Greater Manchester Major Trauma Network

Adult Major Trauma Patient Pathways and Transfer Policies

1. Introduction

This document describes the patient pathways and transfer protocols that should be followed within the Greater Manchester Major Trauma Network (GM MTN). It relates to the following scenarios:

- Primary transfer (from scene)
- Secondary transfer (inter-hospital transfer from initial site to the Major Trauma Centre)
    - Acute secondary transfer ('pit stop' scenario for patients with immediate life threatening injuries)
    - Urgent secondary transfer
- Transfer of critically ill patients
- Reverse Transfers (repatriations)

2. Primary Transfer

a. Pre-hospital major trauma triage tool

Primary transfer is the transfer of a patient **from the scene** of the incident to the most appropriate care facility. In order to deliver appropriate triage at the pre-hospital stage and to identify the optimal destination, the North West Ambulance Service NHS Trust (NWAS) has developed a triage tool, **'Paramedic Pathfinder – Major Trauma in Adults'.** This has been in use since April 2012 (Version 1.2, October 2011), and was updated and re-issued in September 2015 (Version 2.0, September 2015).

All eligible front-line staff members have been trained in the use of the major trauma pathfinder tool. NWAS has also established a 24/7 Trauma Cell. This cell provides support to staff when making decisions about the appropriate destination for patients falling into the major trauma category. It ensures correct resources are dispatched and that receiving trauma centres are fully aware of the patient condition in time for the patient arrival.

Please note that there are separate pathfinders for children, burns injuries, and non-major trauma

The **major trauma pathfinder** is divided into four main categories:

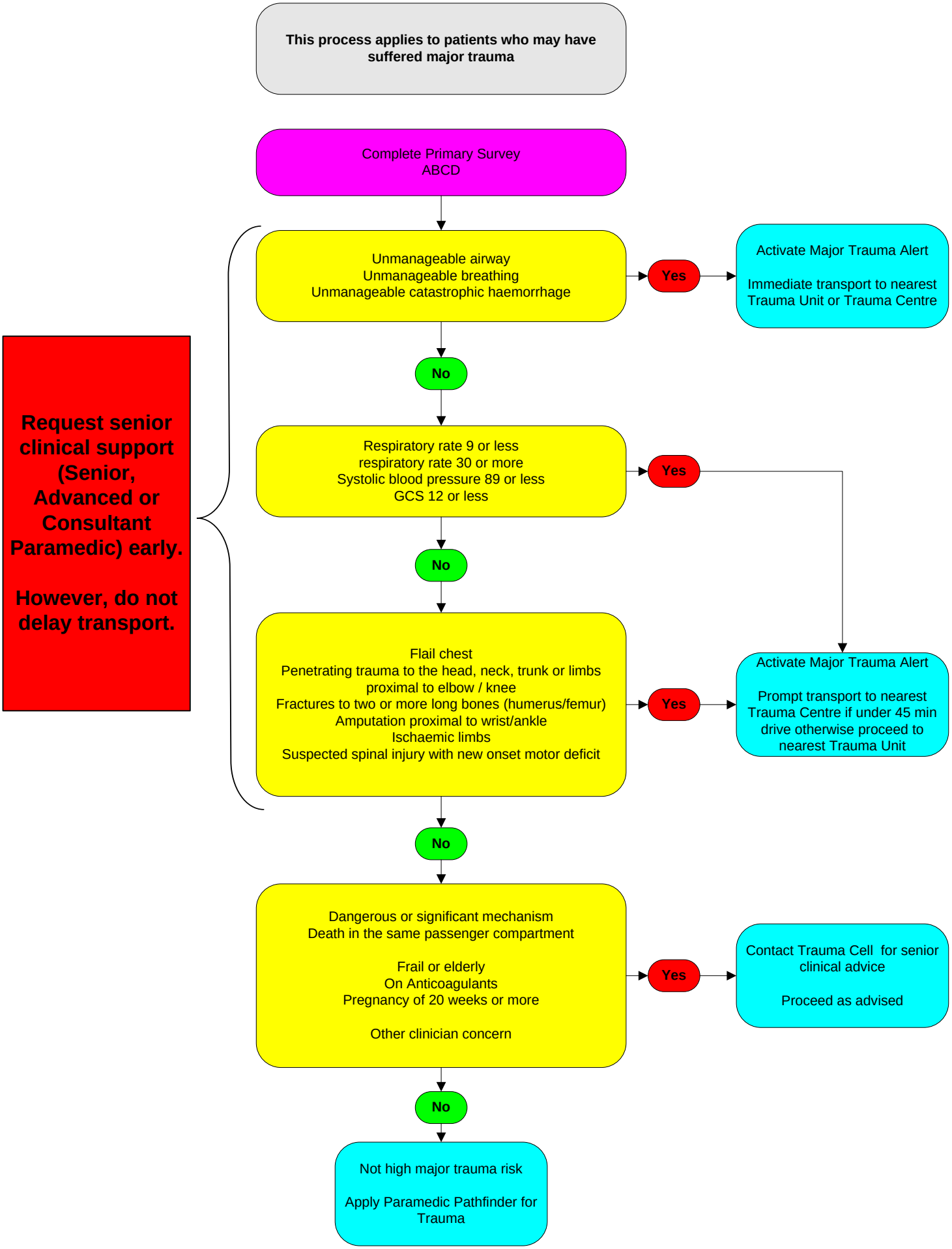
- Catastrophe
- Physiology
- Anatomy
- History

The optimal destination for Major Trauma patients is usually a major trauma centre (MTC). The pathfinder identifies potential ('candidate') major trauma and activates bypass to the MTC (within a 45 minute drive time). If the journey time to the MTC is greater than 45 mins, patients should be conveyed to the nearest Trauma Unit (TU). Patients with catastrophic injuries (including traumatic cardiac arrest) should be conveyed to the nearest MTC or TU site.

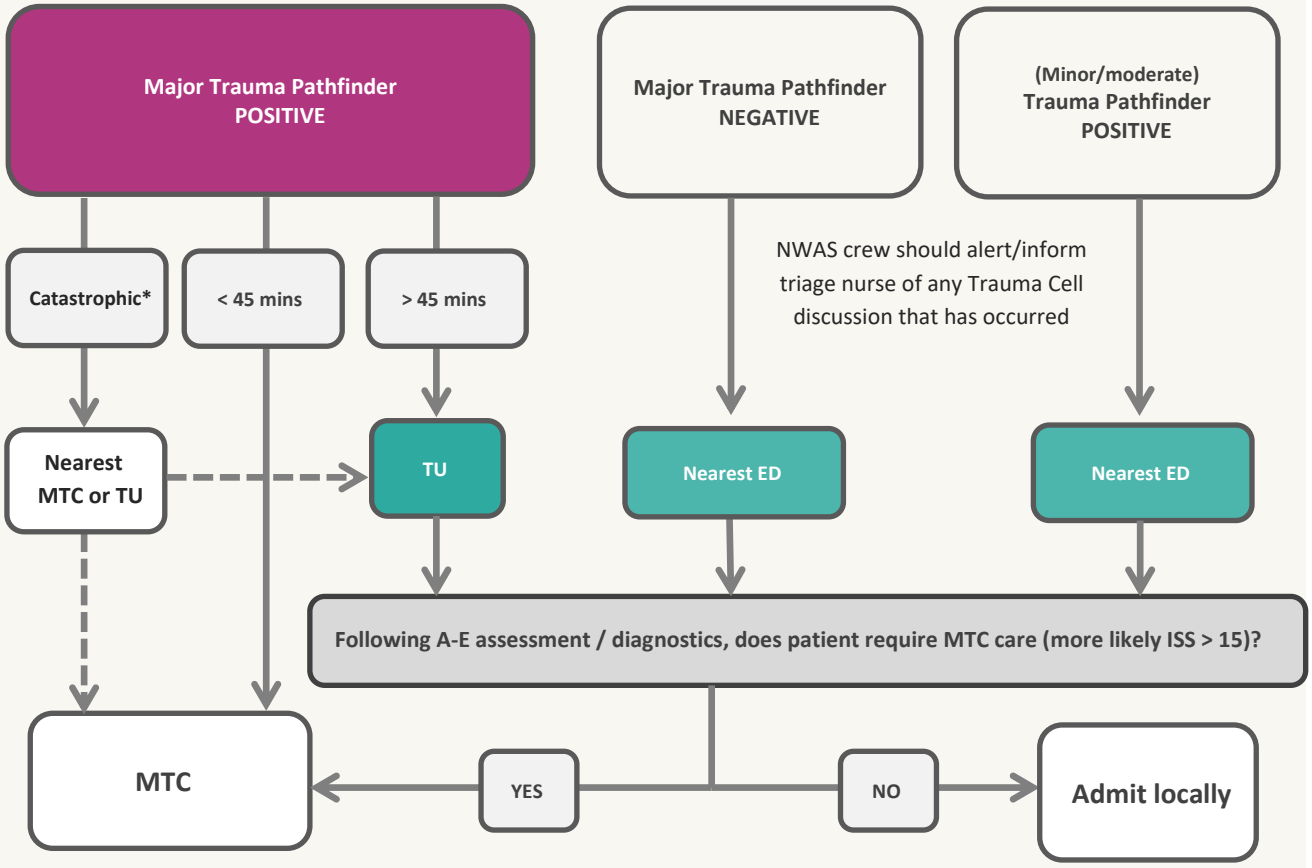
If the ambulance crew have any clinical concern the pathfinder instructs them to call the Trauma Cell.

Trauma Cell will then advise accordingly. This may involve Trauma Cell declaring the patient as 'major trauma' and contacting the MTC to inform of a patient's imminent arrival.

Trauma Cell may also declare the patient as **not** a major trauma patient. These patients are known as 'major trauma pathfinder negative' patients. These cases adopt the NWAS 'Trauma Pathfinder' and the patient is conveyed to the nearest Emergency Department (ED). On arrival to the ED (of the nearest hospital) it is advised that the crew inform the triage nurse that discussion with trauma cell has taken place.


This process applies to patients who may have suffered major trauma
Complete Primary Survey
ABCD
Unmanageable airway
Unmanageable breathing
Unmanageable catastrophic haemorrhage
Yes
Activate Major Trauma Alert
Immediate transport to nearest Trauma Unit or Trauma Centre
No
Respiratory rate 9 or less
respiratory rate 30 or more
Systolic blood pressure 89 or less
GCS 12 or less
Yes
No
Flail chest
Penetrating trauma to the head, neck, trunk or limbs proximal to elbow / knee
Fractures to two or more long bones (humerus/femur)
Amputation proximal to wrist/ankle
Ischaemic limbs
Suspected spinal injury with new onset motor deficit
Yes
Activate Major Trauma Alert
Prompt transport to nearest Trauma Centre if under 45 min drive otherwise proceed to nearest Trauma Unit
No
Request senior clinical support (Senior, Advanced or Consultant Paramedic) early.
However, do not delay transport.
Dangerous or significant mechanism
Death in the same passenger compartment
Frail or elderly
On Anticoagulants
Pregnancy of 20 weeks or more
Other clinician concern
Yes
Contact Trauma Cell for senior clinical advice
Proceed as advised
No
Not high major trauma risk
Apply Paramedic Pathfinder for Trauma

b. Pathfinder outcomes



- *Catastrophic: Patients with unmanageable airway, unmanageable breathing or unmanageable catastrophic haemorrhage
- In GM, as a result of the geography of the conurbation, the majority of major trauma **triage positive** patients are able to reach the MTC within 45 minutes.
- MT triage positive patients should only be conveyed to a TU if the journey time to the MTC is more than 45 minutes or if the patient has suffered catastrophic injuries that require immediate clinical intervention **and** is unlikely to survive bypassing the nearest TU.
- **REMEMBER!** Not all trauma is major trauma. Minor and moderate trauma can be appropriately cared for at the nearest ED.

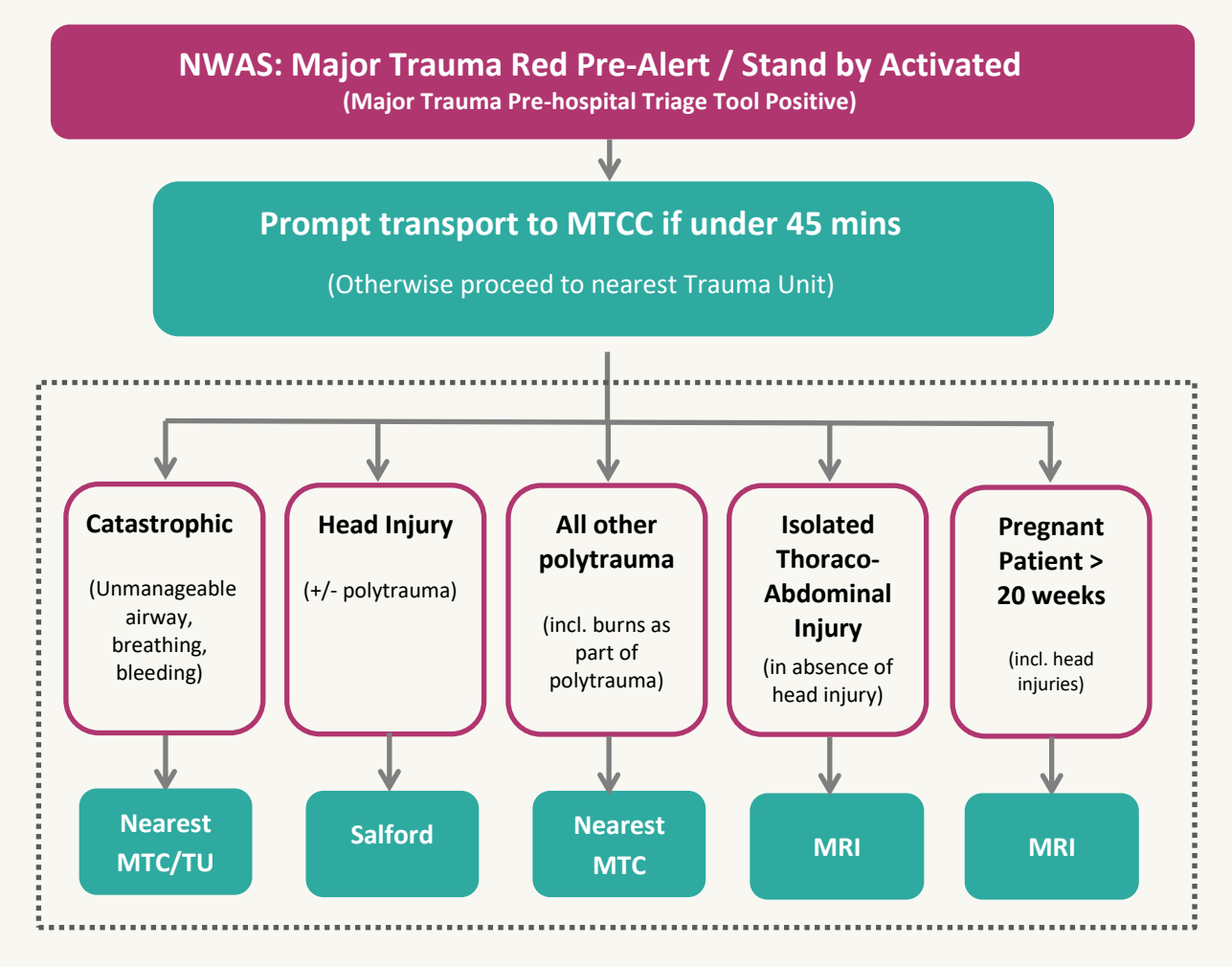
c. NWAS Pre-alerts

The following table details the types of pre-alert (relating to trauma patients) that emergency departments can expect to receive from NWAS.

Alert type	RED (Standby)	Frail Injured Patient (FrIP)	No pre-alert / Self presenters
Destination	MTC (if within 45 mins) Nearest TU (if MTC cannot be reached within 45 mins) Nearest MTC/TU for 'catastrophic' patients	Nearest ED	Nearest ED
Patient type	Patients with suspected **MAJOR** trauma – 'candidate' major trauma (NWAS **MT** Pathfinder ***triage positive*** patients)	**Frail Injured Patient (FrIP):** Elderly and/or frail injured patient that **IS NOT** major trauma triage positive, but there is some clinical concern	NWAS Major Trauma Pathfinder ***triage negative*** patients Patients with minor or moderate trauma but **NOT** major trauma Although not pre-alerted, NWAS crew **must** alert triage clinician of any previous Trauma Cell discussion
Trust response	**Activate Trauma Team**	**Recommended early senior clinical review**. The patient has not triggered the pathfinder for **MAJOR** trauma, but should be assessed for occult injuries. **Minimum requirements:** - Booked into ED - Set of observations recorded - A-E assessment	**Minimum requirements:** - Booked into ED - Set of observations recorded - A-E assessment ***Self-presenting patients may have major trauma***

d. Supplementary pathfinder for Greater Manchester

There are also supplementary pathfinders in place specifically for Greater Manchester which reflect the dispersal of specialist services across the conurbation. These are as follows:



N.B. Patients with **isolated severe burns** should be taken to Wythenshawe Hospital where the regional burns service is based. There is separate guidance for burns patients in the event of a major incident being declared.

e. Other pre-hospital services

A smaller number of patients will be conveyed by the East Midlands Ambulance Service (EMAS). Although EMAS has its own pathfinder tool, it has been agreed that EMAS will use the NWAS pathfinder and Trauma Cell for patients that are being conveyed to GM hospitals.

Similarly, private ambulances covering specialist events have access to the MTC standby phones, and are able to contact the MTCs directly with suspected major trauma patients.

3. Secondary Transfer

This relates to the secondary transfer of patients from an existing (usually first receiving) care provider to an enhanced or specialised care provider. This falls into the following categories:

a. 'Pit Stop'

When a patient has catastrophic injuries and presents with unmanageable airway, unmanageable breathing or unmanageable catastrophic haemorrhage, they will be conveyed to the nearest MTC or TU. When the receiving site is a TU, this should be considered an initial 'pit stop' where the patient is stabilised for onward transfer to the MTC. This includes patients in traumatic cardiac arrest.

Principles for 'Pit Stop' patients:

- Management of 'Pit Stop' patients at the TU should be limited to rapid investigation and interventions that will maximise stabilisation with the aim of **rapid transfer** onwards to the MTC for definitive treatment (see Pit Stop pathway on page 8)

- The TU should consider whether damage control surgery is required before transfer but this is likely to be necessary in **exceptional circumstances only**.

- Where possible (and resources permit) the NWAS crew should remain with the pit stop patient in order to continue transfer to the MTC. The crew should keep Trauma Cell informed of progress. In the case of an extended delay the crew may be stood down and a new ambulance will need to be called.

- Pit stop patients should be transferred under the Trauma Team Leader (TTL) to Trauma Team Leader process. This should be on a 'send and call' basis.

- The transferring hospital should ensure that an appropriate transfer team is available to escort the patient as necessary.

- Where it has not been possible for the originating crew to remain at the TU, patients should be transferred via NWAS in accordance with the NHS England Ambulance Response Programme standards (August 2017). The majority of major trauma patients being transferred via the TTL to TTL process require **Category 2: Emergency** transfers**.** As per NICE guidance[1], patients with major trauma who need critical interventions at a major trauma centre should leave the sending emergency department within 30 minutes of the decision to transfer.

- In situations where either TTL (TU/LEH or MTC) feels that the transfer should be accelerated e.g. for patients who require time critical transfer because a specialist team is standing by to treat the patient (general surgeon, vascular surgeon, interventional radiologist, neurosurgeon etc.) the **MTC TTL** should contact the Trauma Cell to facilitate this.

- The Network has produced a 'Major Trauma Transfer TTL-TTL Checklist' to support these transfers (see Appendix A). The GM Critical Care and Major Trauma ODN's Transfer Form (Appendix B) should be used for these transfers. This is a summary form; the referring site should ensure full clinical information is also provided to the MTC.

[1] nice.org.uk/guidance/ng40 - Section 1.5.4

Pit Stop at Trauma Unit

(NWAS Triage Positive for Major Trauma Pathfinder)

For patients who require life-saving intervention prior to ongoing transfer to MTC

RED STANDBY MAJOR TRAUMA 'PIT STOP' CALL TO TRAUMA UNIT

Where possible request that crew remain with patient to complete pit stop and continue transfer to MTC

Unmanageable airway

- Anaesthetic review
- Manage airway
- Think TXA

TTL to (MTC) TTL
Send and call

Timeframe for transfer as per NWAS Transfer Categories

Unmanageable breathing

- Consider CXR +/- eFAST
- +/- Chest Drain(s)
- Think TXA

TTL to (MTC) TTL
Send and call

Timeframe for transfer as per NWAS Transfer Categories

Unmanageable catastrophic haemorrhage

- Control external haemorrhage
- Pelvic binder/tourniquet
- +/- blood products
- Think anticoagulant reversal
- Think TXA
- Consider Damage Control Surgery (rare)

TTL to (MTC) TTL
Send and call

Timeframe for transfer as per NWAS Transfer Categories

If in doubt about whether to transfer, liaise with the MTC TTL (SRFT: 0161 206 2226 / MRI: 0161 276 4012)

If you have concerns about the timeframe for transfer, liaise with MTC TTL and Trauma Cell (0161 227 7011)

b. Urgent Secondary Transfer

In Greater Manchester the most common occurring scenario requiring secondary transfer is when a patient has been conveyed to a TU/LEH because the pathfinder has not been triggered at the scene, or the patient has self-presented at a TU or LEH.

If the patient is found to have 'major' traumatic injuries that are likely to score an ISS > 15 (either single or a combination of injuries) they should be discussed with the MTC.

In such a scenario, the pathway on page 10 can be utilised to support decision making. The pathway includes guidance on minimum requirements, assessment, initial investigation, essential contact numbers and onward transfer.

- Patients must be booked into the initial receiving hospital
- A primary set of observations should be recorded
- A review by a senior clinician should take place

Following the decision to transfer the patient to the MTC:

- Urgent secondary transfer patients should be transferred under the Trauma Team Leader (TTL) to Trauma Team Leader process.
- The transferring hospital should ensure that an appropriate transfer team is available to escort the patient as necessary.
- Patients should be transferred via NWAS in accordance with the NHS England Ambulance Response Programme standards (August 2017). The majority of major trauma patients being transferred via the TTL to TTL process require **Category 2: Emergency** transfers**.** As per NICE guidance[2], patients with major trauma who need critical interventions at a major trauma centre should leave the sending emergency department within 30 minutes of the decision to transfer.
- In situations where either TTL (TU/LEH or MTC) feels that the transfer should be accelerated e.g. for patients who require time critical transfer because a specialist team is standing by to treat the patient (surgeon, vascular surgeon, interventional radiologist, neurosurgeon etc.) the **MTC TTL** should contact the Trauma Cell to facilitate this.
- The Network has produced a 'Major Trauma Transfer TTL-TTL Checklist' to support these transfers (see Appendix A). The GM Critical Care and Major Trauma ODN's Transfer Form (Appendix B) should be used for these transfers. This is a summary form; the referring site should ensure full clinical information is also provided to the MTC.

[2] nice.org.uk/guidance/ng40 - Section 1.5.4

The Injured Patient Pathway

For pre-hospital pathway TRIAGE NEGATIVE or self-presenting patients

'Fast track' Criteria	
Head injured patients 70 years of age or under: **≤70 yrs**	Intubated **AND** abnormal scan, **OR** Extra-dural haematoma: >15mm thickness or > 5mm midline shift, **OR** **Acute** subdural haematoma: >10mm thickness or >5mm midline shift
Head injured patients over 70 years of age: **>70 yrs**	GCS > 8 **AND** Living independently, **AND** One of the following: - Extradural haematoma >15mm thickness or >5mm midline shift - **Acute** subdural haematoma > 10mm thickness or >5mm midline shift
Spinal Injuries	Spinal injuries with hard motor neurology

For catastrophic injuries (unmanageable: airway, breathing, or catastrophic haemorrhage): Go to 'PIT STOP' guidance

Is there a clinical diagnosis of major trauma? One or more of the following:

- Flail chest
- Penetrating trauma to head, neck, trunk or limbs proximal to elbow/knee
- Fractures to two or more long bones (humerus / femur)
- Amputation proximal to wrist / ankle
- Ischaemic limbs – post manipulation
- Suspected spinal injury with new onset motor deficit
- Head Injury with GCS 12 or less

YES

NO

Does the patient meet 'fast track' criteria?

YES

NO

Diagnostics

Positive radiological findings for **MAJOR** trauma?

YES

NO

Contact MTC TTL

TTL-TTL discussion regarding management plan

SRFT: 0161 206 2226 / 206 5354
MRI: 0161 276 4012

Further investigation and discussion of results with a specialist may be required.

Agreed that patient requires MTC care?

YES

NO

TTL to TTL
Send and call

NWAS transfer to MTC within appropriate timeframe

(See NWAS Transfer categories)

MTC

Treat / Admit locally

If conveyed by NWAS, ambulance crew must alert triage clinician of any previous Trauma Cell discussion.

Think TXA

Think anticoagulant reversal

Frailty/futility: Discuss with MTC – will the patient benefit from transfer?

AS A MINIMUM:

1. Patients should be booked into receiving hospital
2. Primary set of observations recorded
3. Review by senior ED clinician

4. Transfer Principles

- No critically ill patient will be transferred without first being appropriately resuscitated.
- All relevant parties, including the relatives, must be fully informed that the transfer is taking place.
- Transfer should be in an appropriately equipped vehicle and accompanied by skilled and competent staff.
- It is the responsibility of the referring site to ensure that an appropriate transfer team is made available
- The transfer team should all be familiar with the patient's clinical condition
- The GM Critical Care & Major Trauma Network Transfer Form (Appendix B) should be completed for all patients. This is a summary form; ensure full clinical information is also provided to the MTC.

5. Ambulance Transfer Categories

In 2017, NHS England implemented new ambulance standards across the country under the Ambulance Response Programme (ARP). NWAS went live with the ARP in August 2017.

There are four categories of call as per the table below:

Category	Mean	90th Percentile
Life threatening Category 1	7 minutes	15 minutes
Emergency Category 2	18 minutes	40 minutes
Urgent Category 3	-	120 minutes
Less Urgent Category 4	-	180 minutes

- The majority of major trauma patients being transferred via the TTL to TTL process require **Category 2: Emergency transfers**. However, as per NICE guidance, patients with major trauma who need critical interventions at a major trauma centre should leave the sending emergency department within 30 minutes of the decision to transfer.
- In situations where either TTL (TU/LEH or MTC) feels that the transfer should be accelerated e.g. for patients who require time critical transfer because a specialist team is standing by to treat the patient (surgeon, vascular surgeon, interventional radiologist, neurosurgeon etc.) the MTC TTL should contact the Trauma Cell to facilitate this.

6. Critical Care Transfers

Critically ill patients should be transferred in line with Intensive Care Society (ICS) guidance https://www.ics.ac.uk/ICS/ICS/GuidelinesAndStandards/ICSGuidelines.aspx and the North West Critical Care Networks' Transfer Policy. (Appendix C)

7. Reverse Transfers

To enable Major Trauma Centres (MTCs) to provide trauma care for the most severely injured patients on a continuous basis, it is essential to have a system in place to enable patients to return to a suitable local hospital as soon as the acute phase of their trauma care is completed. This enables them to continue their treatment closer to home and helps provide capacity for the MTC to continue to function as a hub within the network.

The repatriation of major trauma patients to their local hospitals has the potential to be challenging for the patient, carers and organisations involved. Unnecessary delays are unhelpful in a number of ways:

- They can prevent acutely ill patients being admitted into designated beds
- They can impede care packages for patients
- They can be inconvenient or distressing for both patient and relatives
- They can be a source of frustration in relationships between hospitals

The Network Reverse Transfer policy[3] aims to provide guidance to ensure a sustainable trauma service where delays are at the minimum; with robust escalation procedures should a delay occur.

The policy applies to adult major trauma patients only and covers all hospitals within the Greater Manchester Network footprint

When a patient has completed their acute trauma-bundle at the MTC and is deemed medically fit for transfer, it is appropriate that they should be repatriated (reverse transferred) to their local hospital. The procedure for this is as follows:

- The major trauma co-ordinator at the MTC will contact the trauma coordinator/bed manager at the patient's local hospital
- **Stage 1:** The receiving hospital must identify an accepting specialty within 24 hours of notification and confirm details to the MTC coordinator
- ***Failure to identify an accepting speciality within 24 hours will trigger the escalation process***
- **Stage 2:** Once an accepting speciality has been identified, the Trust has 48hrs to enact the transfer
- ***Failure to transfer the patient within 48 hours will trigger the escalation process***

[3] Available as a separate policy on the Network website [LINK]

- Transfer principles:
  - The protocol should be adhered to 24/7, however repatriations should not ideally take place between the hours of 10pm and 6am
  - The patient and next of kin should be informed of the proposed move
  - The transferring hospital is responsible for appropriate escorting personnel
  - Regional transfer principles must be followed
- Fully completed trauma discharge documentation and a rehabilitation prescription should be printed and sent with the patient
- The receiving hospital must allocate a trauma or rehabilitation coordinator within 24 hours of reverse transfer, who will continue to update the rehabilitation prescription throughout the patient's length of stay. A copy of the final document should be returned to the referring MTC.
- An MTC contact name and number should be provided for any additional information required
- Some flexibility in acceptance of patients for admission and repatriation will be necessary, and expected, as some geographical areas may be served by more than one hospital.
- The escalation process is triggered by a breach at either of stages 1 or 2. In the event of a breach the MTC coordinator will escalate the incident to the Director of Operations/Chief Operating Officer and the Medical Director of the receiving trust. They should also alert their own Director of Operations that a breach has occurred.

Greater Manchester Major Trauma Network Reverse Transfer Process