shock, sepsis, hypovolaemia (follow sepsis guidance relevant to clinical setting)[5]

If significant abnormalities in examination so far, call for help.

Considerations in major trauma:[6]

- Early signs of shock are tachycardia and peripheral vasoconstriction. A low BP is a later sign of shock, and relying on this can delay recognition.
- Neurogenic shock presents classically with hypotension without tachycardia, cutaneous vasoconstriction or narrowed pulse pressure.
- Older patients may not demonstrate an appropriate tachycardia because of their limited cardiac response to catecholamine stimulation or medication such as beta blockers / calcium channel blockers or with certain pacemakers.
- Older people may also be more likely to have hypertension. Relative hypotension should be identified by reviewing their normal BP.
- Initial fluid resuscitation should be with a 250–500 mL crystalloid solution bolus[7] and assess response – identify evidence of adequate end-organ perfusion and tissue oxygenation. Early blood products are beneficial in the context of significant bleeding, and a balance is needed between maintaining BP and increasing rate of active bleeding – control of haemorrhage is key.

D – Disability

- BM, temperature
- Glasgow coma scale (GCS) – separate out into component parts; if GCS 8 or less, consider securing airway
- Pupil size and reaction
- Any lateralising signs or sensory loss/change (can they move their arms and legs, any obvious facial asymmetry, can they feel you touching them? Observe for spontaneous movements if unable to follow instructions)

E – Exposure

- Look for rashes, evidence of bleeding, joint or long bone deformity, bruising to indicate site of impact, lines, catheter

Consider adjuncts to primary survey: bloods, arterial/venous blood gases, electrocardiogram, urinary catheter, chest X-ray.

Do you need more help? Consider the need for escalation (to Medical Escalation Team or other escalation team / service call)

In community or mental health settings, does the patient need to be transferred elsewhere? Dial 999.

4. The secondary survey

A secondary survey does not begin until the primary survey is completed (go back and reassess if there are abnormalities on the primary survey), appropriate resuscitation has been initiated and the patient's observations are responding appropriately. It consists of a head-to-toe evaluation of the patient including a complete history and examination, including reassessment of all vital signs.

At this stage, if not already done, it is advisable to review a brief history of the admission and the patient's past medical history, including previous falls, risk of fracture, any known spinal pathology, and what medications are they on – in particular, antiplatelets or anticoagulants. Together with the history from the ward staff and your initial assessment, consider what could have precipitated the fall.

4.1 Head

4.1.i History

Did they hit their head or was their fall unwitnessed? If so:

- Any visible injury?
- Any loss of consciousness?
- Are they on anticoagulants/antiplatelets (excluding aspirin monotherapy), any clotting disorder?
- Any previous brain surgery?
- Any new reduction in GCS, loss of consciousness or seizures since fall?
- Is the patient complaining of new headache, memory loss, dizziness, double vision or vomiting after the fall?
- Any evidence of drug (including prescribed medication) or alcohol intoxication?
- Any evidence of irritability or altered behaviour?

4.1.ii Examination

This involves a visual inspection and neurological examination:

- Look for scalp/head laceration, contusions, evidence of fractures
- Eyes: visual acuity, pupil size and symmetry, haemorrhage of conjunctiva and/or fundi, ocular entrapment (eye movements)
- Any focal neurology?
- Clinical signs of a basal skull fracture: periorbital ecchymosis, retroauricular ecchymosis (Battle's signs), rhinorrhoea or otorrhea (CSF leakage), and dysfunction of cranial nerves VII and VIII – facial paralysis and hearing loss – which may occur immediately or after a few days[6]

4.1.iii For patients in community settings

If there is evidence of head injury or an unwitnessed fall, consider referral to the local emergency department if any of the following are present:

- Positive findings on history listed above (4.1.i)
- Any focal neurology
- Clinical concern
- Concern of patient/carer
- Inability to observe patient

If not using NHS transport, ensure that the patient is accompanied by a competent adult. Shared decision-making should be employed.[8] An example of where this may be relevant includes patients with no other indication for imaging (of head, C-spine or any other injury) other than being on anticoagulation or antiplatelets.[9]

4.1.iv Investigation

Follow guidance for imaging as per NICE guideline 232 (see Fig 1)[10]:

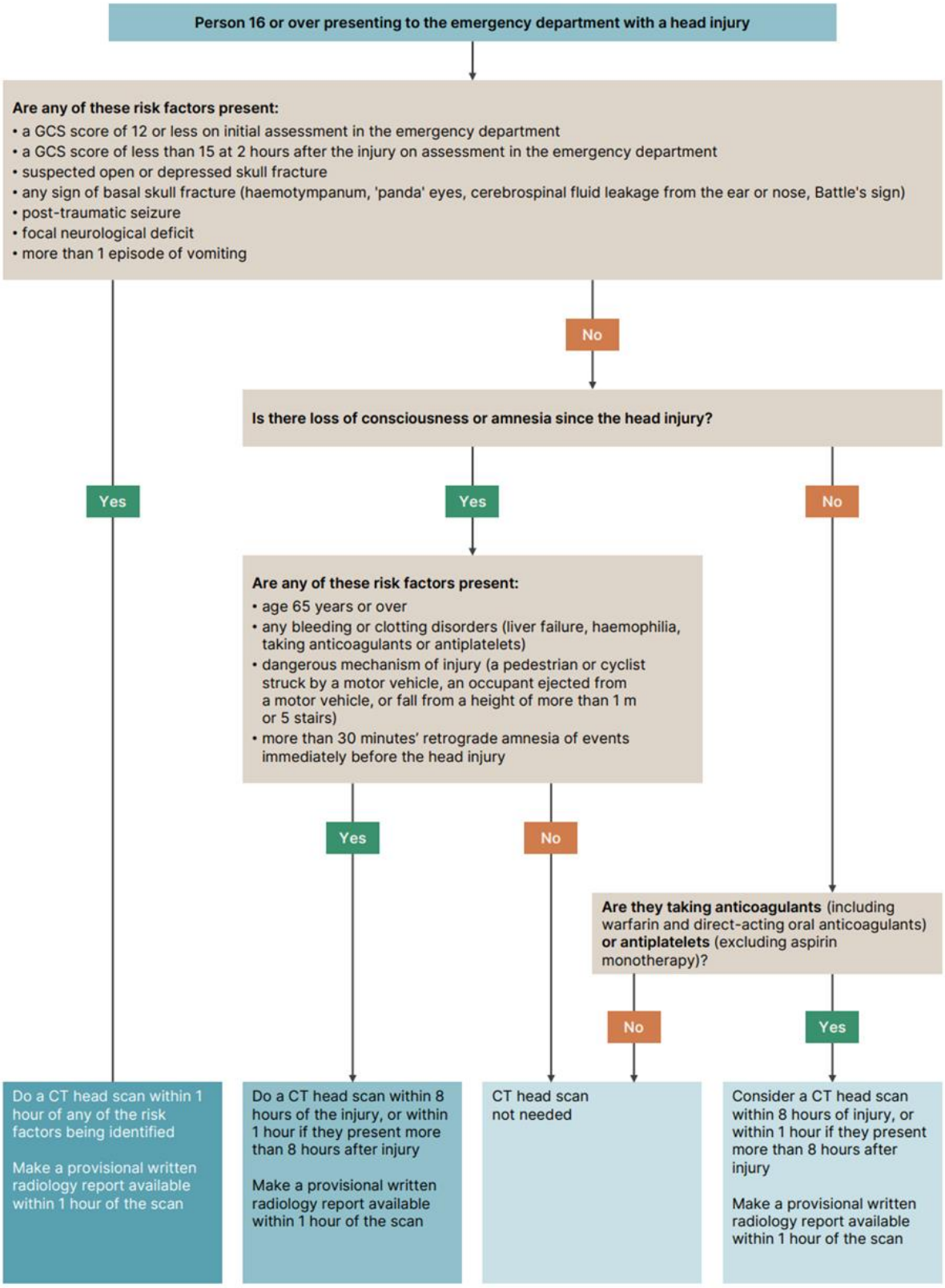


Fig 1: Algorithm for selecting people aged 16 and over for a CT head scan

4.1.v Management

Neurological observations

In cases of a fall with head injury, **or an unwitnessed fall**, neurological observations should be documented every 30 minutes until a GCS of 15***** is achieved. This should be followed by a frequency as for those patients with a GCS score of 15*: observations should be every 30 mins for 2 hours, every 1 hour for 4 hours, then every 2 hours for 24 hours. This should include GCS score (separated into component parts – appendix 2), pupil size and reactivity, limb movements, respiratory rate, heart rate, temperature and blood oxygen saturation.

If any deterioration is observed, nursing staff should escalate immediately for reassessment, revert to half-hourly observations and follow the original frequency schedule as above.

Use of an appropriate head injury proforma / observation chart is recommended.[10] The patient should be reviewed after 24 hours and a decision to continue or stop neurological observations should be made and documented.

Urgent reassessment and consideration of CT scan is required if there is:

- agitation or abnormal behaviour
- a sustained (for at least 30 minutes) drop of 1 point in GCS (give more weight to a drop of 1 point in the motor response of the GCS score)
- any drop of 3 or more points in the eye-opening or verbal response scores of the GCS score, or 2 or more points in the motor response score
- severe or increasing headache, or persistent vomiting
- new or evolving neurological symptoms or signs, such as pupil inequality or asymmetry of limb or facial movement.

*****If a patient is known to be disoriented at baseline due to a **known** cognitive impairment, GCS 14 can be considered their normal level and neurological observations followed as per GCS 15.

Anticoagulation

Anticoagulation including prophylactic heparin and antiplatelets should be reviewed. A senior decision maker should be involved if there is any doubt, and should undertake a risk–benefit analysis based on the individual patient. See notes on reversal of anticoagulation below (section 6).[11]

Referral

Refer to a neurosurgeon if there are any new and surgically significant abnormalities on imaging (refer to local referral pathway policy). Regardless of imaging, neurosurgical advice should be sought if any of the following is present:

- persisting coma (GCS 8 or less) after initial resuscitation
- unexplained confusion that persists for more than 4 hours
- deterioration in GCS after admission
- progressive focal neurological signs
- a seizure without full recovery; a definite or penetrating injury
- a cerebrospinal fluid leak.[10]

4.2 C-spine

4.2.i History

- Was the fall from height (eg over the rails of a raised bed) or because of syncope?
- Does the patient have a history of spinal fracture, or do they have / are at risk of osteoporosis or other spinal pathology?
- Have you already identified external evidence of head or facial injuries?
- Is the patient complaining of new neck pain?

4.2.ii Examination

- Is there obvious new neck or spinal deformity?
- Palpate for midline tenderness
- Any abnormal neurology?
- If C-spine injury is suspected at this stage using flowchart below (Fig 2) to assist decision, progress to immobilising C-spine and do not move neck further
- Follow flowchart below (Fig 2) – if deemed safe, assess neck movement by asking patient to rotate neck 45° to the right and left.

4.2.iii Management

Follow the flowchart below (Fig 2) to determine whether a CT scan of the C-spine is required. Clear communication with radiology is required to organise appropriate manual handling for an immobilised patient.

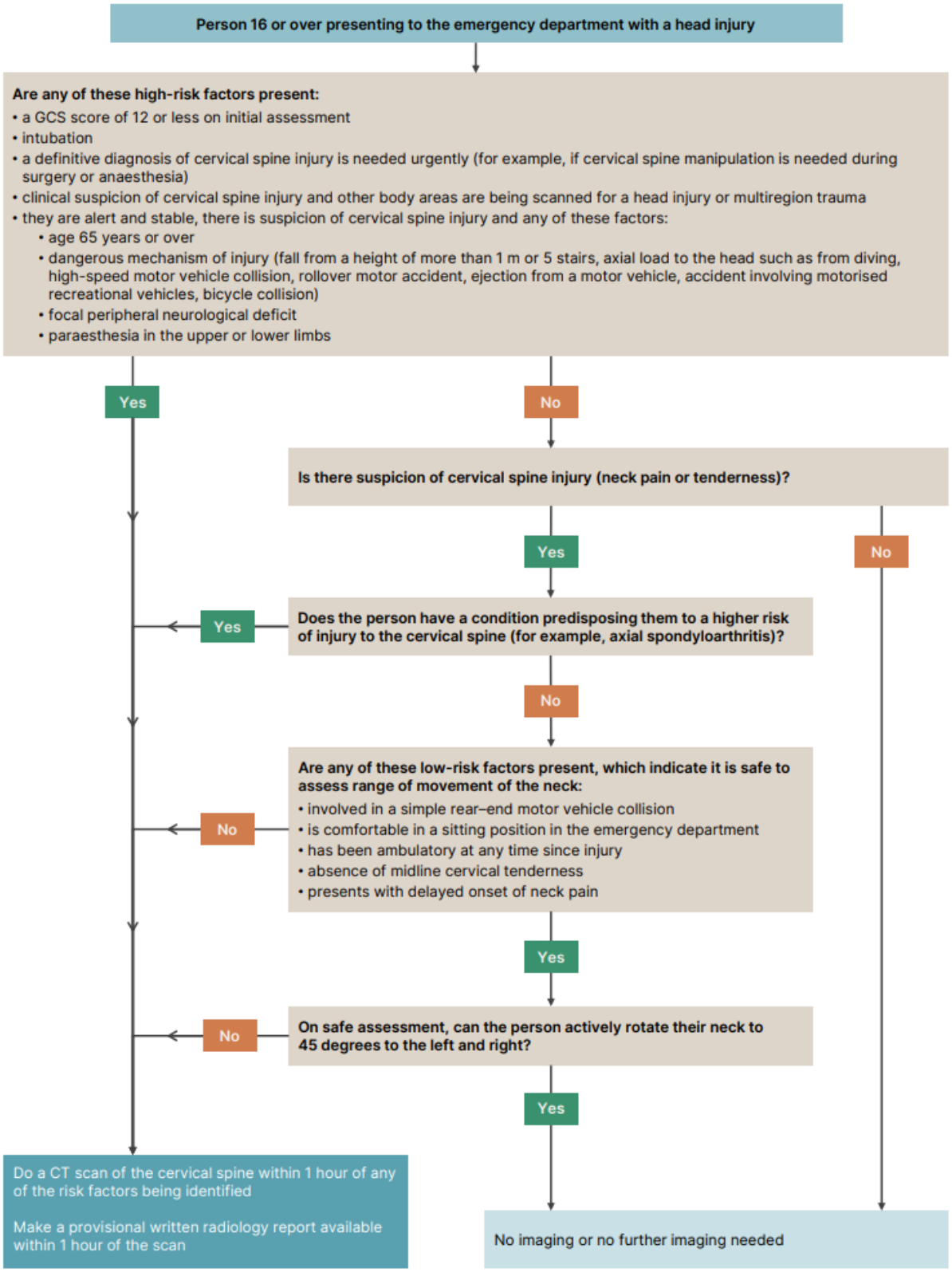


Fig 2: Algorithm for selecting people 16 and over for imaging of the cervical spine

4.3 Thoracic/lumbar spine[12]

4.3.i History

- Was the fall from height (eg over the rails of a raised bed)?
- Does the patient have a history of spinal fracture, or do they have / are at risk of osteoporosis or other spinal pathology?
- Is there a suspected spinal fracture in another region of the spine?
- Are they reporting new pain in thoracic or lumbar spine? Any pain on coughing?
- Are there abnormal neurological symptoms (weakness or numbness/tingling)?

4.3.ii Examination

Examine for abnormal neurology if not already done so (weakness or numbness/tingling, bladder/bowel involvement)

Do not move someone to palpate their spine. There is no longer evidence to support log rolling and palpating spine.[13,14] If you suspect spinal injury from examination so far, keep movement to a minimum, immobilise the spine (see 4.3.iii) and arrange for imaging.

Be aware that to complete a full examination to exclude spinal fractures, the patient should be observed to mobilise (sit, stand, step, assess walking). Look for pain or abnormal neurological symptoms (stop if this occurs). The full assessment may need to be done by the parent MDT, especially if equipment or specialist skills are required to assess safely.

4.3.iii Guidance on immobilisation[12,15]

If a decision is made to immobilise the patient, **you will need help from appropriately trained and experienced staff**. Consider the resources available, for example support may be obtained from trauma teams, orthopaedic doctors, outreach teams or paramedics in the community.

1. When immobilising the spine, tailor the approach to the person's specific circumstances.
2. When carrying out full inline spinal immobilisation in adults, manually stabilise the head with the spine inline using the following stepwise approach:

   Fit an appropriately sized semirigid collar unless contraindicated by:

   - a compromised airway
   - known spinal deformities, such as ankylosing spondylitis (in these cases, keep the spine in the person's current position).

   Reassess the airway after applying the collar.

   Using a log-rolling technique, place and secure the person onto a scoop stretcher.

   Secure the person with head blocks and tape.

   Using local manual handling recommendations, move the patient from the floor to a bed or trolley.

   Patients should not be kept on a scoop stretcher for prolonged periods of time, but consideration is also needed about how to transport the patient to radiology and on and off the scanning table.
3. The use of spinal immobilisation devices may be difficult (for example in people with short or wide necks, or people with a pre-existing deformity) and could be counterproductive (for example increasing pain, worsening neurological signs and symptoms). In uncooperative, agitated or distressed people, think about letting them find a position where they are comfortable with soft padding and tape, eg rolled-up towels. A senior decision maker should be involved and should consider the following:[15]

- Check appropriately fitting collar, consider fitting a soft, padded collar (eg Miami-J)
- Appropriate analgesia has been given
- Delirium management strategies and triggers have been addressed
- Balance of risk/benefits of immobilisation, imaging and sedation following local policies, with careful documentation of decision-making.

Please note, immobilisation practices are becoming increasingly more nuanced and patient centred. Until any new formal guidance is issued, the advice stated here is from NICE and the London Major Trauma System.[10,12,15] To immobilise a patient safely requires up-to-date and regularly practised skills that are not readily available to ward staff, so escalate for help before attempting to do so, keeping movement to a minimum in the interim.

If the patient is immobilised, consideration should be given to how the patient can be transferred to the radiology department and moved on and off the CT scanning table. Once again, appropriate equipment and expertise will be needed.

Assessment, imaging and imaging reporting should be completed within 2 hours of the decision to immobilise. If continued immobilisation is required, rigid collars should be switched to soft, padded collars (such as Miami-J) at the earliest opportunity and movement restrictions should be clearly documented within 1 hour of imaging reporting.[15] This will require appropriate involvement of neurosurgical and/or orthopaedic specialists, depending on local pathways.

Current practice for older, frail patients is to carefully consider the risks and benefits of prolonged immobilisation in the context of a diagnosed C-spine fracture.[15] Risks of dysphagia, pressure ulcers and raised intracranial pressure are associated with prolonged immobilisation.[16] A senior decision maker, in conjunction with the wider MDT, should lead shared decision making with the patient and family.

4.3.iv Investigation

Perform an X-ray as the first-line investigation for people with suspected spinal column injury without abnormal neurological signs or symptoms in the thoracic or lumbosacral regions (T1–L3).

Perform a CT scan if the X-ray is abnormal or there are clinical signs or symptoms of a spinal column injury.

If a new spinal column fracture is confirmed, image the rest of the spinal column.

If there is a neurological abnormality that could be attributable to spinal cord injury, perform MRI after CT, regardless of whether the abnormality is evident on CT.[10]

4.3.v Points to consider

In the case of spinal fractures, be aware that:

- approximately 10% of patients with C-spine fracture have a second, non-contiguous vertebral column fracture, therefore imaging of the entire spine is recommended
- in the context of spinal injury, the ASIA spinal cord injury chart can be used to document the motor and sensory examination
- neurogenic shock: injury to T6 or above can impair descending sympathetic pathways causing hypotension, bradycardia
- spinal shock refers to flaccidity and loss of reflexes that occur immediately after spinal cord injury
- hypoventilation can occur from injury to C3–C5
- the inability to feel pain from a spinal cord injury can mask other significant injuries, such as from a pelvic fracture
- central cord syndrome can occur without bony injury – commonly as a result of a forward fall resulting in facial impact, especially in those with underlying spinal stenosis, common in older fallers.[6]

4.3.vi In a community setting (or setting without access to scoop board, hoist equipment or specialist skills)

Call 999 for an emergency ambulance and report a suspected spinal injury to allow them to prioritise the call appropriately.

While waiting for support, continue with regular ABC, NEWS2 observations, reassure the patient and keep them warm.

Do not try to move the patient with a hoist or flat lifting equipment, as any movement of the spine should be kept to a minimum.

4.4 Chest including clavicles, ribs and sternum

4.4.i History

Was there direct impact onto the chest wall? Is the patient experiencing pain, shortness of breath, hypoxia?

4.4.ii Examination

Observe for:

- increased work of breathing, expansion, asymmetrical or abnormal breathing
- contusions and haematomas
- distended neck veins (can be caused by tension pneumothorax or cardiac tamponade).

Feel for:

- crepitus (indicates subcutaneous emphysema due to pneumothorax), expansion, chest wall tenderness, tracheal deviation.

Percuss: is there hyper- or reduced resonance?

Auscultate: symmetrical air entry throughout? Added sounds? Heart sounds?

4.4.iii Investigation

Consider a CT chest to diagnose rib fractures and lung contusions.

4.4.iv Management

Rib fractures in the older patient should raise significant concern, as the incidence of pneumonia and mortality is significantly higher than in younger patients.[17] Proactive pulmonary hygiene, eg chest physiotherapy within 24 hours,[18] and analgesia are the mainstays of treatment to optimise ventilation and reduce complications. Access to regional or neuroaxial blocks is highly recommended, and therefore referral to pain/anaesthetic services to review the patient should be considered.[19]

Use of risk scoring, such as the Battle score, can help identify those patients requiring a higher level of care and consideration of treatment escalation plan.

Follow local trauma network pathways for management of rib fractures to ensure access to appropriate specialist input.

4.5 Abdomen

4.5.i History

Abdominal injuries are less likely to be a feature of inpatient falls; however, from the findings so far, think about:

- solid organ laceration in the context of lower rib fractures
- bladder and bowel injury from pelvic fractures
- bladder or bowel dysfunction from spinal injury.

4.5.ii Examination

- Bruising including flanks and genital areas may indicate spinal or pelvic fractures or injury to urinary tract, including kidney.
- Check for tenderness, guarding, bowel sounds.
- Look for evidence of acute urinary retention.

4.6 Hip/pelvis

4.6.i History

Is the patient reporting pain in their groin/hip/thigh?

4.6.ii Examination

- Bruising around genitalia, blood at urethral meatus indicating ruptured urethra
- Shortened, externally rotated leg (note: not all patients with fractured neck of femur will present with this finding)
- Gentle palpation of bony pelvis for tenderness
- Ask patient to perform an active straight leg raise
- Assess (if possible without causing pain):
    - external rotation and abduction of each leg
    - pain elicited with rotation of the limb
    - distal pulses and sensation.[20]

If the patient is still on the floor and hip or pelvic fracture is suspected, you will need flat-lifting equipment to transfer the patient onto a bed.

4.6.iii Investigation and management

If a pelvic fracture suspected and there is hypotension, consider an unstable fracture and use of pelvic binder – call for urgent orthopaedic/trauma expertise.

If an isolated injury is suspected, X-ray the pelvis and/or hip. If multiple injuries or unstable pelvic fracture are suspected, perform trauma CT.[21] If clinically suspicious for a hip fracture and the X-ray is normal, consider MRI or CT scan to assess further.[22]

If a fracture is confirmed, refer urgently to orthopaedic services to allow access to specialist review.

A pelvic or sacral insufficiency fracture, which commonly accompanies a simple pubic ramus fracture, will at least cause back pain and may render the pelvis unstable. All patients with fractures of the pelvic ring should undergo review of their imaging and have a documented management plan. All patients who fail to mobilise despite adequate analgesia should be considered for CT scanning within 72 hours of their fall.[15]

Imaging to exclude hip and pelvic fractures is urgent and should not be deferred to working hours. For comparison, emergency department expectations for patients presenting with suspected hip fracture are:

- analgesia within 15 mins if moderate or severe pain and then reassessed within 15 mins of receiving analgesia, then hourly until settled[19]
- X-ray as soon as possible (within 90 mins of arrival)[22]
- consider fascia iliaca block (ortho StR, anaesthetic StR)
- refer to orthopaedic services as soon as possible to ensure prompt surgery (within 36 hours).[23]

If a hip fracture is confirmed, a fascia iliaca block (FIB) is recommended if oral analgesia is insufficient and local resource is available.[23,24] See appendix 3 for guidance on FIB.

4.6.iv In suspected hip/pelvic injury in a community setting (without access to flat lifting equipment)

- Call 999 for an emergency ambulance and report a suspected hip/pelvic fracture.
- Consider keeping the patient comfortable on the floor if ambulance transfer is likely to be rapid, to avoid unnecessary transfers.
- Continue medical assessment (if medical cover is available).
- Consider giving analgesia if ambulance support is likely to take longer than 30 minutes.

If a prolonged wait for ambulance support is anticipated, consider the risks of moving the patient (increased pain) against the risks of a prolonged period on the floor (pressure ulceration, hypothermia, rhabdomyolysis) and, if moving is indicated, arrange to use an alternative safe moving and handling technique to move the patient into bed. In such an event, it may be necessary to use a sling hoist or other lifting device.

4.7 Extremities – bones and joints in all four limbs

4.7.i History

Has the patient reported pain or observed to be protecting use of a limb?

4.7.ii Examination

Look for:

- asymmetry, deformity, swelling, erythema, wounds

Feel for:

- warmth, swelling, tenderness

Movement:

- active movement: ask patient to move
- passive movement: if patient is unable to move, gently move upper and lower limbs to elicit range of movement and any pain
- compare sides, take into account previous limitations and injuries.

In suspected fractures, assess neurovascular status distal to fracture, looking for loss of sensation or weakness, absence or asymmetry of pulses and reflexes, or acute compartment syndrome (in particular in forearm and lower leg injuries).

4.7.iii Investigation

Have a low threshold for ordering X-rays of affected areas, guided by clinical examination. If X-rays are not readily available and uncertainty exists about whether they are required, NICE recommends using a clinical decision rule such as the Ottawa rules:

- **Following an ankle injury,** if there is pain in the malleolar zone, and one of the following:
  - inability to bear weight (walk four steps) immediately after the injury and when examined

- bone tenderness along the distal 6 cm of the posterior edge of the fibula or tip of the lateral malleolus
- bone tenderness along the distal 6 cm of the posterior edge of the tibia or tip of the medial malleolus.

- **Following a foot injury,** if there is pain in the midfoot zone, and one of the following:
  - inability to bear weight (walk four steps) immediately after the injury and when examined
  - bone tenderness at the base of the fifth metatarsal
  - bone tenderness of the navicular bone.

- **Following a knee injury,** if there is one or more of the following:
  - inability to bear weight (walk four steps) at the time of injury and when examined
  - the person is aged 55 years or more
  - tenderness at the head of the fibula
  - isolated tenderness of the patella
  - inability to flex the knee to 90°

- **Following a wrist injury,** if there is:
  - pain or tenderness over the scaphoid bone (palpate at the base of the anatomical snuff box and scaphoid tubercle).

Note: the Ottawa rules may be less applicable in certain clinical situations where clinical judgement should be used, for example in people who:

- are younger than 18 years of age
- are confused, have a cognitive deficit or communication problems, or are intoxicated, as the person's expression or perception of pain can be altered
- have polytrauma, head injury or diminished sensation in the lower extremities (for example, due to neurological deficit)
- have gross swelling making palpation of the area impossible
- are pregnant.

X-ray the joint above and below the suspected injury and refer to orthopaedic services promptly if any fracture is identified or there is any uncertainty interpreting the X-ray.

To complete a full examination and to exclude any bony injuries, the patient's mobility should be assessed. The patient should sit, stand, step, walk, observing for any pain or abnormal neurological symptoms (stop if this occurs). If equipment or specialist skills are required to assess safely, this may need to be done by the parent team.

5. Analgesia

If injury is suspected or diagnosed, appropriate and prompt analgesia is an essential component of the patient's management and should be given within 30 minutes of the fall. Pain scoring to assess severity and response to analgesia should be recorded. Follow local guidelines for pain scoring – using appropriate tools for those with cognitive impairment, eg Abbey pain scale or PAINAD – and for prescribing guidance.

Take into account those patients who are unlikely to ask for analgesia on a PRN basis and consider prescribing regular medication. If opiate-based drugs are used, include laxatives and PRN anti-emetics.

6. Anticoagulation/antiplatelets

Rapidly reverse anticoagulation in patients who have major trauma with haemorrhage or head injury with suspected intracranial haemorrhage, following local haematological policies/advice. Do not reverse anticoagulation in patients who do not have active or suspected bleeding.[21,26–28]

A senior decision maker should be involved in the risk–benefit decision to stop and restart essential anticoagulation or antiplatelets.[11]

If an inpatient fall results in major bleeding or suspected significant intracranial bleed (GCS 12 or less), tranexamic acid may be indicated and trauma/haematological advice should be urgently sought.[10,21]

7. Delirium/dementia

- Assessment for injuries in the context of delirium or dementia is more challenging and requires a meticulous history, examination and period of observation.
- Understand the patient's baseline cognition and function (involving carer/relative for collateral history) and screen for delirium using the 4AT, treating possible causes promptly.
- Use appropriate pain scoring tool, observing for non-verbal signs of pain in accordance with your local policies.
- Have a low threshold for imaging.
- How can the patient be managed safely, eg is enhanced supervision required?
- See section 4.3.iii on immobilising agitated patients.

8. Investigations

8.1 To exclude fracture / significant injury:

- CT in head injury meeting criteria in NICE flowchart (Fig 1)
- CT C-spine meeting criteria in NICE flowchart (Fig 2)

- Spinal injury:[12]
  - In suspected isolated spinal injury (T1–L3) without abnormal neurological signs or symptoms in the thoracic or lumbosacral regions, perform an X-ray as the first-line investigation.
  - Perform CT if the X-ray is abnormal or there are clinical signs or symptoms of a spinal column injury.
  - If a new spinal column fracture is confirmed, image the rest of the spinal column.
  - If there is a neurological abnormality that could be attributable to spinal cord injury, perform MRI after CT, regardless of whether the abnormality is evident on CT.[10]

- Use CT chest for suspected rib fractures.
- Use whole-body CT for blunt major trauma and suspected multiple injuries.[12] The initial scanogram should help identify injuries to extremities, but usually scan from head to mid-thigh. Note that this usually uses IV contrast.
- Order plain X-rays for suspected fractures to extremities.

Be aware that it is easy to miss injuries if there is an obvious painful and distracting injury. Maintaining a systematic method of assessing for injury and careful consideration of the imaging requested will reduce this risk.

Be mindful of expected timescales and communicate these appropriately to relevant staff, the patient and their family (as appropriate). Ensuring appropriate review of results and prompt action is an expected responsibility of the reviewer.

8.2 To exclude medical deterioration and investigate cause for fall

Perform:

- delirium screening (4AT)

Investigations as clinically indicated:

- bloods
- ECG
- ABG (lactate, respiratory function, Hb)
- blood cultures
- bladder scan
- urine culture
- chest X-ray – for medical reasons, not for rib fractures

9. Community/mental health settings

This resource should be used in conjunction with the NAIF post-fall management resource for first responders. Pathways can be adapted locally, depending on the resource available and the training and experience of the HCPs involved. For specific guidance in community settings on head injuries, spinal injuries and pelvic/hip injuries, please refer to individual sections (4.1.iii; 4.3.vi; 4.6.iv).

10. Handover

- Document frequency of observations and ensure that nursing staff are aware of particular signs and symptoms to look for (increased drowsiness, agitation, changes in pupil size or reaction, slurred speech, vomiting, seizures, difficulty swallowing, abnormalities in limb function, pain, bladder or bowel difficulties).
- Be aware that, in older patients, delayed presentation of subdural haemorrhage does not always result in focal neurological signs; cognitive impairment and headache are most common.[11] Have a low threshold for rescanning patients at high risk.
- Document examination findings and any narrative of the fall, thoughts about possible causes or risk factors.
- Complete the appropriate incident reporting forms / post-fall proforma / post-fall debrief.
- Update family/carer and consider duty of candour.
- Ensure prompt review of imaging and involvement of relevant specialties, including trauma nurses or trauma geriatrician if this resource is available.

11. For parent team/MDT

Awareness/acknowledgement of inpatient fall – consideration of causes. MDT Swarm huddle may be appropriate.[29] Be guided by local Patient Safety Incident Response Framework (PSIRF) policy. Consider duty of candour.

- Ensure full assessment of mobility (if the falls review has not already included the assessment) and, if injuries have been sustained, ensure early specialist therapy input.
- Repeat the multifactorial assessment to optimise safe activity (MASA) including medication review, lying/standing blood pressure, continence assessment, vision assessment, mobility assessment, delirium assessment.
- Bone health assessment (eg FRAX score), pressure area assessment, VTE assessment (consider mechanical prophylaxis if heparin contraindicated).
- Be mindful of potential for delayed presentation of injuries. If there is a deterioration in injuries or diagnosis of new injuries, ensure that appropriate teams are involved to confirm whether transfer to an alternative hospital (eg major trauma centre) is required.

- Review neurological observations and clearly document whether they need to stop or continue
- Patients who have sustained a traumatic brain injury should have appropriate occupational therapy and vestibular assessments, avoiding opiates to treat isolated headaches. Written head injury advice should be given on discharge.[10,15]
- Patients with conservatively managed C-spine injuries may not tolerate prolonged use of cervical collars and associated complications. Seek specialist MDT input to assist in making patient-centred decisions regarding continued immobilisation.[15]
- Communicate clearly with orthopaedic teams to obtain prompt weight-bearing decisions, with emphasis on the fewest restrictions possible for older, frailer patients to allow maximum function.
- Consideration may also need to be given to any significant change in the patient's condition that requires review of escalation or resuscitation decisions, adoption of end-of-life care approach or change to longer-term care planning (eg previous discharge decisions, or home support in place).

12. Local policies

This summary of existing guidance will require review at a local level to determine how it aligns with local policies, pathways and resource. Areas of practice around immobilisation and access to prompt imaging, for example, need careful thought.

It is expected that only a small percentage of patients who fall as inpatients will require immobilisation. However, it is advised that local stakeholders discuss how this can be done safely in the event that it is necessary, and that agreed escalation pathways are communicated to the relevant staff performing these assessments.

Potential barriers to prompt imaging include:

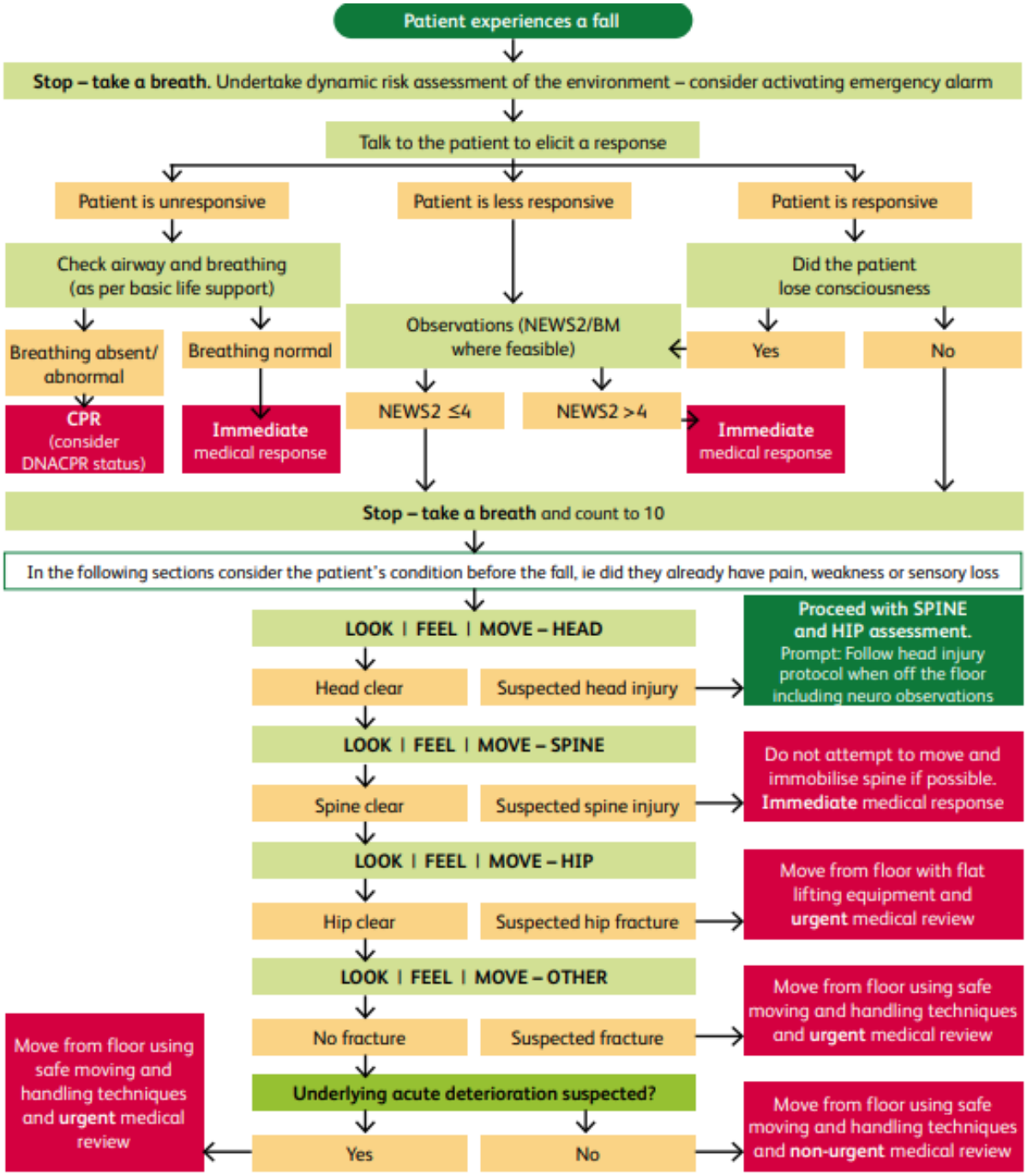
- ordering imaging – who can do this and do they need to personally review the patient?
- radiology – what staffing is available for manual handling out of hours, especially if the patient is immobilised, in pain or delirious?
- Ability (workload, skillset) to chase investigations and review results out of hours.

Local monitoring and quality improvement may be required to address some of these barriers if there is evidence of delays in imaging and diagnosis of injuries.

Appendix

Appendix 1. NAIF first responder resource

with a summary below of manual handling recommendations with suspected injuries

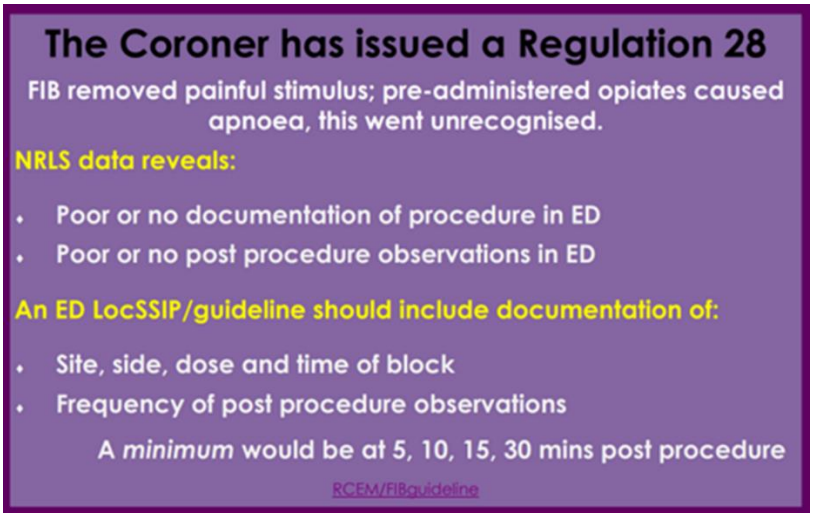


Appendix 2. Glasgow coma scale (GCS)

		Score
Eye opening	Spontaneously	4
	To speech	3
	To pain	2
	None	1
Verbal response	Orientated	5
	Confused	4
	Inappropriate	3
	Incomprehensible	2
	None	1
Motor response	Obeys commands	6
	Localises to pain	5
	Withdraws from pain	4
	Flexion to pain	3
	Extension to pain	2
	None	1

Appendix 3. RCEM guidance on fascia-iliaca blocks[30,31]

- Patients receiving an FIB should be closely monitored during the procedure and after (for a minimum of 1 hour); for both signs of local anaesthetic toxicity* and sedation effects of other analgesia that may have been given.
- Intralipid® should be easily available for treatment of local anaesthetic toxicity in clinical areas where FIB is administered.
- In departments where FIB is administered, there should be a policy available that includes details of competency assessment, monitoring of patients and treatment of complications.
- The use of an invasive procedure checklist and a 'Stop before you block' process is recommended.



***Signs of severe toxicity:[32]**

- Sudden alteration in mental status, severe agitation or loss of consciousness, with or without tonic-clonic convulsions.
- Cardiovascular collapse: sinus bradycardia, conduction blocks, asystole and ventricular tachyarrhythmias may all occur.
- Local anaesthetic toxicity may occur some time after an initial injection.

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- Public Health, NHS England
- Royal College of Emergency Medicine
- Royal College of Nursing
- Royal College of Occupational Therapy
- Royal College of Psychiatry
- South Tees Hospitals NHS Foundation Trust
- St George's University Hospitals NHS Foundation Trust

- **Online resource: post-fall medical examination – a guide for inpatient settings**
- **References**

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