Polytrauma in the Acute Medical Unit

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CHAIR TARN OLDER PERSONS WORKING GROUP
Background

Consultant Physician and Orthogeriatrician at UHS since 2009

Full Part in the Geriatrics AMU rota

Started as Clinical lead for major trauma rehabilitation since 2013

Clinical Director of Major Trauma since 2016
  ◦ Recognised variation from the “Classic” polytrauma
  ◦ Large number of older polytrauma patients
Introduction and Aims

Understand basics of trauma care

National picture of trauma care (inc BPT)

Basic Principles

“Stealth” trauma

Challenges on AMU
Map - South of England Major Trauma Networks
BPT for Major Trauma

level 1 BPT is payable for all patients with an ISS of more than eight providing that:

a) the patient is treated in a major trauma centre

b) Trauma Audit and Research Network (TARN) data are completed and submitted within 25 days of discharge

c) a rehabilitation prescription is completed for each patient and recorded on TARN

d) any coroners’ cases are flagged within TARN as being subject to delay to allow later payment

e) tranexamic acid is administered within three hours of injury for patients receiving blood products

f) if the patient is transferred as a non-emergency they must be admitted to the major trauma centre within two calendar days of referral from a trauma unit (TU) treated in a major trauma centre
BPT for Major Trauma

A level 2 BPT is payable for all patients with an ISS of 16 or more providing level 1 criteria are met and that:

a) if the patient is admitted directly to the major trauma centre or transferred as an emergency, they must be received by a trauma team led by a consultant in the major trauma centre; the consultant can be from any specialty, but must be present within five minutes

b) if the patient is transferred as a non-emergency, they must be admitted to the major trauma centre within two calendar days of referral from the trauma unit

c) patients admitted directly to a major trauma centre with a head injury (AIS 1+) and a Glasgow Coma Scale (GCS) score of less than 13 (or intubated pre-hospital), and who do not require emergency surgery or interventional radiology within one hour of admission, receive a head CT scan within 60 minutes of arrival.
Case History
UHS Survival

0.5 additional survivors out of every 100 patients

-0.30 to 1.2
How Do you define trauma?

- Defined as an Injury Severity Score (ISS) $\geq 15$
- ISS is derived from Abbreviated injury scale (AIS).
- 6 body sites
  1. Head & Neck
  2. Face
  3. Chest
  4. Abdomen
  5. Extremity
  6. External
# Defining trauma 2 – Abbreviated Injury Scale

<table>
<thead>
<tr>
<th>AIS Score</th>
<th>Injury Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor</td>
</tr>
<tr>
<td>2</td>
<td>moderate</td>
</tr>
<tr>
<td>3</td>
<td>serious</td>
</tr>
<tr>
<td>4</td>
<td>severe</td>
</tr>
<tr>
<td>5</td>
<td>critical</td>
</tr>
<tr>
<td>6</td>
<td>unsurvivable</td>
</tr>
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</table>
Injury Severity Scale

ISS is calculated from square of top 3 most severe injury sites

<table>
<thead>
<tr>
<th>Site</th>
<th>AIS</th>
<th>Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head &amp; neck</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>face</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>chest</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>abdomen</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>extremity</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>external</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>ISS</strong></td>
<td></td>
<td><strong>29</strong></td>
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</tbody>
</table>
TARN
THE TRAUMA AUDIT & RESEARCH NETWORK

England & Wales

MAJOR TRAUMA IN OLDER PEOPLE

2017
Changing Trends in Major Trauma

![Graph showing percentage of patients changing over years by age group.]

![Graph showing percentage of England and Wales population changing over years by age group.]


Age groups: 60-69, 70-79, 80-89, 90+
## AMU

<table>
<thead>
<tr>
<th></th>
<th>Total (inc 1 – 8)</th>
<th>ISS 9 - 15</th>
<th>ISS &gt; 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>1420</td>
<td>519</td>
<td>652</td>
</tr>
<tr>
<td>AMU</td>
<td>73</td>
<td>48</td>
<td>21</td>
</tr>
</tbody>
</table>
“Stealth Trauma”
TARN Data

- 298 patients
  - Aged 65 or greater
  - ISS 15 or greater

- ‘Go Live’ of MTC 1/4/2012 until 31/8/2014

- Included patients arriving by TU bypass and secondary transfer as well as direct admissions
MTC Demographics

Male 182 (61%), Female 116 (39%)

Avg. age – 78.5yrs

Avg. ISS – 24

Avg. Acute LOS – 15 days

Avg ICU stay – 6.5 days

In hospital mortality – 19.7%
Delayed Diagnosis

24% had a delayed diagnosis of injury (68/282)
These included >9% with >3 diagnoses
Injuries missed included
Location of Incident

![Bar chart showing the percentage of patients by age band and location of incident. The bars are color-coded, with light green for indoors and dark green for outdoors.](image-url)
Triage

Often not recognised

3% from within hospitals

Treatment often delayed

Delayed or no transfer to MTC

Who is treating these patients?
Grade of Clinician - Receiving

![Chart showing the percentage of patients by age band and grade of clinician.

- Consultant
- Associate Specialist
- ST 3+
- FY / ST 1-2
- Other / Not recorded

Age bands: < 16, 16-59, 60-69, 70-79, 80-89, 90+.

Percentage of patients decreasing from left to right.
Body Area Injured

<table>
<thead>
<tr>
<th>Body Area</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>80%</td>
</tr>
<tr>
<td>Thorax</td>
<td>20%</td>
</tr>
<tr>
<td>Abdomen</td>
<td>10%</td>
</tr>
<tr>
<td>Spine</td>
<td>5%</td>
</tr>
<tr>
<td>Pelvis</td>
<td>5%</td>
</tr>
<tr>
<td>Limbs</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
</tr>
<tr>
<td>Polytama</td>
<td>5%</td>
</tr>
</tbody>
</table>
Injury Mechanism associated with Death
Traumatic Brain Injuries

Time to Head CT for patients with Traumatic Brain Injury (TBI)

Figure 17: Relationship between age and time to CT head scan (Appendix 2, Table 16)

Time to head scan in older patients with serious TBI (AIS Head 3+) is about 1.5 hours longer than younger patients. This may be due to difficulties in early identification, difficulties in head injury assessment in patients with dementia, a higher proportion of acute on chronic subdural bleeds with a minor mechanism of injury, slower presentation of symptoms as the older cranium has more space to accommodate bleeding, or a lower prioritisation of older patients.
Head Injuries in UHS (>80s)

Total 53 patients
19 male, 34 female
Average age 87.9 years (range 80-100)
Average CCS 1.8 (range 0-4)
Average ISS 11 (range 1-75)

**Specialty distribution**
- Orthopaedics (n=24)
- Medicine (n=26)
- Max/fax/Neuro (n=3)

**Head injury severity**
- Mild (n=45)
- Moderate (n=5)
- Severe (n=4)
Mortality by head injury severity

- Mild (n=45) GCS 14-15: 6.60%
- Moderate (n=5) GCS 8-13: 20%
- Severe (n=4) GCS<8: 13.20%
- Overall (n=53) 30 day mortality: 20.00%
- Overall (n=53) 1 year mortality: 30%
Conclusions

Admission to hospital with a head injury is associated with an increased mortality and morbidity. This seems to be applicable even to mild head injuries.

Risk appears comparable to that of a hip fracture.

This might suggest that head injury is a frailty admission similar to Hip Fracture.

No difference is apparent if patient receives a falls assessment.

Outcomes are worse in medical wards.

Patients may benefit from more integrated trauma care with orthogeriatrics.
Outcome on Discharge

![Graph showing outcomes on discharge across different age bands.](image-url)
Summary

Low Energy Transfer Mechanism

Unusual presentations

Under representation from prehospital through to inpatient care

Slower response throughout pathway
The Way Forward

Better prehospital protocols for recognition

Education in ED

Higher index of suspicion throughout pathway

Importance of Primary, secondary and tertiary survey

Discussion with regional MTC

“Rescue Protocols” for missed patients
Many Thanks