Greater Manchester
Major Trauma Network

TTL Handbook

April 2026

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Introduction

The Greater Manchester Major Trauma Network (GM MTN) comprises of 11 hospital sites at the following locations:

Adult Major Trauma Centres (MTC)
- Manchester Royal Infirmary (MRI)
- Salford Royal Hospital (SRH)

Adult Trauma Units (TU)
- Royal Albert Edward Infirmary (RAEI)
- Stepping Hill Hospital (SHH)
- The Royal Oldham Hospital (TROH)

Adult Local Emergency Hospitals (LEH)
- Fairfield General Hospital (FGH)
- Macclesfield District General Hospital (MDGH)
- North Manchester General Hospital (NMGH)
- Royal Bolton Hospital (RBH)
- Tameside General Hospital (TGH)
- Wythenshawe Hospital (WH)

PAEDIATRIC MTC SERVICES IN GREATER MANCHESTER

The GM MTN and MTCC provide **adult services only**. In this context, this relates to patients aged 16 or over. Children's major trauma services (15 and under) are managed by the Northwest Children's Major Trauma Network.

The North West Children's Major Trauma Network

For information around the management of children (under 16 years) please refer to the paediatric clinical guidelines at:

NW Children's Major Trauma Network website

For further information contact info@nwchildrenstrama.nhs.uk

PRE-HOSPITAL

At scene patients are assessed by the North West Ambulance Service (NWAS).

The NWAS Adult Major Trauma Pathfinder (V2.0 2015) is an assessment tool utilised to assess patients with potential major trauma injuries. There are two patient groups identified in the NWAS Major Trauma pathfinder:

NWAS Major Trauma Pathfinder ***'positive'***

NWAS Major Trauma Pathfinder ***'negative'***

MT ***'positive'*** patients are those identified as having:

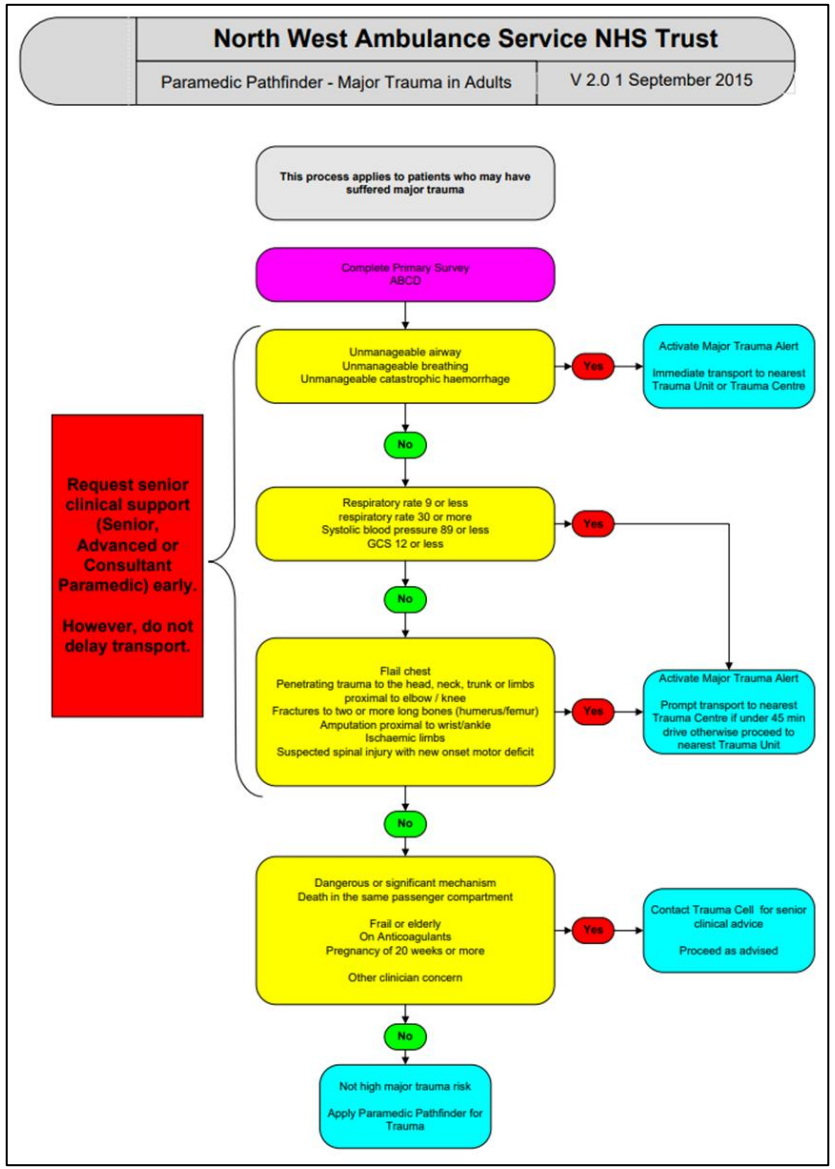
- **Catastrophe:** Unmanageable airway, breathing or circulation (or multiple issues)
- **Anatomy:** Identified anatomical injury presentations (see chart)
- **Physiology:** Physiological observations that are indicative of potentially serious injury (outlined)
- Patients may also be designated as MT 'positive' following discussion between the crew at scene, on-scene clinicians and/or the Complex Incident Hub (CIH) around significance of mechanism, or clinical concern.

These patients should be conveyed directly to a Major Trauma Centre (MTC) from scene.

If there is an immediate, life-threatening concern, these patients may 'Pit Stop' at a Trauma Unit for life-saving interventions if the crew feel this is necessary.

Those assessed as ***'negative'*** are conveyed to the nearest Emergency Department

Frail, older, injured patients should be discussed if there is the potential for serious injury



MT-Adult-Pathfinder-100515.pdf

Below are the contact numbers for the MTC:

Complex Incident Hub (CIH)	01772 867612
Manchester Royal Infirmary (MRI) TTL (Red phone):	0161 276 4012
Salford Royal Hospital (SRH) TTL direct line:	0161 206 2226

If you are awaiting a time-critical secondary transfer to another site, you can contact CIH to advise/notify on the number above. This should only happen for critically ill (life or limb threatened) patients (surgeon waiting)

Please note, the MRI TTL number is for the red standby phone

You may be asked to call back on a different number

In Greater Manchester there are two Adult Major Trauma Centres:

- Manchester Royal Infirmary (MRI)
- Salford Royal Hospital (SRH)

The pre-hospital pathfinder in GM is designed to convey patients to the most appropriate MTC site for the patient's injury. Both sites also act as the nearest hospital for pathfinder negative patients.

This chart provides guidance regarding which MTC site to convey the patient to, however the decision-making process should be made on a case-by-case basis, ensuring that the needs of the patient can be met.

Injury Type	Specialised Services	MTC site
Suspected head injuries (GCS 12 or less), with or without other injuries	Neurosciences	SRH
Isolated thoraco-abdominal injuries (absence of head injury)	Interventional Radiology, vascular surgery, HPB and cardiothoracic specialties	MRI
Penetrating trauma to the 'shorts and T-shirt' distribution area		MRI
Pregnant patient >20 weeks pregnant (including head injuries)	Maternity and neonatal services	MRI
Other polytrauma	Arrangements in place for specialist services to travel to the other MTC site if required	Nearest MTC

Open Lower Limb fractures should be conveyed to the appropriate MTC

BURNS PATIENTS

- There is a separate burns network (Northern Burn Care Network) and separate NWAS Pathfinder/instruction for patients with burns.
- Burns is outwith of the scope of the NHSE Major Trauma Clinical Network Specification.
- **Any suspicion of MT injuries should be conveyed to the appropriate MTC as NWAS MT Pathfinder +ve.**

MAJOR TRAUMA AND BURNS – WHAT'S THE PRIORITY?

If an individual has experienced both major trauma and burns, the **primary focus of treatment** should be managing **major trauma injuries** following the European Trauma Course (ETC) protocol. This involves utilising the **cABCDE** approach, whilst integrating burns care into trauma management.
While **major trauma takes precedence**, important first aid measures for burns should be carried out concurrently with the primary survey:

1. **Appropriate resuscitation**
For major trauma this will usually be blood products; for burns in isolation this will be IV fluids

2. **Active prevention of hypothermia**

3. **Removal of clothing and jewellery –** this helps to prevent further injury and allows for thorough assessment. Remove rings as tissues may swell

4. **Cover the burn –** where possible, cover with Cling Film or clean dressings. This will help to protect the wound and assist with pain relief

Prioritise life-threatening injuries

Once stabilised, attention can be shifted towards managing the burn injury

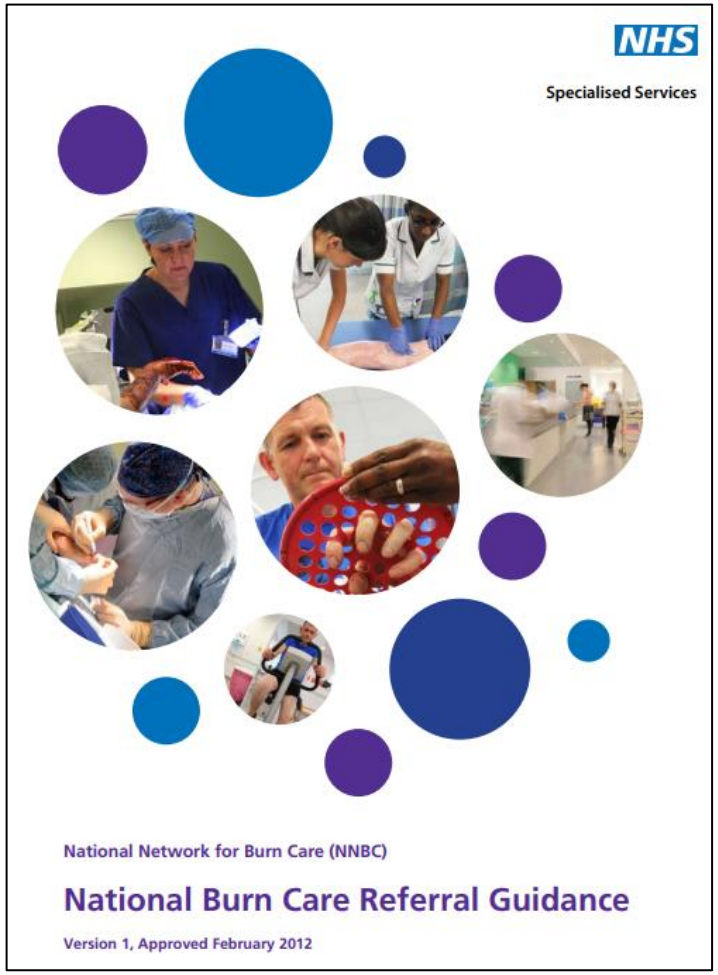
Agree onward treatment plan for injuries

Plan for transfer to a specialised burn centre (if appropriate) as per Northern Burns Network Pathways

NATIONAL BURN CARE REFERRAL GUIDANCE (2012)

The suggested minimum threshold for referral into specialised burn care services can be summarised as:

- All burns ≥2% TBSA in children or ≥3% in adults
- All full thickness burns
- All circumferential burns
- Any burn not healed in 2 weeks
- Any burn with suspicion of non-accidental injury should be referred to a Burn Unit/Centre for expert assessment within 24 hours



You can print a copy of the National Burn Care Referral Guidance here

REQUIREMENTS OF THE MTC TRAUMA TEAM LEADER (TTL)

MTC standard D15/S/a 19-001B

- There must be a medical consultant **trauma team leader** on site 24/7 at the MTC to lead the trauma team and available in 5 minutes of arrival of the patient
- The MTC trauma team leader should have an **agreed list of responsibilities** and have attended **trauma team leader training**

Provider status requirements

- Trauma Team Leaders (TTLs) at GM MTC sites should hold **ATLS and APLS provider status as a minimum.**

All consultant-level MTC Trauma Team Leaders should be able to perform the following emergency procedures when required:

- Thoracostomies
- Thoracotomy
- Lateral Canthotomy
- Resuscitative Hysterotomy
- Front of Neck Access (FONA)

This ensures that every trauma team can provide **time-critical interventions** to the sickest patients, as necessary without delay.

For Consultants that have not completed training in the UK (or have not completed EM training) separate training should be sought to align to the standards outlined in the Emergency Medicine Certificate of Completion of Training (EM CCT).
The full RCEM Curriculum (2025 update) document can be viewed **here**

ABOUT THE MAJOR TRAUMA CENTRE

- The MTC TTL should be aware of the distribution of specialist services throughout the MTCC and should assess on a case-by-case basis which receiving site is the appropriate destination.

- The Major Trauma Centre (MTC) operates as a hub for severely injured patients.

- Not all patients will require transfer to the MTC, but those that require specialist services should be considered for transfer.

- The injury profile of the patient and potential interventions will determine how rapidly the patient needs to be conveyed. Some injuries may require immediate surgical intervention, whereas others e.g. patients with rib fractures can be admitted locally (ward or ICU) to maximise non-operative management (analgesia, observation and physio) before being considered discussion around rib fixation.

- All sites see patients with major trauma injuries; not all patients will require transfer.

- It is imperative that appropriate local agreements are in are in place for all sites that outline the arrangements for patient groups (i.e. parent teams for head injuries, chest injuries etc.)

REFERRALS

- For patients with several injuries, the MTC TTL should manage decision making regarding the acceptance of injured patients; Directing callers to contact multiple specialties should be avoided wherever possible (exception Interventional Radiology, see below)

- TTL-TTL referrals may take place that require consideration of multiple injuries. Patients with polytrauma injuries should be **considered** for transfer to the MTC, even with no operative requirement

- Please consider utilising the Salford Patient Pass

- Any patient that may potentially require Interventional Radiology or immediate vascular surgery should be discussed with the MRI TTL. Callers may be directed to liaise with IR directly who will assess if a lesion is suitable for IR

- If cardiothoracic advice is required, the team at MRI should be contacted 24/7 (Switchboard 0161 2761234)

- The MTC TTL should be familiar with the GM Clinical Guidelines. You can view these **here**

- The MTC TTL should be familiar with the GM Pathways. You can view these **here**

TRAUMA UNITS (TU)

There are three designated trauma units (TUs) in the GM Major Trauma Network:

- Royal Albert Edward Infirmary (Wigan)
- Stepping Hill Hospital (Stockport)
- The Royal Oldham Hospital

Trauma Units provide an inbound ‘staging post’ function for patients who have catastrophic injuries (compromised airways or exsanguinating haemorrhage) who require resuscitation and stabilisation but are too far from an MTC to be conveyed there directly or require immediate intervention.

Occurring in a small number of cases (due the geography of GM), these are known as ‘pit stop’ patients, the management of these patients at the TU should be limited to life-saving interventions that will maximise stabilisation with the aim of rapid transfer onwards to the MTC for definitive treatment.

Trauma Units have 24/7 access to theatre. Trauma Unit TTLs should be able to perform emergency procedures such as resuscitative thoracotomy, lateral canthotomy and resuscitative hysterotomy.

You can find more information on our website **here**

TRAUMA UNITS (TU)

- On rare occasions Pit Stop patients may be deemed too unstable for onward travel to the MTC.
- Trauma Units are resourced to provide 24/7 access to surgical services and emergency theatre may be the only suitable option to stabilise a patient. This is referred to as ‘damage control surgery’ (DCS).
- Patients should be assessed on a case-by-case basis and advice from the MTC should be sought in these cases.

The GM Clinical Guidelines provide guidance on specific injuries and can be viewed

here (GM Clinical Guidelines v4.1 December 2025)

- Trauma units will also receive patients who were triage negative at the scene. Sites may also receive self-presenting patients who would qualify as NWAS triage positive, if NWAS were involved. Patients should be assessed and imaged as appropriate, and the Injured Patient Pathway should be followed.
- The GM Injured Patient Pathway should be utilised and TTL-TTL discussion should occur with the appropriate MTC site.
- Trauma Units also play a vital role by repatriating patients with major trauma from the MTC sites when they no longer require MTC level care.

LOCAL EMERGENCY HOSPITALS (LEH)

There are six local emergency hospital sites in the GM major trauma network:

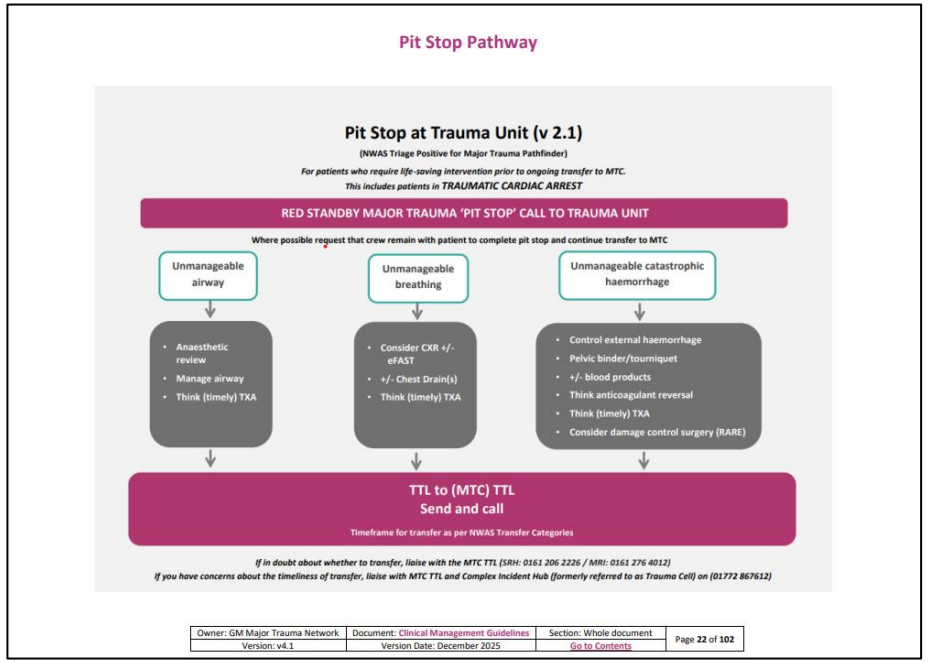
- Fairfield General Hospital
- Macclesfield General Hospital
- North Manchester General Hospital
- Royal Bolton Hospital
- Tameside General Hospital
- Wythenshawe Hospital

- LEHs have type 1 emergency departments, however, within the GM Network, should **not** routinely receive NWAS Major Trauma Pathfinder **positive** patients. LEH sites may receive self-presenting patients who would qualify as NWAS triage positive. Patients assessed as NWAS Major Trauma Pathfinder 'negative' at scene are conveyed to the nearest hospital site.
- Therefore, sites should have processes in place to recognise patients with occult (or obvious) injuries who are beyond their capability to treat and be able to transfer them rapidly to the MTC.
- LEHs also play a vital role by repatriating patients with major trauma from the MTC sites when they no longer require MTC level care.

GREATER MANCHESTER MAJOR TRAUMA NETWORK PATHWAYS

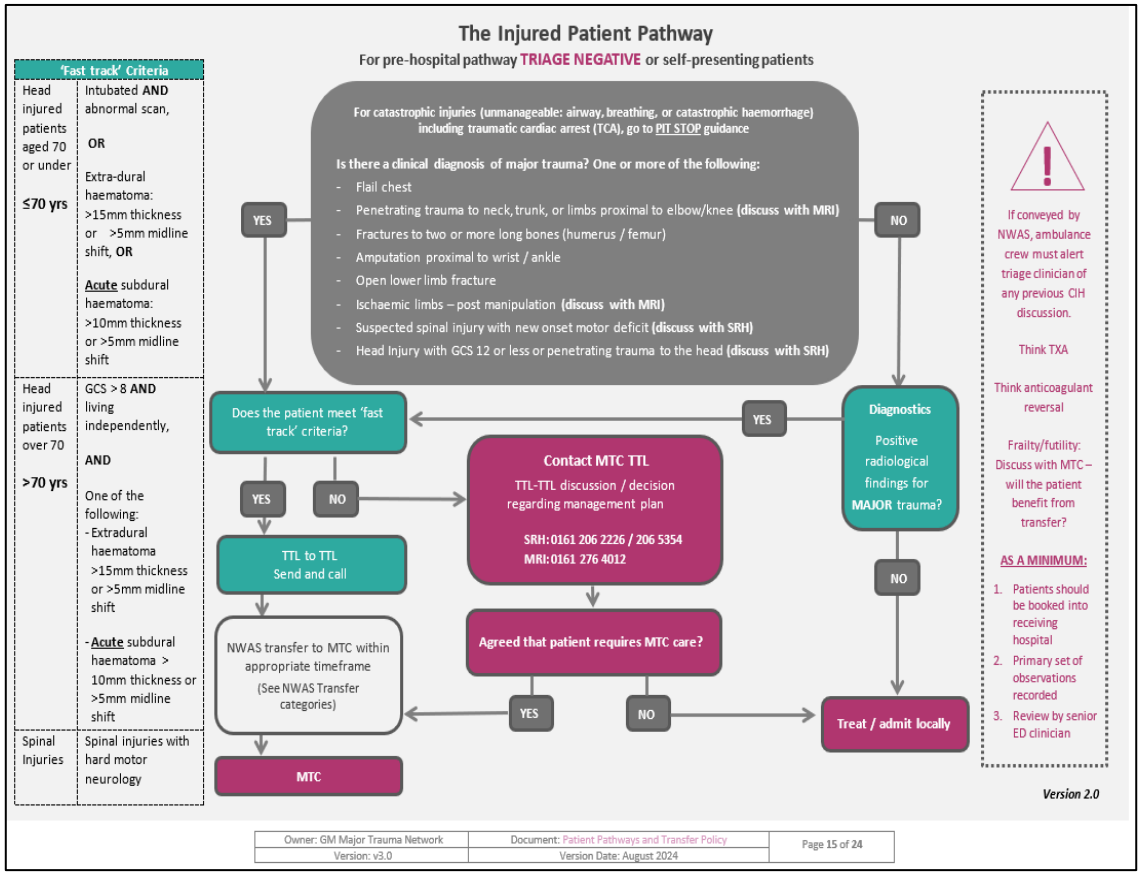
GM Pit Stop Pathway 2025 (v2.1)

- For critically injured patients that are too unwell to travel directly to the MTC and require a Trauma Unit to provide life-saving intervention
- Essential interventions only. Don't delay transfer.
- Wherever possible, patients should remain on the ambulance trolley. The same crew should continue the transfer to the MTC
- Once stabilised, the patient should be transferred on a **'send and call'**. Pit Stop patients should be **automatically transferred**.



You can print a copy of the GM Pit Stop Pathway here (GM Pit Stop Pathway v2.1 December 2025)

GM Injured Patient Pathway 2024 (v 2.0)

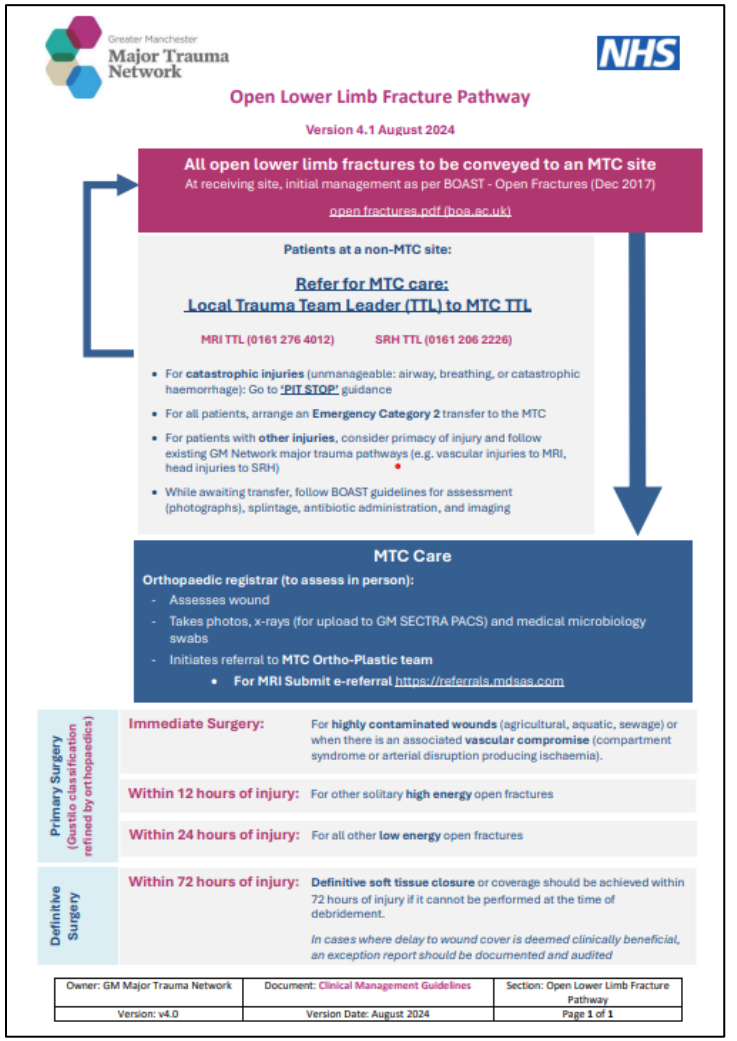


You can print a copy of the GM Injured Patient Pathway **here**

- For NWAS conveyed (assessed as 'triage negative' on scene by NWAS) or self-presenting patients that have major trauma injuries following CT imaging
- Patients should receive timely TXA and anticoagulant reversal (if necessary)
- Investigations should be carried out and the receiving site TTL should discuss with the MTC TTL
- MTC TTLs are the decision makers regarding decision to transfer
- If it is felt that a patient requires additional intervention (neuroprotective measures) this should be discussed, agreed and documented

GM Open Lower Limb Pathway 2024 (v4.1)

- Utilised for all patients with an open lower limb (OLL) fracture (long bones, hind and mid foot. Forefoot excluded)
- Patients should be conveyed directly to the MTC from scene
- Those that present to non-MTC sites should be transferred to the MTC
- BOA guidelines should be followed, and the patient should be referred to the MTC (TTL-TTL) and accepted for transfer



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Open Lower Limb Fracture Pathway

Version 4.1 August 2024

All open lower limb fractures to be conveyed to an MTC site

At receiving site, initial management as per BOAST - Open Fractures (Dec 2017)

open fractures.pdf (boa.ac.uk)

Patients at a non-MTC site:

Refer for MTC care:
Local Trauma Team Leader (TTL) to MTC TTL

MRI TTL (0161 276 4012) SRH TTL (0161 206 2226)

- For **catastrophic injuries** (unmanageable: airway, breathing, or catastrophic haemorrhage): Go to **'PIT STOP'** guidance
- For all patients, arrange an **Emergency Category 2** transfer to the MTC
- For patients with **other injuries**, consider primacy of injury and follow existing GM Network major trauma pathways (e.g. vascular injuries to MRI, head injuries to SRH)
- While awaiting transfer, follow BOAST guidelines for assessment (photographs), splintage, antibiotic administration, and imaging

MTC Care

Orthopaedic registrar (to assess in person):

- Assesses wound
- Takes photos, x-rays (for upload to GM SECTRA PACS) and medical microbiology swabs
- Initiates referral to **MTC Ortho-Plastic team**
  - **For MRI Submit e-referral** https://referrals.mdsas.com

Primary Surgery (Gustilo classification refined by orthopaedics)

Immediate Surgery:	For **highly contaminated wounds** (agricultural, aquatic, sewage) or when there is an associated **vascular compromise** (compartment syndrome or arterial disruption producing ischaemia).
Within 12 hours of injury:	For other solitary **high energy** open fractures
Within 24 hours of injury:	For all other **low energy** open fractures

Definitive Surgery

Within 72 hours of injury:	**Definitive soft tissue closure** or coverage should be achieved within 72 hours of injury if it cannot be performed at the time of debridement. *In cases where delay to wound cover is deemed clinically beneficial, an exception report should be documented and audited*

Owner: GM Major Trauma Network	Document: Clinical Management Guidelines	Section: Open Lower Limb Fracture Pathway
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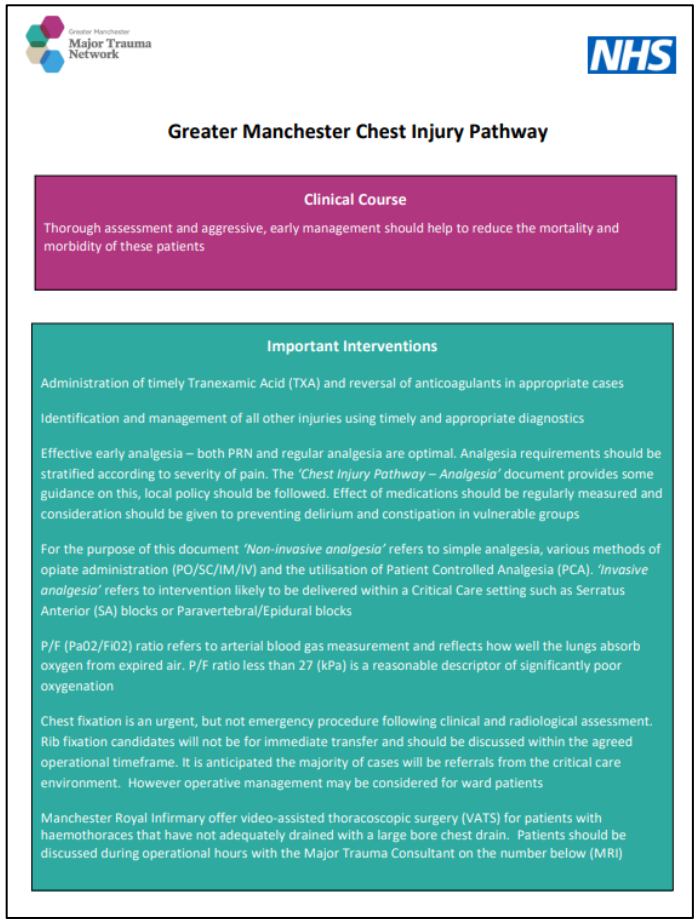
You can print a copy of the GM Open Lower Limb Pathway here

GM Chest Injury Pathway 2024 (v1.1)



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Greater Manchester Chest Injury Pathway

Clinical Course

Thorough assessment and aggressive, early management should help to reduce the mortality and morbidity of these patients

Important Interventions

Administration of timely Tranexamic Acid (TXA) and reversal of anticoagulants in appropriate cases

Identification and management of all other injuries using timely and appropriate diagnostics

Effective early analgesia – both PRN and regular analgesia are optimal. Analgesia requirements should be stratified according to severity of pain. The *'Chest Injury Pathway – Analgesia'* document provides some guidance on this, local policy should be followed. Effect of medications should be regularly measured and consideration should be given to preventing delirium and constipation in vulnerable groups

For the purpose of this document *'Non-invasive analgesia'* refers to simple analgesia, various methods of opiate administration (PO/SC/IM/IV) and the utilisation of Patient Controlled Analgesia (PCA). *'Invasive analgesia'* refers to intervention likely to be delivered within a Critical Care setting such as Serratus Anterior (SA) blocks or Paravertebral/Epidural blocks

P/F (Pa02/Fi02) ratio refers to arterial blood gas measurement and reflects how well the lungs absorb oxygen from expired air. P/F ratio less than 27 (kPa) is a reasonable descriptor of significantly poor oxygenation

Chest fixation is an urgent, but not emergency procedure following clinical and radiological assessment. Rib fixation candidates will not be for immediate transfer and should be discussed within the agreed operational timeframe. It is anticipated the majority of cases will be referrals from the critical care environment. However operative management may be considered for ward patients

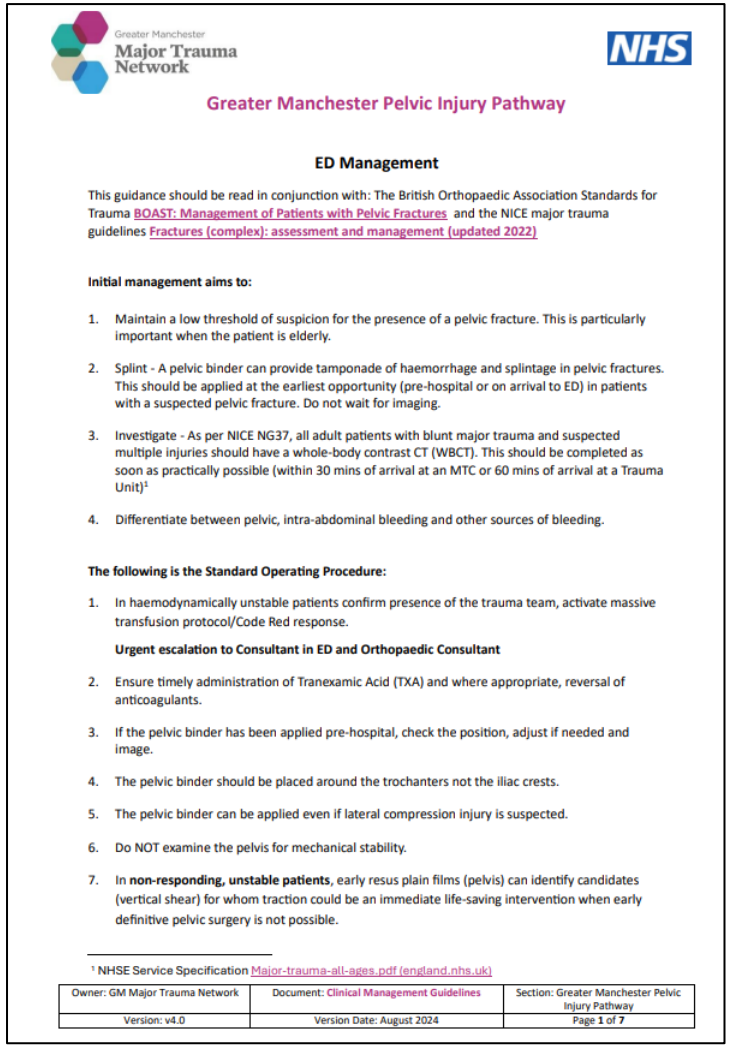
Manchester Royal Infirmary offer video-assisted thoracoscopic surgery (VATS) for patients with haemothoraces that have not adequately drained with a large bore chest drain. Patients should be discussed during operational hours with the Major Trauma Consultant on the number below (MRI)

You can print a copy of the GM Chest Injury Pathway **here**

- Used to guide decisions around imaging and next steps for patients that present with chest injuries.
- 'Senior ED concerns' is a valid reason to request a CT scan for any patient. CT scans can inform the ongoing management of a patient and are preferable to multiple X-Rays.
- Most patients will not require transfer to the MTC for care. It is anticipated that most patients will be locally admitted for analgesia and prevention of complications. Each hospital site should have suitable arrangements in place (parent team and appropriate wards) to care for this patient group.
- Regular, appropriate analgesia should enable an effective cough and deep breathing. Patients should be encouraged to take 3 deep breaths and 3 deep coughs an hour and referral to physio and pain teams is encouraged. Consider SA blocks or epidural management.
- Managing chest injuries in older patients can be complex. Care should be given to avoid delirium, and advice can be sought from a pharmacist or frailty team.

GM Pelvic Injury Pathway 2024 (v1.0)

- Stratifies injury profiles and directs users to consider management based on CT findings.
- Any uncontrolled bleeding/instability should trigger a Major Haemorrhage Protocol (MHP) activation and immediate placement of a pelvic binder. Rapid transfer to local theatre for damage control surgery (DCS) may be required (rare) if the patient is unstable and the source of bleeding is unknown.
- Transfer to emergency theatre can happen with/without a CT scan.
- For patients being considered for TTL transfer, consider primacy of other injuries.



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Greater Manchester Pelvic Injury Pathway

ED Management

This guidance should be read in conjunction with: The British Orthopaedic Association Standards for Trauma BOAST: Management of Patients with Pelvic Fractures and the NICE major trauma guidelines Fractures (complex): assessment and management (updated 2022)

Initial management aims to:

1. Maintain a low threshold of suspicion for the presence of a pelvic fracture. This is particularly important when the patient is elderly.
2. Splint - A pelvic binder can provide tamponade of haemorrhage and splintage in pelvic fractures. This should be applied at the earliest opportunity (pre-hospital or on arrival to ED) in patients with a suspected pelvic fracture. Do not wait for imaging.
3. Investigate - As per NICE NG37, all adult patients with blunt major trauma and suspected multiple injuries should have a whole-body contrast CT (WBCT). This should be completed as soon as practically possible (within 30 mins of arrival at an MTC or 60 mins of arrival at a Trauma Unit)[1]
4. Differentiate between pelvic, intra-abdominal bleeding and other sources of bleeding.

The following is the Standard Operating Procedure:

1. In haemodynamically unstable patients confirm presence of the trauma team, activate massive transfusion protocol/Code Red response.

   Urgent escalation to Consultant in ED and Orthopaedic Consultant
2. Ensure timely administration of Tranexamic Acid (TXA) and where appropriate, reversal of anticoagulants.
3. If the pelvic binder has been applied pre-hospital, check the position, adjust if needed and image.
4. The pelvic binder should be placed around the trochanters not the iliac crests.
5. The pelvic binder can be applied even if lateral compression injury is suspected.
6. Do NOT examine the pelvis for mechanical stability.
7. In **non-responding, unstable patients**, early resus plain films (pelvis) can identify candidates (vertical shear) for whom traction could be an immediate life-saving intervention when early definitive pelvic surgery is not possible.

[1] NHSE Service Specification Major-trauma-all-ages.pdf (england.nhs.uk)

Owner: GM Major Trauma Network	Document: Clinical Management Guidelines	Section: Greater Manchester Pelvic Injury Pathway
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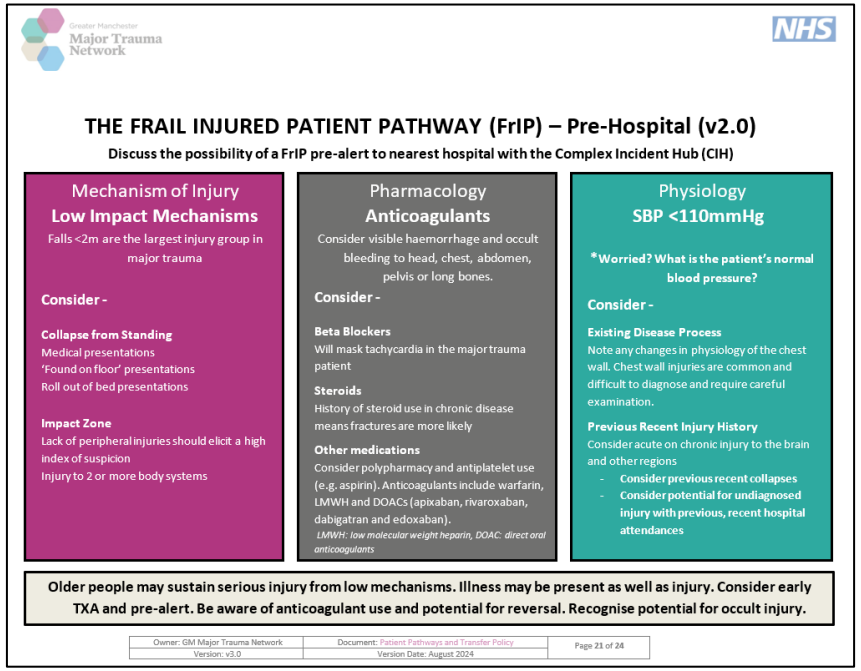
You can print a copy of the GM Pelvic Injury Pathway **here**

GM Frail Injured Patient (FrIP) Pathway



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THE FRAIL INJURED PATIENT PATHWAY (FrIP) – Pre-Hospital (v2.0)

Discuss the possibility of a FrIP pre-alert to nearest hospital with the Complex Incident Hub (CIH)

Mechanism of Injury
Low Impact Mechanisms
Falls <2m are the largest injury group in major trauma

Consider -

Collapse from Standing
Medical presentations
'Found on floor' presentations
Roll out of bed presentations

Impact Zone
Lack of peripheral injuries should elicit a high index of suspicion
Injury to 2 or more body systems

Pharmacology
Anticoagulants
Consider visible haemorrhage and occult bleeding to head, chest, abdomen, pelvis or long bones.

Consider -

Beta Blockers
Will mask tachycardia in the major trauma patient

Steroids
History of steroid use in chronic disease means fractures are more likely

Other medications
Consider polypharmacy and antiplatelet use (e.g. aspirin). Anticoagulants include warfarin, LMWH and DOACs (apixaban, rivaroxaban, dabigatran and edoxaban).
LMWH: low molecular weight heparin, DOAC: direct oral anticoagulants

Physiology
SBP <110mmHg

***Worried? What is the patient's normal blood pressure?**

Consider -

Existing Disease Process
Note any changes in physiology of the chest wall. Chest wall injuries are common and difficult to diagnose and require careful examination.

Previous Recent Injury History
Consider acute on chronic injury to the brain and other regions
- **Consider previous recent collapses**
- **Consider potential for undiagnosed injury with previous, recent hospital attendances**

Older people may sustain serious injury from low mechanisms. Illness may be present as well as injury. Consider early TXA and pre-alert. Be aware of anticoagulant use and potential for reversal. Recognise potential for occult injury.

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You can print a copy of the GM Frail Injured Patient Pathway **here**

- Utilised for older, frail patients where there is a suspicion of major trauma injury (but the patient has been assessed as NWAS MT Pathfinder -ve).
- The pathway sits beneath the NWAS Major Trauma Pathfinder to act as a secondary method of capture as older patients with low mechanisms do not often trigger as MT +ve.
- The Frail Injured Patient Pathway (FrIP) can also be utilised at triage to alert clinicians to patients that may require senior review and consideration of early CT scan.
- Patients on a 'Frail Injured Patient (FrIP) pre-alert' will be taken to the nearest ED. These alerts can be identified on the One Response system. MTCs are also 'local hospital' sites for these patients.
- CT scans are preferable to X-Rays and can inform referral, treatment or discussion (including discussion around futility).
- Patients can be ill as well as injured. Any patient 'found on floor' or 'collapsed' should be considered as potentially injured and appropriate imaging should be arranged.

OLDER PEOPLE AND MAJOR TRAUMA

- Patients are often ill as well as injured. Patient may present as generally unwell.
- Any frail patient that has been found on floor, fallen from standing etc may be concealing serious injury
- Older and/or frail patients are complex to assess and disguise occult injury well and, due to physiological and hormonal changes, have different presentation and responses to injury.
- Older patients rarely present as hypotensive. A systolic BP <110 mmHg is considered hypotension in an older patient
- Older patients often present with a low mechanism of injury. Fall from standing, roll out of bed or slipped from a chair can all result in serious injury
- CT scans guide decision making. CT imaging can influence treatment options, speciality referral, transfer to the MTC, and discussions around ceilings of care.

OLDER PEOPLE AND MAJOR TRAUMA

- The GM Major Trauma Network has developed an aide memoire ‘Meet Harry’.
- The infographic is used by both NWAS and in ED triage to support decision making when assessing older patients.
- Any patient found on the floor should be carefully examined for signs of traumatic injury.
- Frailty scoring can assist in evaluating patients needs.
- Patients are at risk of decondition during hospital stays. Preventing delirium and dehydration are important when caring for older patients.
- Frailty teams are available to support the care of older patients and can give advice and support for this complex group.
- You can print a copy of the Harry poster **here.**

GM PATHWAY GUIDANCE

It is the responsibility of the MTC TTL to direct the call to the most appropriate site for the patients needs

Spinal injury with a new onset of hard motor neurology (less than 5/5 power in any limb) should be directed to Salford Royal Hospital. Suspected spinal injury with **NEW** onset of hard motor neurology is featured in the ***automatic acceptance criteria*** on the **GM Injured Patient Pathway**

Penetrating trauma should be discussed with Manchester Royal Infirmary TTL (MRI). If there is penetrating trauma to the head, you may be asked to discuss with the SRH TTL.

All pregnant patients (>20 weeks) should be conveyed to MRI. If necessary, a neurosurgical team will attend MRI ED with a 'grab bag' of equipment from SRH.

Patients that have undergone a resuscitative thoracotomy/damage control surgery (DCS) at a receiving hospital should NOT be routinely transferred to the MTC until a plan has been agreed with relevant speciality. Patients should be medically optimised in an intensive care setting and ongoing stabilisation should take place following damage control surgery. Cardiothoracic services at MRI should be contacted to advise on management.

Patients meeting the 'fast track criteria' should be conveyed to SRH. A call to give an ATMIST handover should be made when the patient is en route to the specialist site. The receiving site should not decline to accept this patient group.

HEAD INJURY GUIDANCE – MANAGEMENT WITH REDUCED GCS*

Maintaining haemodynamic stability and avoiding hypoxia during intubation is essential to minimise secondary brain injury.

Document GCS (including a breakdown of component parts) and pupil size/reactivity prior to induction. Look for and treat seizures. Benzodiazepines are first line treatment.

Avoid hypoxia (maintain PaCO2 4.5 – 5.0kPa).
If in doubt, intubate. Arrange transfer process (NWAS ambulance and appropriate escort) simultaneously with clinical management.

The endotracheal tube should be secured in a way that avoids obstruction of cerebral venous drainage; ties or similar can be used provided they can be secured in a way that protects the airway but does not impede cerebral venous outflow.
Maintain strict neutral alignment of head, neck and thorax to promote cerebral venous drainage.

If intracranial bleeding, warfarin must (almost always) be reversed in the referring hospital. Wherever possible DOACs should also be reversed prior to transfer, following local protocols.

Call Salford Royal Hospital Emergency Department Resus on 0161 2061957 to inform them of your departure and expected arrival time.

*Taken from the Inter-Hospital Transfer of the Critically Ill Adult with Acute Brain Injury in Greater Manchester document (2024)

AREAS OF CAUTION

The points below relate to incident reports submitted to the GM MT Network.
In all cases the patients were assessed as NWAS MT Pathfinder negative at scene and conveyed to the nearest hospital site

Equine Trauma - if a fall from a horse has been broken by a fence, wall or other hard object then consider the potential for visceral injury. Falls at speed can be significant.

Dangerous or significant mechanism – a low threshold for CT is advised. Often patients are only MT –ve because their observations at scene were within normal limits.

E-Scooters and E-Bikes – can cause significant harm and often travel at speed with no head protection.

Young people compensate – have a lower threshold for CT and consider the potential of visceral injury depending on the impact zone.

Signs of shock – recognition and treatment should be simultaneous. Consider signs of bleeding and do not wait for hypotension before blood product administration. Hypotension in the presence of traumatic injury is shock until proven otherwise and hypotension is a late sign of hypovolaemia.

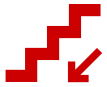
AREAS OF CAUTION (CONT.)

Older patients – an older patient with a BP of <110mmHg is considered hypotensive.
Have a low threshold for CT in older patients.

Anticoagulant medication – patients on these medications present particular risk.
Consider timely reversal, impact zone and CT scan rather than X-Rays as this could change management.

Reduced GCS – Avoid tethering bias and the assumptions of others, especially in vulnerable groups.

Falls >2m – depending on the impact zone these can be significant (even in a walking and talking patient). Consider CT scans over X-Rays.



Fall down full flights of stairs – consider the potential injuries following a fall. Where are the signs of injury? Is there an absence of peripheral injuries? Where is the impact zone? (head, spine, chest, pelvis).

BEFORE YOU..

RECEIVE TRAUMA CASES

PREPARATION AND COMMUNICATION

As the TTL your message needs to be heard and understood. This begins with preparation.

Prepare environment/workforce – ensure your team know what is needed and prepare for worst case scenario. Organise roles, responsibilities and tasks

On arrival – hands-off handover to establish history, interventions and other pieces of vital information

Agree priority actions to stabilise, in rare cases this may be straight to theatre. Ensure senior decision makers are aware and involved

Consider bleeding as a first step – TXA, anticoagulant reversal, administration of blood products, potential for MHP activation and appropriate imaging

BEFORE YOU..

DISCUSS WITH THE MTC TTL

GUIDANCE FOR REFERRING TTLS WHEN CONSIDERING REFERRALS

Are you speaking to the correct site? Immediate concerns around ongoing haemorrhage should be directed to the MRI TTL (may require timely IR)

The MTC TTL needs to understand the reason for the call. Is it for advice or referral?

Prior to referral, a Clinical Frailty Score (CFS) for appropriate patients can assist in assessing if transfer to the MTC is in the patient's best interests. Consider frailty and futility. Transfer should be in the patient's best interest

What has prompted the call? Is it the requirement for specialist MTC care or is it concern around multiple injuries?

All sites will admit 'major trauma'. Combination of injuries (resulting in the ISS >15) and lack of cohorted MT patients present challenges to local sites. Only patients that require MTC specific expertise should be referred

All open lower limb fractures should be conveyed to the MTC. Consider other injuries when referring and speak to the most appropriate site

BEFORE YOU..

TRANSFER TO THE MTC

PREPARATIONS PRIOR TO TRANSFER TO THE MTC

Ensure all time critical interventions have been completed prior to transfer (such as reversal of anticoagulants)

Ensure all documentation is ready and complete

Ensure you have the appropriate escort to accompany the patient

Contact the Complex Incident Hub to inform them of the trauma transfer if the patient is a time critical transfer (surgeon waiting)

Ensure the MTC knows that the patient is en route – call the MTC TTL

FOR MTCS

POINTS TO CONSIDER WHEN DISCUSSING REFERRALS

Remember the human factors – people are largely asking for help

MTC TTLs should not instruct multiple consultant-consultant referrals for specialty discussions. The MTC TTL should be the gatekeeper and make enquiries wherever possible

It is important to understand that things happen much slower at a non-MTC site, this includes obtaining imaging and reports. Consider what is necessary to inform decision making

Pit Stop patients will be conveyed to the MTC following **immediate life-saving** interventions only. It is helpful to 'pull' these patients and attempt to minimise any delays. It is not necessary to obtain imaging prior to onward travel

If the patient should have been a 'send and call' accept the patient!

Consider utilising Patient Pass TTL Referral to document injuries when referring to SRH **https://patientpass.srft.nhs.uk** . MRI TTLs can open a Hive document to document the discussion