



## **Midlands Silver Trauma Group.**

### **The Silver Safety Net – A Proposal for a Regional Trauma Desk Response to Triage Older People with Injuries**

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#### **Introduction.**

Following on from the publication of the TARN Report “Major Trauma in Older People” (2017), the single most important finding was the difficulty that current systems have in the early identification of older patients with major trauma.

This may be caused by the lower energy transfer mechanism of injury, with the most common mechanism in older people being a fall of less than 2 metres; co-morbid illness which makes the presentation less obvious; or signs of significant injury that take longer to manifest. Alternatively, one might conclude that our gaze has been diverted away from this group of patients, focussing instead on the traditional perspective of trauma being due to high-energy transfer.

By failing to identify major trauma in older people, there is a lower rate of bypass to Major Trauma Centres; low levels of pre-alert; low levels of trauma team activation and initial management by relatively junior clinicians. When this is framed against the current workforce crisis in Emergency Care, some of these people will be seen by temporary staff who may be unfamiliar with local imaging protocols and patient pathways.

There is a need to address this problem. For Major Trauma Centres, late identification of older people with a high ISS could amount to lost best practice tariff, for Trauma Units, it may relate to poor performance against key performance indicators.

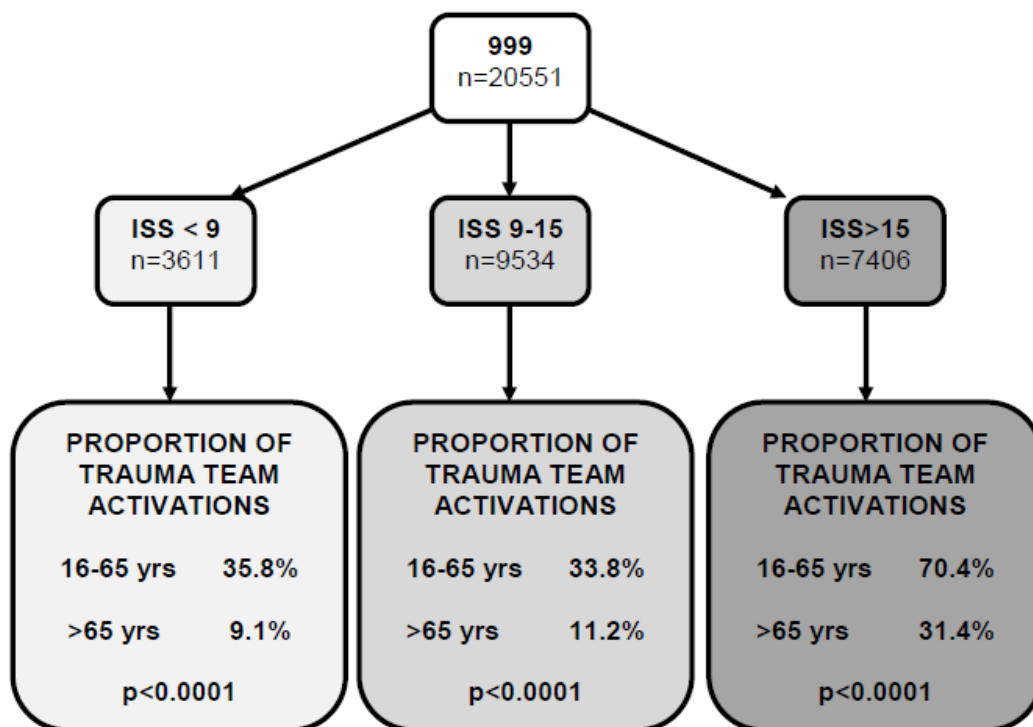
For all centres and units, there is a need to address this issue for *patients*. Delayed identification of injury, suboptimal pain management or hydration strategies can all contribute to the onset of delirium. It is therefore vital that care is optimised as early as possible in a patient’s journey and we work towards early identification of major trauma for older people.

The “Silver Safety Net” is being proposed by the Midlands’ Silver Trauma Group. This tool is designed to be implemented at the Regional Trauma Desk to improve pre-alerts for older people with traumatic injuries.

## Background

Aside from the 2017 TARN Paper, most evidence for the difficulties in appropriate triage of older people with major trauma has arisen from the United States<sup>2,3</sup>. Suggestions had been made from the Ohio Registry Review<sup>4</sup> and the Eastern Association for the Surgery of Trauma<sup>5</sup> to incorporate age-specific criteria into traditional triage systems, although certain aspects of these criteria may have issues with practical application (e.g. AIS>3 should warrant Level I care).

Since the onset of the Midlands' Trauma Networks in March 2012, until 31<sup>st</sup> December 2016, there have been 20,551 submissions to TARN for patients presenting via emergency ambulance. This data has been analysed by age, ISS and whether or not a trauma team was activated to produce the following information<sup>6</sup>:



For all categories of ISS <9; 9-15; >15, there was a significant difference in the proportion of older vs younger patients who had a trauma team activated. This regional data reflects the findings of the TARN report and is clear evidence of widespread difficulties in identifying older patients with major trauma.

In order to address the pre-hospital recognition of major trauma in older people, one has to consider the educational and training burden that would be needed to reach the 4,000 staff responding to 3,000 calls every day in the Midlands Region<sup>7</sup>.

Whilst there will be a need to make adjustments to the Major Trauma Tool eventually, there remains a need to implement a widespread awareness and education campaign to highlight the pitfalls of silver trauma and deliver best evidence practice to greater attention in pre-hospital and in-hospital communities.

The Midlands' Silver Trauma Group proposes an initial model that aims to increase pre-hospital pre-alerting for older people with suspected major trauma without having any of the following negative effects:

### **1. Over-burden MTCs and TUs with pre-alerts for all older people with falls**

This type of presentation represents a high proportion of Emergency case workload so pre-alerting all types of falls in older people would overwhelm most Emergency Departments.

### **2. Increase bypass to MTCs for patients that could be managed in a Trauma Unit**

The 2017 TARN report provides data that describes the lower rates of surgical intervention in older people, with some local Trauma Units reporting rates of up to 65% people not having surgical intervention<sup>8</sup>.

Trauma Units should be expected to be able to manage older patients with major trauma and place greater focus on optimising good Nursing care and medical / geriatric intervention

### **3. Deliver older people with significant high-energy trauma to Trauma Units or Local Emergency Hospitals**

Local data demonstrates that 76% of older people with same level falls sustain injury to a single body region. When compared to vehicular accidents only 31% of people sustain single-region injury<sup>9</sup>

There is a need to place greater emphasis on older people involved in high energy trauma bypassing Trauma Units. TARN Data from the BBCHWTN in 2015 identified only 15 patients aged 65 years or over with high energy mechanisms<sup>10</sup> (e.g. fall > 6M; Motorcycle or bicycle collisions; intrusion; pedestrian vs car). Such numbers of patients would not be expected to over-burden MTCs by TU-bypass and yet patients with greater risk for multi-system injuries would be transported to a more appropriate setting.

## The Silver Safety Net

The Silver Safety Net has been designed to assist pre-hospital crews and the Regional Trauma Desk in deciding the most appropriate method of conveyance to an Major Trauma Centre or Trauma Unit. This will take the form of one of the following outcomes:

- 1. No pre-alert needed** – routine conveyance to appropriate hospital
- 2. Silver Trauma alert** – pre-alert issued to Emergency Department for a patient likely to need access to early intervention and/or imaging, but who may not need a formal trauma team response.
- 3. Trauma Unit Bypass**– for older people with high energy transfer trauma mechanisms

It is to be used in conjunction with the existing Major Trauma Triage Tool whereby if an older person with injuries meets any of the POSITIVE criteria that warrant direct MTC conveyance or trauma team activation these take precedence over the Silver Safety Net.

If a pre-hospital team has any concern about a patient with low-energy trauma from same-level falls, they should contact the Regional Trauma Desk for advice who will apply the following tool:

# Aged 65 years and over?



## Silver Trauma Safety Net

Issue Silver Trauma Pre-Alert With Any of the Following:

### PHYSIOLOGY

SBP <110mmHg in the presence of significant injury\*

*\*excludes minor abrasions, lacerations, haematoma, or fractures distal to wrist / ankles*

### ANATOMY

Injury to 2 or more Body Regions (excluding injuries distal to wrist/ankle joints)

Suspected shaft of femur fracture

Open fracture proximal to wrist / ankles

### MECHANISM

Fall downstairs

Road Traffic Collision\* (entrapment > 30mins; ejection; death in same incident; telemetry suggests high-energy)

Pedestrian or Pedal-cyclist vs Car\*

\*Direct MTC Conveyance

Lower threshold for MTC conveyance if a patient is on anticoagulation medication with any of the listed mechanisms of injury

The Tool is designed to follow the Level I, II and III triggers of the existing Major Trauma Triage Tool, in terms of physiology, anatomy of injury, and mechanism of injury.

By limiting the control of this tool to the Regional Trauma Desk will mean that it is more likely to be applied in a correct manner. If it is used more widely without prior testing, there is a possibility of it being interpreted differently by different crews. This could lead to a rapid over-burdening of Emergency Departments caused by increased pre-alerts, whereby resource will struggle to keep up with demand.

## **Components of the Silver Safety Net and Evidence**

### *Physiology*

Older People with a systolic blood pressure of less than 110mmHg should be pre-alerted to the hospital. This is not a requirement for MTC-transfer as this would place a huge burden on attendances at MTCs. The blood pressure may be lowered by pre-existing disease, concurrent illness or poly-pharmacy and not be caused by traumatic injury. When a patient has been found to have sustained a significant injury and their blood pressure is less than 110mmHg, a Silver Trauma Pre-Alert should be issued.

The Blood Pressure limit for older people after trauma is higher than the existing Level I triggers of two successive readings of a systolic blood pressure of 90mmHg or less. This takes into account evidence that mortality rates in older people with a systolic blood pressure less than 110mmHg are equivalent to those found in younger people with systolic of less than 90mmHg<sup>11,12</sup>.

Glasgow Coma Scale has not been included as a trigger in this section as evidence suggests that older people with a head injury with a given AIS will have a higher presenting GCS than their younger counterparts<sup>13</sup>. It would overwhelm services if a higher GCS score than the current level were to be implemented as a criterion for trauma team activation. The Midlands' Silver Trauma Group believes that hospital teams should develop their own triage mechanisms to identify older people at risk of head injury at the time of their arrival, such as the EFGHI Score<sup>14</sup>.

### *Anatomy*

From a practical perspective older people with suspected shaft of femur fracture or compound fracture are likely to need rapid assessment for pain management and splintage of fractures, hence the diagnosis or suspicion of these injuries should trigger a pre-alert to the hospital.

Patients with injuries to two or more body regions (e.g. head and neck trauma; head and chest wall injury) would benefit from a Silver Trauma Pre-Alert. Hospital-based teams may decide to accommodate such individuals in Resuscitation Room, or they may decide to prioritise their care in the triage queue to enable rapid assessment and decisions on the need for imaging or performing acts such as clearing an individual's cervical spine.

Either way, it would allow hospital teams to mobilise senior clinicians to assess older people at an earlier stage of their journey.

### *Mechanism*

Most major trauma in older people is sustained following a fall less than 2M. Higher energy mechanisms of injury are more likely to lead to multi-system trauma, especially to the ageing individual, so these types of mechanism should trigger a Silver Trauma Pre-Alert. For the purposes of the Silver Safety Net, the following mechanisms are listed with the associated response:

<b>Mechanism of Injury</b>	<b>Response</b>
Fall downstairs	Take to TU or MTC Silver Trauma Pre-Alert or Trauma Team activation

Road Traffic Collision (entrapment>30mins; intrusion into cabin; death in same incident; telemetry suggests high energy transfer)	Direct MTC Transfer Trauma Team activation
Pedestrian or Cyclist vs Car / Lorry etc..	Direct MTC Transfer Trauma Team activation

If any older person sustains one of the above mechanisms of injury and are taking anticoagulant medication (e.g. warfarin, dabigatran, rivaroxaban, apixaban), there should be a lower threshold for conveyance towards a major trauma centre.

## Hospital-Based Response

When a Silver Trauma Pre-Alert is issued to a receiving hospital, the Emergency Department should make arrangements so that the individual can be met on arrival by senior members of the clinical team (equivalent to ST4 or above) with additional Nursing support.

If patients are arriving on a scoop stretcher or with any form of spinal immobilisation, the assessing team should make an early judgement as to whether or not this protection can be removed or whether some other form of protection is required until imaging is performed. This does not necessarily need to happen in the Resuscitation Room, but space should be available if a patient is deemed in need of this level of care.

The Silver Trauma Pre-Alert is not an indication that a formal Trauma Team response is required – some patients may have their injuries cleared very quickly and be in need of more urgent medical attention (e.g. treatment of arrhythmias as a cause for an initial fall). It is merely designed to ensure quicker access to more senior clinicians to facilitate optimum care and earlier access to imaging.



## Conclusions

With an ever-expanding elderly population, and more mainstream recognition of low-energy trauma for older people, there is a need to develop triage mechanisms that ensure the right patients get to the right place at the right time. Existing evidence from the Tri-Networks' region mirrors that of US-based studies and the findings of the 2017 TARN Report.

Changing the existing triage tool at its point of use to cater for major trauma in older people, will be met with huge challenges in terms of: training and education of West Midlands Ambulance Service personnel; the risk of over-triage for older people with falls, placing huge burden on Emergency Departments already under immense pressure; and other risks that come with the implementation of an untested triage model.

The Midlands' Silver Trauma Group consists of a multidisciplinary group of professionals from Ambulance Service, Emergency Department, Ortho-Geriatric and Trauma Network backgrounds and proposes a model of triage to be controlled in the first instance at the Regional Trauma Desk.

The "Silver Safety Net" aims to identify older patients with injuries that would benefit from more appropriate pre-alerts being issued to Emergency Departments. It also aims to improve conveyance to MTCs for older patients with high energy mechanisms of injury, without over-burdening MTCs with patients that could otherwise be managed in a Trauma Unit.

At the same time as proposing this model, the Midlands Silver Trauma Group are working on a campaign to raise awareness for silver trauma, whilst providing different forms of education that can be delivered in an online format.

Once the "Silver Safety Net" has been tested, and there is more widespread awareness of the pitfalls of silver trauma, the MST Group would propose incorporating the key elements of the Silver Safety Net into the Major Trauma Triage Tool.

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## Appendix A

