



Trauma System Implementation Programme

Trauma Triage Tool and Trauma Access Protocol

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Working Final Version

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Trauma Triage Tool & Trauma Access Protocol

1. Introduction

1.1 Context

Trauma system for Ireland recommends triage of selected patient directly to a Major Trauma Centre and refinement of protocols for bypass and inter hospital transfer. Work stream 8 of the Trauma Implementation Programme is required to specifically look at this (project co-sponsors David Menzies & Robert Morton).

1.2 Purpose

To identify major trauma with acceptable sensitivity and specificity to achieve acceptable rates of under and over triage (TBC). International experience suggests an over triage rate of 30% is compatible with an under triage rate of approximately 10%, which is felt to be clinically acceptable.

The Trauma Triage Tool will have 4 functions:

1. Activation of the Trauma Team (TT) in Trauma Units (TUs) and Major Trauma Centres (MTCs)
2. Determine which patients should be brought directly to MTC from point of injury
3. Determine which patients should be identified early for priority secondary retrieval from TU to MTC
4. Provide clarity on which patients can be taken to non TU/MTC sites (if any)

1.3 Requirements

The tool should be accurate, easy to use, sensitive and specific. It should be compatible with existing NAS, PHECC and other policies and protocols. It should be available to, and used by, all pre hospital service providers who wish to access the National Trauma System.

1.4 Components

There are two components presented below in draft form:

- A. Trauma Triage Tool, which identifies actual or potential Major Trauma Patients
- B. Trauma Access Protocol, which specifies actions with respect to Major Trauma Patients

Description:

The Trauma Triage Tool is based on three components: injuries, physiology and mechanism. A positive result in any component means the patient meets MTC criteria and patient disposition should be as described in the Trauma Access Protocol.

Patient Destination:

Most of these patients will not be within 45 minutes travel to MTC from scene unless HEMS dispatched (based on HEMS dispatch criteria). The only geographic areas of the country where a land based crew may have a choice between a TU and an MTC is the greater Dublin area and very specific parts of the South Trauma Network (these are the only regions in which the MTC is within 45 minutes of a TU, even taking a longer cut off time of 60 minutes does not significantly change this).

HEMS teams will benefit from shorter transfer times (particularly with good helicopter landing zone infrastructure). The provision of pre hospital critical care (by air or by land) may allow longer timeframes to the MTC to be considered following discussion with NEOC, based on enhanced clinical interventions en route. The Trauma Triage Tool, may be used to prompt a HEMS dispatch, but does not of itself, automatically trigger same.

Special Circumstances:

Specific criteria or considerations may need to be included for patients aged < 16, > 65, pregnant or with significant comorbidities.

Components of TTT:

The components of the Trauma Triage Tool require consideration. While the thrust of the tool is clear, the impact of selecting a GCS of 14 vs 13 or a sustained SBP < 90mmHg vs 100mmHg, vs a single episode of < 90mmHg may impact on the sensitivity and specificity of the tool.

NEOC Trauma Desk:

The Trauma System for Ireland report recommends an 'Advanced Paramedic with additional training and access to a consultant level physician with prehospital trauma experience' being based in NEOC to provide decision support to this tool.

This needs further consideration but could be provided by the NAS Critical Care & Retrieval Services who are working towards a 24/7 retrieval consultant on call model for the country. This facility is referred to in this document as the 'NEOC Trauma Desk'.

Specific Injuries:

Patients with specific isolated injuries (e.g. plastics, vascular, urology, traumatic brain injury, burns) may have pathways to non MTC units in specific cases. Realistically this is likely only to be possible from an inter hospital perspective. Such cases should be screened by the NEOC Trauma Desk.

Implementation:

Implementation may need to be staged but should be compatible with the final version of this (i.e. always part of this, not a different system). Training for NAS staff and the practicalities of the timeline to deliver need to be factored into any implementation plan

Trauma Triage Tool

2. Trauma Triage Tool

All patients attended to prehospital as the result of an injury, should have the Trauma Triage Tool applied. Pre-hospital, a patient who meets any of the criteria of the Trauma Triage Tool is considered a Major Trauma +ve Patient.

**Traumatic event
+ any single criteria from Injuries, Physiology or
Mechanism
= Major Trauma +ve Patient**

A. Injuries Identified:

Injuries:	
Airway	<ul style="list-style-type: none"> ▪ Airway injury or potential airway injury ▪ Hoarseness or stridor
Chest	<ul style="list-style-type: none"> ▪ Evidence of respiratory compromise ▪ Cyanosis, crepitus, subcutaneous emphysema ▪ Suspicion of multiple rib fractures, severe pain, ▪ Seatbelt abrasion, contusion, evidence of blunt impact ▪ Significant chest wall trauma (e.g. deformity, flail chest)
Haemorrhage	<ul style="list-style-type: none"> ▪ Severe haemorrhage or suspected severe haemorrhage ▪ Arterial bleeding requiring tourniquet control
Head	<ul style="list-style-type: none"> ▪ Any Canadian head CT positive patients ▪ Open/depressed skull fracture
Limbs	<ul style="list-style-type: none"> ▪ Fracture to 2 or more of: femur, tibia, humerus. ▪ Major compound fracture or open dislocation. ▪ Crushed, degloved, mangled, pulseless limbs ▪ Amputation above wrist or ankle ▪ *Plastics may be suitable for some TUs?
Penetrating	<ul style="list-style-type: none"> ▪ All penetrating injuries except isolated superficial limb injuries
Abdomen	<ul style="list-style-type: none"> ▪ Severe pain, rigidity, distension, swelling ▪ Seatbelt abrasion, contusion, evidence of blunt impact.
Pelvis	<ul style="list-style-type: none"> ▪ Suspected major pelvic fractures (i.e. active bleeding is suspected from a pelvic fracture following blunt high-energy trauma)
Spine	<ul style="list-style-type: none"> ▪ Spinal trauma suggested by new, abnormal neurology. ▪ Visible deformity, priapism, severe pain.
Burns	<ul style="list-style-type: none"> ▪ >20% BSA ▪ Suspected respiratory tract burns

These are not exclusive or absolute. Any significant injuries involving more than one body region, or which require specialist care or treatment to preserve life, limb or quality of life should be considered for triage to MTC. **If there is concern on the part of the treating clinicians pre hospital, the case should be discussed with the NEOC Trauma Desk.**

B: Patient Physiology:

Physiology:	
SpO2:	< 90% on air
Respiratory Rate:	< 10 or > 29
Heart Rate:	> 120bpm after adequate analgesia
Systolic Blood Pressure:	< 90mmHg at any stage
Glasgow Coma Score:	< 13 or deteriorating

These are not exclusive. **If there is concern on the part of the treating clinicians pre hospital, the case should be discussed with the NEOC Trauma Desk.**

C: Mechanism of Injury:

Mechanism:	
Fall	<ul style="list-style-type: none"> ▪ >3metres (or 2 x patient's own height) ▪ Fall off ladder > 1metre
Large animal incident	<ul style="list-style-type: none"> ▪ Collision, fall, trampled
RTC	<ul style="list-style-type: none"> ▪ Death in same vehicle ▪ Ejection (partial or complete) from vehicle ▪ Significant intrusion ▪ Intrusion with compression ▪ Damage to A post of vehicle ▪ Prolonged extrication time (> 30 minutes) ▪ Motorcycle > 30kph ▪ Cyclist > 30kph ▪ Any pedestrian vs vehicle ▪ Bullseye windscreen ▪ High speed RTC (> 60kph)
Electrocution	<ul style="list-style-type: none"> ▪ High voltage electrocution
Burns	<ul style="list-style-type: none"> ▪ Isolated burns may be considered for triage direct to burns unit
Other	<ul style="list-style-type: none"> ▪ Any rapid deceleration incident ▪ Available information consistent with high risk of injury ▪ Focal blunt trauma to head or torso ▪ Hanging

Mechanism is recognised as being an important, but sometimes not specific, tool for prediction of major trauma. **Any decisions to designate (or not) a patient as Major Trauma, based on mechanism alone, should be discussed with the NEOC Trauma Desk.**

Trauma Access Protocol

3. Trauma Access Protocol

Pre Hospital:

1. EMS crew screen patient for major trauma using Trauma Triage Tool above
2. If negative, take to nearest TU or MTC according to catchment area
3. If positive (directly, or after discussion with NEOC):
 - Advise NEOC of Major Trauma Patient and proposed destination
 - If < 45 minutes travel to MTC, take to MTC
 - NEOC to advise MTC TTL
 - If > 45 minutes travel to MTC, take to TU or RV with Critical Care Team
 - NEOC to advise TU TTL and/or task Critical Care Team
 - NEOC to make contact with TU TTL within 60 minutes of patient arrival
4. Provide ASHICE (via NEOC) to MTC/TU at earliest opportunity, to allow time to assemble Trauma Team and for preparation to receive patient.

In cases where travel time is borderline within the 45 minute cut off, the NEOC Trauma Desk can provide decision support for these cases.

There may need to be consideration of retaining the option of attending the nearest ED for life saving interventions under the guidance of NEOC Trauma Desk in certain limited circumstances – particularly as aeromedical and critical care services develop.

If > 45 minutes to either TU or MTC, NEOC should consider tasking of aeromedical and/or critical care team.

Inter Hospital:

1. If patient meets Major Trauma Criteria, on assessment at TU (either by application of Trauma Triage Tool, or following clinical assessment) and requires transfer to MTC:
 - Advise NEOC of Major Trauma Patient and potential need for transfer
2. Resuscitate and treat as indicated
3. If emergent indication for transfer to MTC:
 - Request NEOC to activate aeromedical and/or critical care team,
 - NEOC to notify MTC TTL
 - If aeromedical and/or critical care team not available within acceptable timeframe, activate P37 ambulance and local transfer team
4. If non-emergent indication for transfer to MTC (or other specialist site):
 - Discuss with MTC TTL via NEOC
 - Agree timeframe for transfer
 - Arrange transfer via critical care team, local team or ICV as clinically appropriate.