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## CONTACTS

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</tr>
</thead>
<tbody>
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<td>Shiraz Ahmed</td>
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<td></td>
<td>Husna Ghafoor</td>
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1. Information Prior to Joining

1.1 Systems of Data Capture

**Identifying patients using ICD10 codes**
Most Trauma Units use their Trust coding system (ICD10) to identify their TARN patients. An ICD10 code is given to every patient seen at a hospital and there are 2 sections that refer to Trauma: S OR T codes.

TARN can supply an off the shelf SQL script that each Trust can run every week/month that will identify the following ‘potential’ TARN cases:
- Stayed for ≥3 overnight stays
- Died (if worked on in Hospital)
- Transferred out
- Transferred in
- Admitted to Critical care

The spreadsheet will include:
- Discharge destination
- ICD10 code/s
- Name
- Age/DOB
- Admission date
- Discharge Date/Date of Death
- LOS
- TARN inclusion category

**TARN has a list of all included ICD10 Trauma codes on www.tarn.ac.uk/Resources**

**Clarifying inclusion**
Injuries should be checked using imaging report/case notes to ensure they meet the inclusion criteria:
- If they do: Complete a submission
- If they do not: Do not complete a submission, regardless of LOS or Outcome.

See Inclusion Criteria section for full inclusion/exclusion list.

**Most Major Trauma Centres now use a live system to identify their cases. See the Training section of the TARN website, Data Collection slides – Identifying cases & data quality for an example of this.**
2. Standards of Practice

2.1 Inclusion Criteria:

The decision to include a patient should be based on the following 3 points:

A. **ALL TRAUMA PATIENTS IRRESPECTIVE OF AGE**

B. **WHO FULFIL ONE OF THE FOLLOWING LENGTH OF STAY CRITERIA**

<table>
<thead>
<tr>
<th><strong>DIRECT ADMISSIONS</strong></th>
<th><strong>PATIENTS TRANSFERRED IN</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma admissions whose length of stay is 3 overnight stays or more OR Trauma patients admitted to a High Dependency Area regardless of length of stay OR Deaths of trauma patients occurring in the hospital including the Emergency Department (even if the cause of death is medical) OR Trauma patients transferred to other hospital for specialist care or for an ICU/HDU bed.</td>
<td>Trauma patients transferred into your hospital for specialist care or ICU/HDU bed whose combined hospital stay at both sites is 3 overnight stays or more OR Trauma admissions to an ICU/HDU area regardless of length of stay OR Trauma patients who die from their injuries (even if the cause of death is medical)</td>
</tr>
</tbody>
</table>

*C. And whose isolated injuries meet the following criteria*

<table>
<thead>
<tr>
<th><strong>BODY REGION OR SPECIFIC INJURY</strong></th>
<th><strong>INCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)</strong></th>
<th><strong>EXCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD</td>
<td>All brain or skull injuries</td>
<td>LOC or injuries to scalp</td>
</tr>
<tr>
<td>THORAX</td>
<td>All internal injuries</td>
<td></td>
</tr>
<tr>
<td>ABDOMEN</td>
<td>All internal injuries</td>
<td></td>
</tr>
<tr>
<td>SPINE</td>
<td>Cord injury, fracture, dislocation or nerve root injury.</td>
<td>Spinal strain or sprain.</td>
</tr>
<tr>
<td>FACE</td>
<td>Fractures documented as: Significantly Displaced, open, compound or comminuted. All Lefort fractures All panfacial fractures. All Orbital Blowout fractures</td>
<td>Fractures documented as Closed and simple or stable.</td>
</tr>
<tr>
<td>NECK</td>
<td>Any Organ injury, injury to the Carotid artery, Vertebral Artery or Jugular veins, hyoid fracture</td>
<td>Nerve injuries Skin injuries</td>
</tr>
<tr>
<td>FEMORAL FRACTURE</td>
<td>All Shaft, Distal, Head or Subtrochanteric fractures, <em>regardless of Age.</em> Isolated Neck of Femur or Isolated Neck of femur or Inter/Greater trochanteric fractures &gt; 65 years.</td>
<td>Isolated Neck of femur or Inter/Greater trochanteric fractures &gt; 65 years.</td>
</tr>
<tr>
<td>FOOT OR HAND: JOINT OR BONE</td>
<td>Crush or amputation only.</td>
<td>Any fractures &amp;/or dislocations, even if Open &amp;/or multiple</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>FINGER OR TOE</td>
<td>None</td>
<td>All injuries to digits, even if Open fractures, amputation or crush &amp;/or multiple injuries.</td>
</tr>
<tr>
<td>LIMB – UPPER (EXCEPT HANDS/FINGERS)</td>
<td>Any Open injury. Any 2 limb fractures &amp;/or dislocations.</td>
<td>Any Closed unilateral injury (including multiple closed fractures &amp;/or dislocations or the same limb)</td>
</tr>
<tr>
<td>LIMB – BELOW KNEE (EXCEPT FEET/TOES)</td>
<td>Any Open injury. Any 2 limb fractures &amp;/or dislocations.</td>
<td>Any Closed unilateral injury (including multiple closed fractures &amp;/or dislocations or the same limb)</td>
</tr>
<tr>
<td>PELVIS</td>
<td>All isolated fractures to Ischium, Sacrum, Coccyx, Ileum, acetabulum. Multiple pubic rami fractures. Fracture(s) of a single pubic rami &lt;65 years old. Any fracture involving SIJ or Symphysis pubis.</td>
<td>Fracture(s) of a single pubic rami &gt;65 years old.</td>
</tr>
<tr>
<td>NERVE</td>
<td>Any injury to sciatic, facial, femoral, cranial nerve or brachial plexus</td>
<td>All other nerve injuries, single or multiple.</td>
</tr>
<tr>
<td>VESSEL</td>
<td>All injuries to femoral, neck, facial, cranial, thoracic or abdominal vessels. Transection or major disruption of any other vessel (excluding vessels in the hands, feet and digits).</td>
<td>Intimal tear or superficial laceration or perforation to any limb vessel.</td>
</tr>
<tr>
<td>SKIN</td>
<td>Laceration or penetrating skin injuries with blood loss &gt;20% (1000mls) Major degloving injury (&gt;50% body region).</td>
<td>Simple skin lacerations or penetrating injuries with blood loss &lt; 20% (1000mls); single or multiple. Contusions or abrasions: single or multiple. Minor degloving injury (&lt;50% body region)</td>
</tr>
<tr>
<td>BURN</td>
<td>Any full thickness burn or Partial/superficial burn &gt;10% body surface area NOT referred to a Burns unit</td>
<td>Partial or superficial burn &lt;10% body surface area. Or any burn referred to a Burns unit.</td>
</tr>
<tr>
<td>INHALATION</td>
<td>All included - if not referred to Burns unit</td>
<td>If referred to Burns unit.</td>
</tr>
<tr>
<td>FROSTBITE</td>
<td>Severe frostbite</td>
<td>Superficial frostbite</td>
</tr>
<tr>
<td>ASPHYXIA</td>
<td>All</td>
<td>None</td>
</tr>
<tr>
<td>DROWNING</td>
<td>All</td>
<td>None</td>
</tr>
<tr>
<td>EXPLOSION</td>
<td>All</td>
<td>None</td>
</tr>
<tr>
<td>HYPOTHERMIA</td>
<td>Accompanied by another TARN eligible injury</td>
<td>Hypothermia in isolation</td>
</tr>
<tr>
<td>ELECTRICAL</td>
<td>All</td>
<td>None</td>
</tr>
</tbody>
</table>
2.2 Anatomical Injury Descriptions

Injury detail
Injury detail is of paramount importance to any TARN submission, therefore all injuries sustained by a patient must be recorded on every submission.

Information relating to injuries should be obtained from the following sources: clinician’s notes, nursing notes, radiology reports, operative notes, discharge summaries and post mortem reports.

Guidelines to help with injury documentation, record:
- Length, depth or Grade of lacerations (especially to internal organs)
- Depth, size and location of haemorrhages and contusions (especially in the brain)
- Open or Closed fractures
- Stability & site of Fractures (e.g. Comminuted/Displaced Shaft/Proximal/Distal fracture)
- Articular (joint) involvement (e.g. Intra-articular, extra-articular)
- Blood loss
- Vessel damage
- Location & number of rib fractures
- Compression or effacement of ventricles/brain stem cisterns
- Neurology associated with spinal cord injuries
- Instability, Blood loss, Joint involvement or Vascular damage associated with Pelvic Fractures
- Cardiac arrest associated with asphyxia or drowning

Unconfirmed injuries
Injuries should only be recorded when the diagnosis is confirmed.

Never record possible, probable or suspected injuries.

Radiology reports and post mortems
The user should paste a radiology report into the relevant imaging section of any EDCR submission.

When a Report is pasted into an EDCR submission, it will automatically appear on the AIS coding section, thus ensuring that the TARN coder has all the information in front of them before assigning AIS codes.

Post mortem results should be used whenever available even if this results in a delay in dispatching your submission.

All injury coding using AIS is done centrally at TARN, but users can see every AIS code issued by TARN by clicking into the AIS coding section once a submission has been Approved.

Accurate and detailed injury descriptions will enable a more precise Injury Severity Score (see 3.1) and therefore a more accurate Probability of Survival calculation (see 3.2).
2.3 Abbreviated Injury Scale (AIS)

Background information
A.I.S. was first published in 1969 by the Association for the Advancement of Automotive Medicine (A.A.A.M.). The latest edition (AIS2005) is now available from the AAAM website: www.AAAM.org at cost of $250 per dictionary.

Structure
- Based on anatomical injury.
- A single AIS score for each injury.
- More than 1500 injuries listed.
- Scores range from 1 to 6, the higher the score the more severe the injury.
- The intervals between the scores are not always consistent e.g. the difference between AIS3 and AIS4 is not necessarily the same as the difference between AIS1 and AIS2.

Example AIS codes

<table>
<thead>
<tr>
<th>INJURY</th>
<th>NUMERICAL IDENTIFIER</th>
<th>AIS</th>
<th>SEVERITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fracture 1 rib</td>
<td>450201</td>
<td>1</td>
<td>Minor</td>
</tr>
<tr>
<td>Fractured 2 ribs</td>
<td>450202</td>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>Haemopneumothorax</td>
<td>442205</td>
<td>3</td>
<td>Serious</td>
</tr>
<tr>
<td>Bilateral lung lacerations</td>
<td>441450</td>
<td>4</td>
<td>Severe</td>
</tr>
<tr>
<td>Bilateral flail chest</td>
<td>450214</td>
<td>5</td>
<td>Critical</td>
</tr>
<tr>
<td>Massive chest crush</td>
<td>413000</td>
<td>6</td>
<td>Maximum</td>
</tr>
</tbody>
</table>

Coding structure explained

<table>
<thead>
<tr>
<th>Body Region</th>
<th>Type of Anatomical Structure</th>
<th>Specific Anatomical Structure</th>
<th>Specific Anatomical Structure</th>
<th>Level</th>
<th>Level</th>
<th>AIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

All existing codes on the TARN database that were coded with AIS98 (previous version of dictionary) were successfully mapped to corresponding AIS2005 codes, so continuing comparisons can be made.
## 2.4 The Path of a TARN Submission

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POTENTIAL</strong></td>
<td>I.T. system report produced or ICD 10 codes are used to highlight potential TARN patients.</td>
</tr>
<tr>
<td><strong>CONFIRM</strong></td>
<td>Data Collector/EDCR user checks if TARN Inclusion Criteria is fulfilled – if YES</td>
</tr>
<tr>
<td><strong>CREATE</strong></td>
<td>Using the EDCR system a user then creates a submission for each TARN patient and enters data gathered from ambulance sheets, radiology reports, post mortems, hospital notes, trauma sheets, operative notes and discharge summaries, a unique submission number will appear at the top of each submission screen. Further detail can be added at any time and in any order whilst a submission remains in the created status. These submissions can be accessed again using the EDCR submission summary screen, which lists their STATUS as CREATED.</td>
</tr>
<tr>
<td><strong>DIARY</strong></td>
<td>The DIARY SECTION is used by TARN post dispatch to inform user of any rejection or return of a submission. This section can also be used by TARN coordinators to communicate with other team members, however diary messages cannot be deleted so please use with caution.</td>
</tr>
<tr>
<td><strong>VALIDATE &amp; DISPATCH</strong></td>
<td>Once all available patient data is entered, the user electronically VALIDATES the submission. The validation procedure checks to ensure no mandatory fields have been missed and if so, will not allow dispatch until all are completed. The user then DISPATCHES all validated submissions to TARN. All dispatched submissions are then assigned to an individual TARN coder. No further detail can then be added by user, however further detail can be added by TARN post dispatch. These submissions can be viewed using the EDCR submission summary screen, which lists their STATUS as DISPATCHED.</td>
</tr>
<tr>
<td><strong>APPROVE</strong></td>
<td>After dispatch all submissions are reviewed by TARN. If a submission can be processed they are coded, assigned an ISS and APPROVED by TARN. These submissions can be viewed using the EDCR submission summary screen, which lists their STATUS as APPROVED.</td>
</tr>
<tr>
<td><strong>REJECT</strong></td>
<td>If the submission does not meet TARN inclusion criteria, the TARN coder will electronically REJECT it, informing the user of the reason in the DIARY section. These submissions can be viewed using the EDCR submission summary screen, which lists their STATUS as REJECTED.</td>
</tr>
<tr>
<td><strong>RETURN</strong></td>
<td>If the submission requires additional information prior to approval, the TARN coder will electronically RETURN it informing the user of the reason in the DIARY section. These submissions can be viewed using the EDCR submission summary screen, which lists their STATUS as RETURNED.</td>
</tr>
<tr>
<td><strong>REDISPATCH</strong></td>
<td>When user has the additional detail required, they must RE-DISPATCH the submission. These submissions can be viewed using the EDCR submission summary screen, which lists their STATUS as REDISPATCHED and then when coded and approved by TARN as APPROVED.</td>
</tr>
<tr>
<td><strong>TRANSFER</strong></td>
<td>Transfers out for further care to another TARN site are FLAGGED whilst awaiting the second site’s submission. These submissions can be viewed using the EDCR submission summary screen, which lists their STATUS as DISPATCHED with a FLAG attached. Once the second site’s submission is received, TARN matches and approves both submissions.</td>
</tr>
<tr>
<td><strong>REPORT</strong></td>
<td>ONLY APPROVED SUBMISSIONS ARE USED IN TARN REPORTS AND ANALYSES.</td>
</tr>
</tbody>
</table>
3. Statistics, information and reporting

3.1 The Injury Severity Score (ISS)

Background
- ISS is based on the AIS and is calculated at discharge or death.
- Increased injury severity scores are associated with increased rates of mortality.
- Only 10% of patients with an ISS of <8 die compared with 95% of patients with an ISS of >50.

Calculating the ISS
a) Code all injuries using the AIS dictionary
b) Assign to one of the following body regions:
   - Head, neck, or cervical spine
   - Face
   - Chest or thoracic spine
   - Abdomen, pelvic contents or lumbar spine
   - Extremities or bony pelvis
   - External injuries or burns
c) Square the highest score in each body region
d) Add the sum of the squares of the highest AIS scores in each of the three most severely injured body regions.

Example

<table>
<thead>
<tr>
<th>Body region</th>
<th>Injury</th>
<th>Code</th>
<th>AIS</th>
<th>AIS²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Temporal fracture</td>
<td>150400</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Head</td>
<td>Small Subdural haematoma</td>
<td>140652</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Chest</td>
<td>3 rib fractures</td>
<td>450220</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Abdomen</td>
<td>Liver laceration (major)</td>
<td>541826</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Extremities</td>
<td>Tibia fracture (displaced)</td>
<td>853405</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>External</td>
<td>Abrasions</td>
<td>910200</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

ISS = 16 +16 + 9 = 41

ISS scores range from 1 to 75, a score of 75 results in one of two ways:
- Three AIS 5 injuries ($5^2 + 5^2 + 5^2 = 75$)
- Injuries coded as AIS6 are, by convention, given an ISS of 75

There is variation in the frequency of different scores:
- 9 & 16 are common,
- 14 & 22 are unusual
- 7 & 15 are unobtainable
3.2 Probability of Survival (Ps)

August 2019

Probability of survival
A probability of survival (PS) is calculated for each injured patient and retained on the TARN database. This allows comparative outcome analyses for hospitals and for other groups of patients to be performed.

Early Outcome Prediction Models using TRISS
In 1984 the Probability of Survival (PS) of each patient was originally calculated from the Revised Trauma Score, Injury Severity Score, age and method of injury (blunt or penetrating). This was known as the TRISS model. There were a number of reasons to develop a European model from this early method:

1. The Revised Trauma Score incurred a high number of cases with unrecorded data (respiratory rate, systolic blood pressure and Glasgow Coma Scale).
2. The way that the Injury Severity Score was incorporated into the calculation contradicted some statistical reasoning.
3. Patients who were transferred to another hospital for further care were excluded.
4. Patients who were intubated at scene were excluded.
5. Children were included but not in a statistically acceptable fashion

The first TARN PS model
In 2004 a new PS logistic regression model based on age, gender, Injury Severity Score (ISS) and Glasgow Coma Score (GCS) was launched by TARN. Where GCS was missing, intubation was used instead. Each element in the model carried a weighting derived from retrospective analysis of the TARN database. As the nature of the trauma population changes over time, we recalculated these weightings in 2009 and 2012.

During 2014 we recalculated the coefficients once more and, at the same time updated the model by adding measures to include the comorbidities of patients and a “true 30 day” outcome. This has resulted in 2 case mix standardised outcome (Ws) charts for your hospital.

The coefficients were recalculated again in 2017, the Ws model uses the PS17 values (recalibrated for Ps19).

Why we added comorbidities
For PS to work effectively we must include all characteristics of the injured patients so that we are comparing like with like. In addition to the patient’s age, gender, injuries and level of consciousness, we also need to consider the patient’s state of health. A patient with a severe pre-existing medical condition is different to a patient who was in good health at the time of injury. We handled this comorbidity using a modified version of the Charlson Comorbidity Index, which assigns weightings to certain medical conditions (mCCI). Twenty one groups of comorbidity were created and a weight was allocated to each of these groups. The weights were derived according to the strength of the relationship between the disease group and outcome.

Earlier this year we circulated an email to all hospital staff that informed you of this development and advised that comorbid data would be essential. Data on pre-existing medical conditions (PMC) has also been included in the Accreditation information for this reason. PMC data is essential!

Why we added outcome at 30 days
Outcome (alive or dead) at 30 days from injury has historically been used in the calculation for Ws. However many patients are discharged before this 30 day point. In order to include these patients we need to know whether patients died at or before the 30 day point after leaving hospital. To do this, we now receive information about post-discharge deaths from the Office of National Statistics (ONS) and use this information in one of the calculations of Ws for your hospital. In the future you will receive two Ws charts – one using outcome in hospital and one using the “true 30 day” outcome. The data linkage is carried out using the patients’ NHS number. We do acknowledge that there are some patients, for example, patients with no fixed abode or who are foreign nationals will not have an NHS number. Excepting this group of patients NHS Number is essential!

The case mix standardised outcome measure Ws
Case mix standardisation uses bands of probability of survival. The bands were revised in Ps17 using an increasingly robust methodology so that there are an equal number of deaths in each band. You will see these in the PS Breakdown table on the TARN website and in your Clinical Reports.
Probability of Survival (Ps19) Model recalibration
The TARN prediction model is calibrated every 2-3 years as a routine exercise.

This is mainly due to the improvement in trauma care and sometimes to a change in the demographics.

The new model, Ps19 is an updated version of Ps17; it uses the same criteria but a change in the age categorisation has been introduced as follows:

< 1yr, 1–10yrs; 11–15yrs; 16–44yrs; 45–54yrs; 55–64yrs; 65–74yrs; 75–84yrs; 85+yrs.

Ps19 has been derived by using information from the TARN database about patients that arrived between April 2017 and March 2019 (inclusive).

Small numbers of patients often affect the accuracy of Ws and therefore the 95% confidence intervals will be large. Any change in Ws that is encapsulated by these confidence limits means that there is no statistically significant change.

If the numbers of patients submitted are small then you should review the Case ascertainment figures and if <80% try to improve these.

Since 2014 the Ps model has included comorbidity so you must be sure to complete all of this data. A large number of patients with missing PMC data will affect the Ws score.

Detailed Ps19 Model
The Probability of Survival for each patient is calculated using the information in the table below which shows the logistic regression coefficients for patient characteristics (Ps19).

\[ \ln \text{ISS} \text{ is the natural logarithm.} \]
\[ \text{ISS is transformed using fractional polynomial technique for a better fit of the model.} \]
\[ \text{mCCI represents the categorised modified Charlson Comorbidity Index.} \]

\[ b = \text{is defined as the linear combination of the regression coefficients and the values of the corresponding patient’s characteristics (ISS, GCS, modified CCI, age and gender) and the constant } e = 2.718282 \text{ (the base of Napierian logarithms).} \]

\[ P_s = \frac{e^b}{1 + e^b} \]
### Outcome at 30 days or discharge

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10 / \sqrt{ISS} - 0.8618)</td>
<td>-2.04374</td>
</tr>
<tr>
<td>(\log_6 \left(\frac{ISS}{10}\right) - 0.2974)</td>
<td>-1.909581</td>
</tr>
<tr>
<td>GCS = 3</td>
<td>-4.49297</td>
</tr>
<tr>
<td>GCS 4 - 5</td>
<td>-3.34416</td>
</tr>
<tr>
<td>GCS 6 - 8</td>
<td>-2.35783</td>
</tr>
<tr>
<td>GCS 9 - 12</td>
<td>-1.60302</td>
</tr>
<tr>
<td>GCS 13 - 14</td>
<td>-0.52474</td>
</tr>
<tr>
<td>GCS 15 (reference)</td>
<td>0.00000</td>
</tr>
<tr>
<td>GCS &quot;Intubated&quot;</td>
<td>-3.685728</td>
</tr>
<tr>
<td>mCCI Not Known</td>
<td>-0.99161</td>
</tr>
<tr>
<td>mCCI 0 (reference)</td>
<td>0.00000</td>
</tr>
<tr>
<td>mCCI 1 - 5</td>
<td>-0.51906</td>
</tr>
</tbody>
</table>

### Outcome at 30 days via ONS data linkage

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10 / \sqrt{ISS} - 0.8618)</td>
<td>-2.03953</td>
</tr>
<tr>
<td>(\log_6 \left(\frac{ISS}{10}\right) - 0.2974)</td>
<td>-1.89033</td>
</tr>
<tr>
<td>GCS = 3</td>
<td>-4.36388</td>
</tr>
<tr>
<td>GCS 4 - 5</td>
<td>-3.17872</td>
</tr>
<tr>
<td>GCS 6 - 8</td>
<td>-2.11443</td>
</tr>
<tr>
<td>GCS 9 - 12</td>
<td>-1.53609</td>
</tr>
<tr>
<td>GCS 13 - 14</td>
<td>-0.53992</td>
</tr>
<tr>
<td>GCS 15 (reference)</td>
<td>0.00000</td>
</tr>
<tr>
<td>GCS &quot;Intubated&quot;</td>
<td>-3.52241</td>
</tr>
<tr>
<td>mCCI Not Known</td>
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</tr>
<tr>
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<td>0.00000</td>
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<tr>
<td>mCCI 1 - 5</td>
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<tr>
<td>Category</td>
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<tr>
<td>---------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>mCCI 6 - 10</td>
<td>-0.96600</td>
</tr>
<tr>
<td>mCCI &gt; 10</td>
<td>-1.53458</td>
</tr>
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<td>Age &lt; 1</td>
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</tr>
<tr>
<td>Age 11 - 15</td>
<td>-0.16049</td>
</tr>
<tr>
<td>Age 16 - 44 (reference)</td>
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</tr>
<tr>
<td>Age 45 - 54</td>
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</tr>
<tr>
<td>Age 55 - 64</td>
<td>-0.94640</td>
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<tr>
<td>Age &lt;1 x Female</td>
<td>+0.02051</td>
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<tr>
<td>Age 1 - 10 x Female</td>
<td>-0.26727</td>
</tr>
<tr>
<td>Age 11 - 15 x Female</td>
<td>+0.71834</td>
</tr>
<tr>
<td>Age 45 - 54 x Female</td>
<td>+0.07896</td>
</tr>
<tr>
<td>Age 55 - 64 x Female</td>
<td>+0.12845</td>
</tr>
<tr>
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</tr>
<tr>
<td>Age 11 - 15</td>
<td>-0.08743</td>
</tr>
<tr>
<td>Age 16 - 44 (reference)</td>
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</tr>
<tr>
<td>Age 45 - 54</td>
<td>-0.33766</td>
</tr>
<tr>
<td>Age 55 - 64</td>
<td>-0.90488</td>
</tr>
<tr>
<td>Age 65 - 75</td>
<td>-1.70869</td>
</tr>
<tr>
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<td>-2.85978</td>
</tr>
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</tr>
<tr>
<td>Age 0 - 5 x Female</td>
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</tr>
<tr>
<td>Age 6 - 10 x Female</td>
<td>0.02104</td>
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<td>Age 11 - 15 x Female</td>
<td>0.59432</td>
</tr>
<tr>
<td>Age 45 - 54 x Female</td>
<td>-0.10280</td>
</tr>
<tr>
<td>Age 55 - 64 x Female</td>
<td>0.22073</td>
</tr>
<tr>
<td>Age 65 - 75 x Female</td>
<td>0.25692</td>
</tr>
<tr>
<td>Age &gt; 75 x Female</td>
<td>0.43942</td>
</tr>
<tr>
<td>Age Range</td>
<td>Coefficient</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Age 65 - 75 x Female</td>
<td>+0.25509</td>
</tr>
<tr>
<td>Age 75 - 85 x Female</td>
<td>+0.42293</td>
</tr>
<tr>
<td>Age &gt; 85 x Female</td>
<td>+0.49363</td>
</tr>
<tr>
<td>Constant</td>
<td>5.67829</td>
</tr>
</tbody>
</table>

| Constant                 | 5.49085     |
3.3 Survival Rate & Ws Comparisons

Survival Rate
- The Ps of each individual patient (admitted during the previous 4 years) are combined into the overall Hospital Survival Rate.
- Survival Rate represents Actual versus Predicted Survivors, per 100 patients.
- A high positive value is desirable; this indicates that your hospital has more survivors than expected.
- Conversely a negative value indicates that your hospital has fewer survivors than expected.
- Survival Rate is updated every 4 months and shown under the Performance Comparisons section of the TARN website for each member Hospital (once 50 cases are submitted).
- The 95% Confidence Interval (CI) is shown as a blue line and indicates that we can be 95% certain the true Ws lies somewhere along the line accounting for different injury severity mixes and the ‘standardised Z statistic’ (Zs) provides a measure of its statistical significance.
- A narrow CI range (such as below) would show that there is a good deal of confidence in the value of Ws.

![Rate of Survival at this Hospital](image)

Comparative Outcome Analysis (Ws graph)
- Comparative Outcome Analysis (Ws) is used to assess a group of patients; in this way a Peer Hospital comparison graph can be compiled containing all similar sites (MTC or Trauma Units) that submit data to TARN.
- Sites are displayed by ascending Survival Rate but must always be viewed in conjunction with Case Ascertainment.

![Major Trauma Centres Comparative Outcome Analysis](image)
Comparative Outcome Analysis (Funnel plot)

- Sites are displayed by Precision (number of cases) but must always be viewed in conjunction with Case Ascertainment.
- As with the Ws graph, sites are only compared to Peer Hospitals (MTCs or Trauma Units)
3.4 Published Reports

Self produced reports
Users with relevant rights to the EDCR system can produce these at any time, covering any time period. More later

Major Trauma Dashboards
- Launched July 2012, updated June 2020
- Key performance Measures
- Benchmarking between Major Trauma Centres.
- Developed by MT Clinical Reference Group
- All Ages included
- Quarterly data analysed: Published by TARN 4 times a year.

Children’s Major Trauma Dashboards
- Launched July 2015
- Key performance Measures
- Benchmarking between Children’s MTCs & Adult/Children combined MTCs.
- Developed by TARN Let.
- <16 at time of incident.
- Bi-annual or Rolling year data: Published by TARN 2 times a year.

Trauma Unit Dashboards
- Launched September 2015
- Key performance Measures
- Benchmarking between Trauma Units.
- Developed by TU advisory committee
- All Ages included
- Quarterly data analysed: Published by TARN 4 times a year.

Themed Tri-annual Network Reports
Published by TARN every four months and uploaded into EDCR.
Tri-annual reports cover the following themes:
- Traumatic brain injury & spinal injury
- Orthopaedic injuries – pelvic injury and open lower limb fractures
- Shocked patients, timeliness of transfers

Performance Comparisons
Published by TARN every 4 months onto the website, showing:
- Standards of care performance for injuries to:
- Brain, Spine, Chest and Limbs.
- Hospital Survival Rate
- Hospital Data Accreditation %.
- Trust & Hospital Case Ascertainment %.

Data Accreditation: A measure of how often CORE fields are completed in every submission, including:

| GCS/Intubation | Incident date & time | 999 call date & time | Arrival time | Transfer Reason, request date | Time TXA Administered | Time of Intubation |
Case Ascertainment:

- Measure of no. of cases submitted (numerator) versus Expected no. of cases (denominator)
- Expected no. of cases denominator is based on HES data (PEDW in Wales and HIPE in Ireland).
- Shown as a 15% range by default (expected variation of the HES data) – see below.
- Or as exact figure if HES v TARN comparison exercise completed (see online reports section).

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>Case ascertainment 2015 %</th>
<th>Case ascertainment 2016 %</th>
<th>Case ascertainment 2017 %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>85 - 99</td>
<td>82 - 96</td>
<td>79 - 93</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>62 - 72</td>
<td>71 - 83</td>
</tr>
<tr>
<td></td>
<td>100+</td>
<td>100+</td>
<td>100+</td>
</tr>
<tr>
<td></td>
<td>100+</td>
<td>86 - 95</td>
<td>71 - 78</td>
</tr>
<tr>
<td></td>
<td>79 - 91</td>
<td>58 - 68</td>
<td>11 - 13</td>
</tr>
<tr>
<td></td>
<td>86 - 100+</td>
<td>84 - 99</td>
<td>91 - 100+</td>
</tr>
<tr>
<td></td>
<td>100+</td>
<td>91 - 100+</td>
<td>98 - 100+</td>
</tr>
</tbody>
</table>
Activity
Real time data
An Activity Summary for each Hospital’s submissions approved during last 90 days or current calendar year. Includes:
- Submission Summary
- ISS Breakdown
- MOI breakdown

Ad hoc analyses
Ad hoc analyses can be requested by any member site and produced by TARN at any time. Please complete the ‘Ad-hoc analysis Request Form’ which can be found under the Resources section of our website. Send completed form to tarn.analysts@manchester.ac.uk.
4. EDCR: User Guide

4.1 Getting Started

The system is designed to run from Microsoft’s Windows Internet Explorer or Chrome.

Open internet explorer on your PC, and select the address: www.tarn.ac.uk

The TARN Home Login page will then be displayed.

Logging in to TARN
- The Login is shown at the right of the Home page.
- This requires you to enter the username and password supplied by TARN.
- You will be supplied with a temporary password, you must change this after you log in on the Home page for the first time.
- If the system has no activity for a period it will log the user out, a re-login will then be required. (There is a warning given when the session is reaching its timeout, and if timed out then a message is shown at the bottom of this panel)
- NOTE: Any work in progress but not saved may be lost.
- If the user does not have a login or there is a problem with the login then the TARN administration staff should be contacted, selection of “Contact Us” will show the details.

Changing password

If a user is locked out of their account they should contact TARN Support who will provide a new temporary password. This must be changed after the first account log in.

Logging off

While the user is logged into the system the top of the screen will always have the option to log off the current user at the right end of the bar; selection of this will log the current user out of the system with no further prompt.
4.2 Data Entry System Aids

Field types

MANDATORY ENTRIES: The entry MUST be made in order to dispatch the submission to TARN and are marked with a RED * to the left of the entry field.

PREFERRED ENTRIES: These entries should be entered (if data available), but are not enforced and are marked with a GREEN # to the left of the entry fields.

Any entry not marked is optional and entry is not enforced.

Please note: completing only mandatory fields will negatively affect data quality.

Tool tips
Tool tips tell you what information should be recorded in that field e.g. Respiratory Rate Tool tip.

Simply hover the mouse over the field name to get the Tool tip.

Help prompts
For most fields Help Prompts are available; these can be viewed by holding the mouse over a field name and clicking the left mouse button.

Help prompts give information about what the field name means, how it is recorded in the Notes and which Location it is usually recorded in, see below.
4.3 Standard Data Entry Formats

**TEXT (LIMITED ENTRY)**
This entry type will accept text and numbers up to a preset length, e.g. Patient Post Code (first part); this example entry takes letters and numbers up to a preset total of five (5) characters.

The length of the entry is preset and may be different from one field to another.

**FREE TEXT ENTRY**
This entry type will accept a limited (but very large) entry, e.g. the entry may be larger than the visible panel (see injury details section on EDCR).

The scroll bar at the right of the panel allows the other text to be read.

**DATE**
The Date entry type requires entries in each part of the field set. The <TAB> key or completing all the digits required will move to the next part of the field.

The entries must be numbers only.

Date of Incident: 12/10/2010 (DD/MM/YYYY)

Each part is validated and a warning will be displayed at the end of the line if the entry is incorrect.

Invalid Day - If the Day is 0 or more than the number of days in the month
Month – If the Month is 0 or more than 12
Year – If the year is less than 1800
Date in Future – If the entry is for a future date
Invalid Entry - If the entry is invalid in other ways, e.g. “/” is not allowed.

The date is checked for leap years so an entry of 29/02/2010 would be invalid.

Dates are allowed from 1/1/1800 to “NOW”. The date entered cannot be in the future.

**Auto-population**
In some fields this button (represented as two pieces of paper one on top of other, see below) this button is shown at the end of the field indicates that the selection can be auto filled.

This happens when the entry may have been entered onto a previous screen or can be inferred from a preceding entry, selection of the button will fill in this entry with that made previously.

If the entry cannot be auto-populated it will be left blank i.e. there has been no other entry made to duplicate.

**Time**
The time type entry requires an entry in each part of the field set, the <TAB> key or completing all the digits required will move onto the part of the field.

The entries must be numbers only, in the 24 hour clock format.

Time of Arrival at the Hospital: 15:35 (HH:MM)

Each part is validated and a warning will be displayed at the end of the line if the entry is incorrect.

- Time cannot be 00:00 – The entered time is not allowed to be exactly midnight, if the actual time was 00:00 then the entry of 00:01 should be made.
- Invalid Hours – If the hours are more than 23
- Invalid Minutes – If the minutes are more than 59
- Invalid Entry - If the entry is invalid in other ways, e.g. “/” is not allowed
**Drop list**
This type of entry is the choice of a preset entry from a list.

Usually there is the option at the top of the list for a “nothing” entry to clear the choice made. Select the down arrow button to “drop” the list then select the choice required. Once a choice has been made the list is hidden and the choice selected is shown. The choices available are usually controlled by TARN Admin, if an entry required is not listed then contact your administrator.

**Radio buttons**
This entry is the choice of a single selection from a multiple choice list. It is usually used where only one answer can be correct at any one time.
E.g. Sex
The selection of any choice will remove any previously marked choice and make the current selection the choice.

The - button will clear the choices made to this option.

**Tick selection boxes**
These entries allow the choice of one or more selections from a preset list. It is used where multiple choices/selections are valid.

E.g. the selection of Vehicle Collision as an Injury Mechanism will open up sub choices of “Position” and “Protection”. Selection of the box will mark the choice, reselection will unset the choice.

**Extra information entry**
In places there may be the option of adding additional data to the section; this is shown by the additional of a + symbol next to the entry that can be repeated.

By selecting + an extra drop list is created so another entry can be added.
E.g. Pre-existing conditions or complications
4.4 Printing

**Printer friendly versions of pages**
On each page the option for a printer friendly version of the screen is presented at the bottom of the left side bar menu.

This will reshow the current page details, without the top and side menus, so it is ready for printing.

**Print**
This option will generate a printed copy of the submission entry form with details as entered; the printout is several pages long, and is previewed on screen before being optionally printed.

There are printed blank entry lines for questions that may not need to be answered in this case or for options to a question answered that did not need that option (i.e. Grade & Speciality of the Attendant 2, who as an Ambulance Paramedic does not need those entries); these should be ignored.

There will also be blank entry lines for any question left unanswered that should have an entry.

Note that the extra sections (Attendant, etc) are indented and included in the section to which they were added.

In the cases where multiple sections have been added they are numbered.

4.5 Submissions

A submission is the entry of a hospital admission trauma event relating to the care and outcome of a patient.

On selection of the submission section the screen shows a summary of all submissions.

Selection of one of the underlined numbers in the summary categories, or a selection of a status in the drop list will show all submissions in that category.

4.6 Creating a New Submission

The submission data can be entered from a pre-printed blank form or entered directly from the case notes.

**Click on Submissions, New Submission**
You are then taken through a duplicate checking screen to ensure this patient’s incident has not already been entered. The duplicate checking screen uses the following fields:

Next click onto **Create New submission** and if no duplicate is found you will be taken into the Opening section of a New submission. This will also automatically assign the next 12 digit sequential submission number for the new submission.

You will see the submission number at the top of the screen, followed by (Created) in brackets; you are now ready to enter data.
4.7 Which dataset: Core or Extended

The Electronic Data Collection & Reporting (eDCR) system allows users to choose which dataset best suits the type of submission they need to enter: **Core or Extended Dataset.**

**CORE DATASET: For standard submissions**

- The Core screens contain only the Key Performance fields that are routinely used in the Clinical Reports, the Network Reports (where applicable) and the website Performance Comparison results.
- These screens were developed to enable data entry into these key fields to be quicker and more efficient.
- As soon as a submission is created, a user automatically enters the ‘Core Dataset’ format.
- There are 10 screens that a user can enter data into: Opening Section, Incident, Pre Hospital, ED, ED Attendants, Imaging, Operations, Critical Care, Ward and At Discharge.
- There are options to bypass locations if no information is recorded.
- There are a reduced number of Observations, Interventions and Investigations to enter data into.
- Most fields are Mandatory with the option for: Yes, No or Not Recorded available where applicable.
- Times are classed as preferred fields to allow the user to enter data when times are simply not available.

**EXTENDED DATASET: For more complex submissions**

- For the more complex or severe cases, we suggest that users complete the “Extended Dataset.”
- The Extended dataset allows users to more easily enter multiple interventions, observations, Investigations and attendants into every location.
- To enter the Extended Dataset simply create a submission, complete the CORE dataset then click on the link which can be found at the top and bottom of every screen, and complete the required extended dataset fields.
- Once a user enters and saves data in the Extended Dataset, they can no longer revert back to the Core dataset.
- The Extended Dataset allows users to enter data as before.
4.8 Core Dataset

**OPENING SECTION**

- The Opening section of the Core Dataset is a combination of the Opening section, Patient Details, BPT, Rehabilitation and Transfer screens with only the Core fields from each displayed.

- The Patient’s NHS number is an increasingly important Core field and users should aim to complete this wherever possible, the option for Not known is: 9999999999.

- Patient’s postcode should also be completed wherever possible, with the following options also available:
  - No fixed abode: ZZ99 3VZ
  - Unknown postcode or Foreign national: ZZ99 3WZ

- The Core Dataset has no dedicated Transfer screen, but a user can still enter Transferred patients by selecting: Transfer In, out or In & out on the Opening screen.

- If one of these options is chosen then additional Transfer questions appear.

- January 17: A new field ‘Admitting Service’ was added and should be completed for every patient admitted to your hospital. This field denotes the Consultant specialty they are admitted under the care of. If admitted under the care of >1 Consultant (Neurosurgery and Cardiothoracics for example) you should choose the service that most closely aligns to the patient’s most serious injury.

- January 17: A new field ‘Is pupil reactivity recorded at the first hospital’ was added for Transfers in and is particularly important for patients with Head injuries.

**Rehabilitation Prescription:**

- Rehabilitation Prescription questions that feed into the Best Practice Tariff for English Major Trauma Centres – see section 4.14 for further details about BPT.

- This section can also be completed by other Major Trauma Centres and Trauma Units.

**Other Audits:**

**BOAST SCREEN :**

- Select ‘Yes’ if patient has an open Femur, Tibia or Fibula Fracture.

- If one of these limb fractures is selected: BOAST screen appears on saving.

**CHEST WALL INJURY SCREEN – LAUNCHED APRIL 2016 :**

- Select ‘Yes’ if patient has Rib or Sternum fracture/s.

- Chest Wall screen appears on saving.

  *If ‘No’ is selected, screen does not appear*
**INCIDENT**

- The Incident screen is identical in both the Core and Extended datasets.
- Free text information about the incident location can be entered using the Description of incident box and is particularly helpful if “Other” Injury mechanism is chosen.
- Fall from bicycle should be recorded as ‘vehicle incident/ collision’ as this allows the subsequent recording of a bike helmet.
- A question called “Length of time trapped” appears when the Trapped at scene box is confirmed.
- If the patient is injured in hospital – select this option from the ‘Additional incident information’ field and ensure the date of arrival and incidents are the date the patient fell in hospital.
- “Out of hospital cardiac arrest” should be selected if the patient has suffered a cardiac arrest at scene or any-time before arrival in first Hospital. This must be documented by a medical professional.
- “Was the patient involved in a Major Incident?”: Select Yes only if the patient comes from an incident for which ANY HOSPITAL has activated its major incident plan.

**PRE HOSPITAL**

The Pre Hospital screen is a combination of At Scene and En-route with only the Core fields from each displayed.

January 17: The question ‘Patient’s method of transport’ was moved and now appears at the top of this screen. The correct way to document pre hospital data is shown below:

- If the patient was brought in by any other means than Ambulance &/or Helicopter, Patient’s method of transport should be selected (car for example) and Pre Hospital details = No.
- If the patient was transferred in or was injured in Hospital, Patient’s method of transport = Not applicable, Pre Hospital details = No.
- If the patient was brought in by Ambulance or Helicopter and the full Patient Report Form (PRF) isn’t available, but you have times &/or CAD/VCS numbers. Patient’s method of transport = Ambulance or Helicopter, Pre Hospital details = No and Patient Report Form issued = Yes.
- If the patient was brought in by Ambulance or Helicopter and the full Patient Report Form (PRF) is available Patient’s method of transport = Ambulance or Helicopter, Pre Hospital details = Yes and Patient Report Form issued = Yes.

**PRE HOSPITAL ATTENDANTS**

- Answering Yes to the question “Attendants at this location” will prompt the following additional fields to appear:
  
  ![Image](image.png)

- Save refreshes the screen and stores the Attendant information in the crumb trail on the left hand side allowing another attendant to be entered.

**PRE HOSPITAL INTERVENTIONS**

- Interventions are limited to the following questions: Airway Support, Breathing Support, Thoracostomy, Spinal Protection, Chest Drain, Blood Products within first 24 hours, Fluid, Tranexamic Acid, Analgesia, Anticoagulant reversal.
- If Yes is selected for any intervention, further questions about date/time/type will appear.
PRE HOSPITAL OBSERVATIONS

- Observations remain batched in the sections: Respiration, Circulation and Nervous System, but are restricted to the following Core fields:
  - Respiratory: Airway status, Breathing status, Oxygen saturation, Respiratory rate.
  - Circulation: Pulse rate, Blood pressure, Capillary Refill.
  - Nervous system: GCS, Pupil size and Reactivity.
- Each section shares a date and time that apply to all the observations.

Where available, users should aim to enter the first set of observations taken Pre Hospital.

Multiple recordings of Observations, Interventions and Attendants can also be added simply by pressing the Save button.

ED

- Users are prompted to answer ED Stay: Yes, No or Not Recorded.
- If a patient is seen in ED, the user should answer Yes.
- If the patient is transferred in or injured in hospital and therefore bypasses ED, the user should answer No.
- If there is absolutely no information about whether or not a patient was seen in ED, the user should answer Not Recorded.

Answering No or Not Recorded allows the user to bypass this screen completely.

ED OBSERVATIONS

- Observations remain batched in sections: Respiration, Circulation and Nervous System, but are restricted to the following Core fields:
  - Respiratory: Airway status, Breathing status, Oxygen saturation, Respiratory rate.
  - Circulation: Pulse rate, Blood pressure, Capillary refill.
  - Nervous system: GCS, Pupil size and Reactivity.
- Each section shares a date and time that apply to all the observations.

Where available, users should aim to enter the first set of observations taken in ED.

ED INVESTIGATIONS

- ED investigations allow the recording of Blood Sampling. None of these fields are mandatory, but they are particularly useful for patients with a chest wall injury (rib or sternum fracture).

ED INTERVENTIONS

- ED Interventions are structured in the same way as in Pre Hospital, with the additional of the following questions: Extubation, Spinal Protection Removed and Embolisation (Interventional Radiology).
- If Yes is selected for any intervention, further questions about date/time/type of intervention will appear.

ED Attendants

- ED Attendants are recorded on a separate screen.
- Multiple Attendants can easily be recorded simply by clicking on the save button.
- Save refreshes the screen and stores the Attendant information in the crumb trail on the left hand side, allowing another attendant to be entered.
**IMAGING**

- Core imaging fields are limited to just: X-ray, CT, Ultrasound, Fast Scan and Other Imaging which includes: AP and Judet Oblique Radiograph and MRI scan.
- A user must answer Yes, No or N/R to each question.
- If Yes is chosen, the user is then prompted to complete: Date, Time and Body region scanned, Method of Image transfer to specialist centre and whether or not the image was Reported by Senior Radiologist.
- Users should copy and paste reports directly into the relevant imaging section.
- Please record the first of each type of imaging and then any subsequent imaging that confirms or rules out an injury.
- TARN injury coders can see copies of all pasted reports on the AIS coding screen, which helps ensure accurate injury coding.
- Dates and Times of Imaging and reporting are Core fields and users should aim to record these for every applicable submission.
- Time of CT should be recorded as time CT began (referred to as Scout View)

**OPERATIONS**

- Users are prompted to answer **Operations**: Yes, No or Not Recorded.
- If a patient has an Operation, the user should answer Yes.
- If the patient does not have an Operation, the user should answer No.
- If there is no information about an Operation that was performed, the user should answer Not Recorded.
  
  *Answering No or Not Recorded allows the user to bypass this screen completely.*
  
  *Answering Yes prompts further questions:*

- Total number of Operations should include the operation you are entering data for, i.e. if a patient has only one operation in total, put 1 into this field.
- If a patient has 2 Operations, put 2 in this field, then enter the data relating to the first Operation, Save and the information is stored in the crumb trail to the left, the screen then refreshes to allow you to enter in your second Operation.
- Supervisor Present should be recorded when a Consultant is present in the Operating room, but not actually performing the Operation.
- Grade and Speciality of the most senior surgeon from each speciality and the Anaesthetist are Core fields and should be recorded wherever possible
- Only the first two Grades/Specialities are Mandatory; if only one surgeon is present there are options in the drop down menu to reflect this.
- An option for Not Known exists for both Grade and Speciality.
- Procedures are batched by Body region, to make it easier for users to find the most relevant one (example showing Abdomen and Face Procedures below).
- Procedure names are now based on OPCS classifications.
**Critical Care**

- Users are prompted to answer **Critical Care Stay**: Yes, No or Not Recorded.
- Critical care units are: Level 2 (HDU), Level 3 (ICU), Level 3s (Ireland only) and Level 4 ICU. The categories are based on nurse dependency and help text should be used for further guidance.
- If a patient is taken to Critical Care for any length of time, the user should answer Yes.
- If the patient isn’t taken to Critical Care, the user should answer No.
- If there is no information about the Critical care stay, the user should answer Not Recorded.

  *Answering No or Not Recorded allows the user to bypass this screen completely.*

  *Answering Yes prompts the user to answer questions relating to Date/Time, Observations and Interventions.*

- In Critical Care the Observations and Interventions are the same as those requested in ED.

  *Where applicable, users should complete the first set of observations taken in Critical Care.*

- Length of Stay in Critical Care should be completed as days, with anything up to 24 hours being classed as 1 day, when a user completes this field the system will copy the data over onto the At Discharge screen.

**Critical Care Attendants**

- CC Attendants are recorded on a separate screen.
- Multiple Attendants can easily be recorded simply by clicking on the save button.
- Save refreshes the screen and stores the Attendant information in the crumb trail on the left hand side allowing another attendant to be entered.

**Ward**

- The Ward section core questions are limited to just Date & Time of arrival/departure and type of ward.
- Observations, Interventions and Attendants are not required in the Core Dataset.

**At Discharge**

- The At Discharge screen is a combination of the Outcome and Injuries screens with only the Core fields from each displayed.
- If a user answers Yes to Complications they are then prompted to answer Yes, No or Not Recorded to the following: Deep Vein Thrombosis, Duodenal Ulcer, Pulmonary Embolism and Multi Organ Failure.
- All other complications should be entered using the drop down box.
- Pre-existing medical conditions (PMCs) should be selected from the drop down menu. Please record all documented PMCs; this can significantly affect Probability of Survival (Ps).
- Clinical frailty scale (CFS) can be recorded for any patient where this is documented in notes. CFS is a requirement for BPT; in order to be eligible for this payment MTCs must record a CFS for all patients aged 65+, and the CFS must be completed by a geriatrician/ orthogeriatrician of grade ST3+.
- If the patient doesn’t go to Critical Care, Users should put 0 into Length of stay in CC field.
- Number of Days intubated is also a Core field and should be completed in days, with anything up to 24 hours being classed as 1 day.
- If the patient is not intubated, users should record as 0.
- If a patient’s Outcome at Discharge is recorded as Alive, the user is prompted to answer:
  - Did the patient self discharge
 Date/Time of Discharge
 Discharged to
 Glasgow Outcome Scale (disability status, normally found on the discharge letter)
 Readmission

- With options for Not Recorded or Not Known available where applicable.

- If a patient’s Outcome is recorded as Dead, the user is prompted to answer:
   Date/Time of Death
   Post Mortem status
   Cause of death (if PM is performed)
   Discharged to: Record as ‘Mortuary’
   Glasgow Outcome Scale: Record as ‘Death’

**Outcome Measurements**

- The outcome measurements screen is automatically populated once a submission has been coded and Approved by TARN, therefore the User does not enter data into this section. The Outcome Measurements screen contains the Patient’s:
   Injury Severity Score (ISS)
   Probability of Survival (Ps)
   New Injury Severity Score (NISS) shown for reference only and is derived from squaring the 3 highest scoring injuries regardless of body region.
   ICD10 codes mapped from AIS codes
   Age
   Gender
   Earliest recorded GCS
   Intubation status

**AIS Coding**

- The AIS coding screen is used by TARN coders to assign Abbreviated Injury Codes (AIS) to all injuries documented on the At Discharge screen.

- The AIS coding screen also shows any CT, X-ray, US or Fast scan reports copied and pasted into the Imaging screen by the user.

**Dispatch and Validation**

- Dispatch and Validation:
   Missing Mandatory fields highlighted in red
   Missing Preferred fields highlighted in green.

A user can’t dispatch a submission without completing all the Mandatory Core fields.

**Chest Wall Confirmation Screen**

- Only appears if Chest Wall screen is completed.
- Asks users to confirm that no data is available for certain key data points associated with Chest wall trauma e.g. Thoracostomy.
- Simply tick to confirm if each data point is unavailable then click: Confirm & Dispatch.
- If data point has been missed, click: Back and enter missing data. Then re-validate submission.

Data entry in related sections
Data is entered using drop down boxes or by keyboard entry according to the field. Some fields only require a “Yes” or “No” response.

All that is needed is to record that the procedure was carried out. To do this, use the radio buttons.

A procedure may be marked as not performed by selection of the “No” option. A selection can be cleared using the “-” option.

Additional recordings in related sections
Extra sections can be added from the same category if required. If, for example the patient had two GCS observations in the Emergency Department, you would enter them as below:

Click ED Observations, Circulation and enter date, time and recording of 1st GCS – then Save Changes.

Save Changes will clear the E.D. Observations screen (storing the information in the crumb trail – see below) but keep you on the same screen so you can simply enter another date, time and GCS recording without moving between screens.

You may know that a particular procedure has been carried out a second time, but not have any data to enter, for example, you may know a second blood pressure reading has been taken, but not have the actual reading.
In this case, you would tick the Add New Section box. This would create a section containing the date and time and nothing else.

Crumb trail
Whenever you SAVE information in a Related Section, the screen is cleared and the information is stored under the relevant Location to the left of main screen; this is called a “crumb trail” and you can review or change any information by clicking on the relevant location, then into the data you wish to change.

You will see a number to the right of any Location you have entered Related Section data into, this number represents the number of data fields you have added, e.g. if you add GCS, Bp, Pulse and Attendant to E.D. you will see E.D. (4).

Hospital questions
The entry of answers to Hospital Questions is optional and dependant on whether specific questions have been set by the hospital.

This section will display any additional questions that the hospital has requested, the questions in this section are not requested by TARN.

These are specific to the hospital selected, and may have a specified format for entry. For details on where these are created contact TARN.

4.9 Extended Dataset
A location is any place where observations can be taken or procedures can be carried out.

At the top of each location screen, there is a space to enter the date and time that the patient entered that location.

Data can be entered in any order; you may enter the Ward details prior to the At Scene details and the system will allow it.

**Related sections**

In each of the system Locations, there are options to record procedures carried out and staff in attendance. These are called RELATED SECTIONS and there are five of them in the Extended Dataset:

- OBSERVATIONS
- INVESTIGATIONS
- INTERVENTIONS
- ATTENDANTS
- OPERATIONS

These can be accessed using the buttons at the bottom of each location screen. Clicking a button will bring up another screen where details can be entered.

There is a space at the top of each section to record the date and time, this date and time will be used for all procedures in this section unless you tell the system otherwise.

The pre-populate button can be used to copy the date from the main location screen. Alternatively, you can type in the date.

As details are entered and saved at a location, the side bar menu will change. It will give details of how many procedures have been carried out at each location.

Clicking on a location will bring up more details about the data entered. Clicking on an individual field will bring up details of an observation, procedure or attendant.

Clicking on the ATTENDANTS button in a location will bring up a screen that will allow you to record attendants at that location, including ambulance staff and nurses.

Information is entered using drop down lists. Use this button to record attendants at all locations except theatre (see below).

Clicking on the OPERATIONS button in a location will bring up a screen where surgical and other procedures can be recorded.

Data entry is via drop down boxes and text entry.

The Operations section asks for details of Grade of Surgeon and Anaesthetist performing the operation, therefore there is no need to go into the Attendants subsection at this location.

---

### 4.10 General Submission Detail

Applicable to both Core and Extended Datasets.
In all sections any changes made MUST be saved by the user.

Moving away from the entry screen will not save the entered/changed details automatically.

A submission can be saved at almost any point, and returned to later for editing, there is a warning given if a save is not possible, usually due to “Live” validation in an entry.
The top side bar menu shows all the submission sections, allowing for quick access as required.

If extra details or extra sections have been added to a section, e.g. Attendants then they will also be shown here (as below).

The lower side bar menu shows options available for the submission being edited.

**Dataentryinrelatedsections**

Data is entered using drop down boxes or by keyboard entry according to the field.
Some fields only require a “Yes” or “No” response.

All that is needed is to record that the procedure was carried out. To do this, use the radio buttons.

A procedure may be marked as not performed by selection of the “No” option. A selection can be cleared using the “.” option.

**Additionalrecordingsinrelatedsections**

Extra sections can be added from the same category if required. If, for example the patient had two GCS observations in the Emergency Department, you would enter them as below:

Click ED Observations, Circulation and enter date, time and recording of 1st GCS – then Save Changes.

Save Changes will clear the E.D. Observations screen (storing the information in the crumb trail – see below) but keep you on the same screen so you can simply enter another date, time and GCS recording without moving between screens.

You may know that a particular procedure has been carried out a second time, but not have any data to enter, for example, you may know a second blood pressure reading has been taken, but not have the actual reading.
In this case, you would tick the Add New Section box. This would create a section containing the date and time and nothing else.

**Crumbtrail**

Whenever you SAVE information in a Related Section, the screen is cleared and the information is stored under the relevant Location to the left of main screen; this is called a “crumb trail” and you can review or change any information by clicking on the relevant location, then into the data you wish to change.

You will see a number to the right of any Location you have entered Related Section data into, this number represents the number of data fields you have added, e.g. if you add GCS, Bp, Pulse and Attendant to E.D. you will see E.D. (4).

**Hospitalquestions**

*THE ENTRY OF ANSWERS TO HOSPITAL QUESTIONS IS OPTIONAL AND DEPENDANT ON WHETHER SPECIFIC QUESTIONS HAVE BEEN SET BY THE HOSPITAL.*

This section will display any additional questions that the hospital has requested, the questions in this section are not requested by TARN.

These are specific to the hospital selected, and may have a specified format for entry.
For details on where these are created contact TARN.

**Saving**
On most screens any changes made to the section will NOT be saved or prompted to be saved when the section is exited or moved away from.

If the screen is timed out, due to inactivity the entries made will not be saved, if you are leaving the screen for a while and want to save your entered work, then save before you leave.

If the changes are to be saved then they should be explicitly saved.

If there are any errors on screen due to checking of the entered data they will have to be corrected before the screen can be saved, e.g. If the entry is out of bounds i.e. an age of 120 (limited to 1 - 110) there will be an on screen message shown, and the error must be corrected or cleared before the page can be saved.

**Saving options**

On screen at both top and bottom of the section is a choice of options for that section.

On entry to a section open for editing the choice may be:-

SAVE CHANGES:
This allows the saving of changes made to the section and remains in that section.

SAVE AND NEXT:
Allows saving of the changes and moving to the next Location on the list.

SAVE AND BACK:
Allows saving of changes and moving back to the main page of that section e.g. If in Attendants in Emergency Department section, you will be taken back to the Emergency Department opening screen.

**Edit**

When a submission is recalled, it is shown as a read only set, the edit option re-enables the editing of the sheet allowing entries to be made and saved.

You can not edit a submission after it has been dispatched to TARN.

**View**

If a submission has been made editable, the view option will return it to being read only, preventing any inadvertent changes from being saved.

Anybody with rights to “view data and produce reports”, will only ever see data in the View state.

Any data dispatched or approved will only be viewable not editable.

**Add new section**

Multiple sections can be recorded by selection of this option; this will repeat the section allowing multiple entries for the patient. E.g. If a patient has multiple visits to Imaging suite on different dates – use this option.

**Delete section**

Will delete all the data entered for that section.

If a section has been visited and saved with no entries, then any mandatory or preferred entries due for that section will be requested before the submission can be dispatched.

If a section has been saved in error, then the section should be deleted, this will remove it from the validation.

**Validate**

Selecting this option will validate that the submission selected is ready for dispatch, it does not dispatch it.

The submission is checked for entries in the mandatory and preferred fields, and any incorrect entries that would prevent the submission being dispatched.

If there is no missing data, then the validation warning screen is not shown, and the opening section is displayed.

If there is any missing data, then the screen will show a list of warnings and errors in the submission; each warning is listed with the section, question and warning.

- All missing mandatory fields are highlighted in **Red**.
• All missing preferred fields are highlighted in Green.
Selection of the underlined section name will take the user back to that section for editing.

Once all mandatory fields are completed, an option to Dispatch this submission to TARN appears underscored at the top of the page.

Dispatch
The simplest way to dispatch a submission is to validate, then use the dispatch statement (see above). Alternatively a user can bypass the Validate option and choose the Dispatch button to the bottom left of the screen, this will also check for missing mandatory and preferred fields.

Once a submission has been dispatched the user will see the submission number at the top of the screen with (Dispatched) in brackets.

Approve
This is the Status of a dispatched submission that a TARN qualified coder has checked and coded.

The user can see all approved submissions by looking on the Submission Summary page and choosing the Approved status in the drop down list.

Once a submission has been approved the user can click into it and will see the submission number at the top of the screen with (Approved) in brackets.

Only when a submission has been approved by TARN can it be used in any reports.

Flag
A TARN coder will flag a submission if it is a transfer out to another TARN site and is awaiting the corresponding submission to match and approve.

Flagged submissions will remain in the Dispatched in-tray until un-flagged and approved by TARN.

Reject
This is the Status of a dispatched submission that a TARN coder has checked but it doesn’t fulfil the Inclusion Criteria.

The submission is rejected and a message will be entered section explaining why it has been rejected.

The user can see all rejected submissions by looking on the Submission Summary page and choosing the Rejected status in the drop down list, or by clicking on the number to the side of the Rejected in-tray (also on the Submission Summary page).

Once a submission has been rejected the user can click into it and will see the submission number at the top of the screen with (Rejected) in brackets.

No further action is necessary unless user disagrees with reject reason or has further information.

Return
This is the Status of a dispatched submission that a TARN coder has checked, but needs further detail from the user before APPROVING.

The submission is returned and a message will be entered explaining why it has been returned.

Once the additional data is added, a hospital user should REDISPATCH the submission to TARN.

The user can see all returned submissions by looking on the Submission Summary page and choosing the Returned status in the drop down list, or by clicking on the number to the side of the Returned in-tray (also on the Submission Summary page).

Once a submission has been returned the user can click into it and will see the submission number at the top of the screen with (Returned) in brackets.
View diary
This shows any diary notes associated with this submission and can be added to by TARN and user.

Diary notes are used to communicate with others who are collaborating with the submission.

Diary notes can be added by user (before dispatch) or by TARN (post dispatch).

Once a diary note has been saved it is not editable

If the submission is only being viewed, then the user cannot add to the diary notes.
4.11 Searching for Submissions

The submission search screen allows the user to find any existing submission (regardless of status) based on numerous fields.

Enter the field/s and select “Find” option.

This will produce a list of all submissions matching your criteria and you can access them simply by clicking the underlined submission number.

If you wish to convert the list into Excel select the Report icon in the middle left of the screen. See Submission Summary report section for more details.

4.12 Online Reports

In addition to entering data, you can also produce reports to summarise and analyse data for your hospital(s). The EDCR system allows you to produce different types of reports.

Detailed explanations of these reports and instructions about how to produce them can be found below.

To create any EDCR data report, follow these steps:

1. Click on AUDIT on the menu bar at the top of the screen.
2. Click on CORE REPORTS
3. CORE REPORTS include Data Quality, Performance Review Indicators, Unmatched Transfers, BOAST.
4. Click on the Report you want to create (see list of all reports below).
5. Choose your Hospital
6. Enter your START DATE and END DATE. Remember to enter them in dd/mm/yyyy format; the dates are inclusive
7. Where applicable choose DATE FOR SELECTION OR RANGE. Dependant on the report this could be Arrival, Discharge, Incident or Approval date.
8. When you have finished setting up your report, click GENERATE REPORT.
9. If you wish to produce the report regularly, you can ‘ADD TO FAVOURITES’

CORE REPORT: UNMATCHED TRANSFERS
Lists any unmatched transfers into or out of each Hospital. Includes: Corresponding site Submission ID, Age, Gender, NHS number, Corresponding Hospital, Transfer date

CORE REPORT: BOAST
Provides a list of all patients with an open lower limb fracture (femur, tibia, fibula) and details whether they are compliant with treatment standards.

CORE REPORT: DATA QUALITY

CORE REPORT: PERFORMANCE REVIEW INDICATORS (PRI)

- How to produce a Data Quality or PRI report is shown on the next few pages.

In addition to CORE reports you may also have access to the following:
- **BEST PRACTICE TARIFF REPORTS** (see section 4.14 on how to produce these).
- **SPECIALIST LONDON REPORTS**
- **SPECIALIST MERSEYSIDE AND CHESHIRE REPORTS**
- **HES/PEDW FEEDBACK DATA REPORTS**

38
• The aim of this report is to help trusts improve their Case Ascertainment, there are two ways to do this:
  • Identify cases that should have been submitted and were not
  • Identify cases that are not eligible and tell TARN about them

For cases that should have been submitted: look for common features that identify these patients and learn to include them in the future.

• For cases that are not eligible: please complete the ‘ineligible reason’ column with details of why a patient doesn’t meet the inclusion criteria and return the completed file to TARN. Once we have your clarification, these patients will be removed from the expected number of cases from which your Case Ascertainment is derived.

Cases highlighted in green have been submitted to TARN and can be discounted (some submitted cases may not be highlighted as they cannot be matched).
Cases in black appear to have not been submitted to TARN.

• **Hospitals that have completed this comparison exercise have their Case Ascertainment shown as an exact % and not a range.**

• **NETWORK REPORTS**
  • ISS>15 not transferred out from Trauma Units.
  • Transfers for repatriation within 48hrs

• **PROMS**
  • Excel file containing details of the PROMs responses from your site (where applicable).
Producing and Analysing your own data using the PRI report

These instructions show you how to produce a PRI report and how to use it:

- List specific patients, such as those who had a CT or Operation within a certain timeframe.
- Produce a summary breakdown, such as ISS by Outcome.

Create a PRI report

1. Click on AUDIT on the menu bar at the top of the screen.
2. Click on CORE REPORTS
3. Click on Performance Review Indicators
4. Choose your Hospital
5. Enter your START DATE and END DATE. Remember to enter them in dd/mm/yyyy format; the dates are inclusive
6. Click DATE FOR SELECTION OR RANGE. Your options will be: Arrival, Discharge, Incident or Approval date.
7. When you have finished setting up your report, click GENERATE REPORT.
8. You will get a message saying that your report is being created. Click OK.
9. If you wish to produce the report regularly, you can ‘ADD TO FAVOURITES’
10. Highlight the entire spreadsheet by clicking on the top left hand corner box (see below)
11. Double click on the line between column A and B to expand all columns
Videos are available via a YouTube link from Training section of the website

List specific patients

The following example shows you how to use filters in Excel to find directly admitted patients with an AIS 3 + head injury who had a CT scan within an hour of arrival.

1. Click on the Data tab, click in any cell containing data and then click on Filter.

2. Move to column T, the transfer field and click on the arrow. Select No transfer and Transfer out. Click OK.

3. Move to column BA (the head injury field). Click on the arrow, choose Number Filters and then Greater Than Or Equal To:

4. In the Custom Autofilter popup, enter 3 and then click OK:
Produce a breakdown

The following steps show you how to produce a breakdown by ISS and mortality using pivot tables in Excel.

1. Click the **Insert** tab, click in any cell containing data and then choose **PivotTable**.

2. The range will set automatically. Click **OK** to create the table:

3. In the **PivotTable Field List** window, click and drag **ISS band** into the **Axis Fields** area (this may be called **Row Labels**), **Outcome** into **Legend Fields** (may be called **Column Labels**), and **SubmissionID** into **Values**:

4. Click on the arrow next to **submission ID** and choose **Value Field Settings**:

5. Change the **Summarize by** setting to **Count** and then click **OK**. This will show how many patients are in each ISS band and how many died and survived.

<table>
<thead>
<tr>
<th>ISS band</th>
<th>Alive</th>
<th>Dead</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 15</td>
<td>30</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>1 - 8</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>9 - 15</td>
<td>25</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Grand Total</td>
<td>62</td>
<td>3</td>
<td>65</td>
</tr>
</tbody>
</table>

You can also pivot by more than two fields at once. Try dragging **Injury Mechanism** into the **Row Labels** field to show how patients in each band were injured. Also remove the **Outcome** field (use the down arrow) and replace with the **Trauma Team** field to see how many **TT activations** there were for **ISS >15**.
Producing and Interpreting the DATA QUALITY Report

These instructions show you how to produce a Data Quality report and how to use it to identify any missing data that may impact on the quality of the reports and analysis you receive.

Data Quality reports show each Hospital’s Data Accreditation & and Case Ascertainment %.

Data Accreditation: A measure of how often CORE fields are completed in every submission, including:

<table>
<thead>
<tr>
<th>GCS/Intubation</th>
<th>Incident date &amp; time</th>
<th>Time intubation</th>
<th>Ambulance call date &amp; time</th>
<th>Arrival time</th>
<th>Transfer Reason, request date and hospital</th>
<th>CT Time, time of provisional and final CT report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Times, grades, specialties</td>
<td>Doctors in the ED: Times, Grades, Specialities</td>
<td>Time TXA administered</td>
<td>Injury detail (%of NFS codes)</td>
<td>Pre-existing medical conditions</td>
<td>Pupils reactivity for AIS3+ head injury</td>
<td></td>
</tr>
</tbody>
</table>

Case Ascertainment:
- Measure of no. of cases submitted (numerator) versus Expected no. of cases (denominator)
- Expected no. of cases denominator is based on HES data or PEDW data in Wales.

Create a Data Quality report

1. Click on AUDIT on the menu bar at the top of the screen.
2. Click on CORE REPORTS
3. Click on Data Quality
4. Choose your Hospital
5. Enter your START DATE and END DATE. Remember to enter them in dd/mm/yyyy format; the dates are inclusive
6. When you have finished setting up your report, click GENERATE REPORT.
7. You will get a message saying that your report is being created. Click OK.
8. If you wish to produce the report regularly, you can ‘ADD TO FAVOURITES’
9. Highlight columns: A-D only, as these 4 columns are compressed on first opening the spreadsheet.
10. Double click on the line between column A and B to expand the 4 columns.
In this report all submission IDs are listed, along with their arrival date, ISS and transfer status. The data fields used in Accreditation are shown across the top. Each data field has an E and S value associated with it. E=expected value and S=score.

If we expect data in that field, E is shown as 1.0 and if we don’t expect data, the E field is shown as 0.0. We wouldn’t expect data in the CT details column if the patient did not have a CT so in this example: E = 0.0

The score is a fraction of the expected value & should be interpreted as a percentage, e.g. 0.5 = 50% missing data. To clarify:

- Score of 1.00 represents 100% (complete data) for that field (shown in green)
- Score of 0.00 (shown in green) represents no expected data for that field (e.g. If Patient did not have a CT scan).
- Score of <100% in red: expected data is missing. THESE ARE THE FIELDS TO REVIEW.

If you wish to review all missing fields, simply scroll over to column Al (Overall) and click on any red field, right click, then filter by cells font colour. If you then want to amend any data field, simply email support@tarn.ac.uk with the relevant submission ID and details and our validation team will make the amendment for you. Please follow the screenshots on page 2 for further guidance.
Submission Summary Report

The Submission Summary report will enable TARN users to summarise submissions over a specified time period. The report includes the following fields:

<table>
<thead>
<tr>
<th>Submission number</th>
<th>NHS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient’s first name</td>
<td>Patient Postcode</td>
</tr>
<tr>
<td>Patient’s surname</td>
<td>Date of Arrival</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>Discharge Date</td>
</tr>
<tr>
<td>Sex</td>
<td>Date of Death (if applicable)</td>
</tr>
<tr>
<td>Age</td>
<td>Discharge status</td>
</tr>
<tr>
<td>ED number</td>
<td>ISS</td>
</tr>
<tr>
<td>Hospital Number</td>
<td></td>
</tr>
</tbody>
</table>

As the reports contain sensitive patient data, they can only be produced by a hospital user with rights to a specific hospital. For this reason staff at TARN can produce these reports but can’t see the fields highlighted above in red.

To create a Submission Summary Report on the eDCR system, follow the steps below:

1. Click on SUBMISSION, then SEARCH and select your hospital.
2. Choose the DATE PERIOD – the options are:
   - Incident date
   - Admission date
   - Discharge date
   - Submission Creation date
   - Submission Approval date
   - Submission Return date
   - Re-submission date
   The most useful dates will be Admission date, Discharge date and Submission Approval date.
3. Choose the date range using the FROM and TO date cells.
4. Chose the Submission Status:
   - CREATED: The report will contain submission you are currently working on.
   - APPROVED: The report will contain submissions sent to TARN that have been coded and approved.
   If you leave the Submission Status blank, the report will contain every submission (Created, Dispatched, Approved etc) entered during the time period selected.
5. Click FIND – the results will appear at the bottom of the screen.
6. Click on REPORT (top left) - the list will be converted into an excel spreadsheet.

Submission Summary Report Example
This will generate a report showing all cases Approved by TARN during June 2012
4.13 Home Page

This is the starter page for the TARN system, the screen has links to various public details of the TARN project, with the option to login to the members only.

From the top menu the following options can be accessed:

ABOUT US
This section contains basic information about Trauma.
- How TARN evolved.

RESOURCES
This section lists some of the resources available.
- PS calculator
- INCLUSION CRITERIA
- Fracture definition list
- Anatomy guide
- Procedures manual
- List of ICD10 Trauma codes and inclusion rules for TARN

TRAINING
This section contains information about TARN training courses, including Dates, Venues and the 2 course options available, along with Training course slides and Training videos that can be view via YouTube and support the face to face course that are regularly held in both Manchester and London. This page also lists all relevant training resources available on the website.

RESEARCH
A collated list of applicable research papers for reference.
- Past publications
- List of current research
- Collaborative projects

CONTACT US
- Directions to TARN offices
- Map of TARN offices
- Address of TARN
- All TARN staff
- Executive Board members listed

PERFORMANCE COMPARISONS
This part of the website provides important information about the rates of survival for patients who have been injured and treated at different hospitals across England and Wales. It also provides information about the benefits of certain kinds of treatment.

This information is freely available without a username and password.

This section contains data relating to every Network/region of England and Wales, including:
- Case Ascertainment range %
- Data accreditation %
- Survival rates
- Standards of care results relating to: Brain, Spinal, Chest and Limb injuries.

Detailed information on how each of these is calculated is also included.

This part of the TARN website was designed with the help of The Healthcare Commission and modelled on the Heart Surgery Website.
4.14 MAJOR TRAUMA BEST PRACTICE TARIFF (BPT)

The Major Trauma Best Practice Tariff (BPT) was launched by the Department of Health on 1st April 2012 and is relevant to Major Trauma Centres (MTCs). Although funding is attached to individual patients, it is an enhancement of the trauma system or network to improve care. There are certain elements of care which will need to be delivered for the BPT to be paid to MTCs, which will need to be captured in the TARN data set in order for payment to be approved.

The Major Trauma Best Practice Tariff uses the Injury Severity Score (ISS) to assign one of two levels of tariff based on either ISS>8 or ISS>15.

The criteria for 2019-20 is shown below.

Commissioners will issue the tariff if the following criteria are met:

A level 1 BPT is payable for all patients with an ISS of 9 or more, providing that:

- The patient is treated in a major trauma centre.
- Trauma Audit and Research Network (TARN) data are completed and submitted within 25 days of discharge.
- A rehabilitation prescription is completed for each patient and core components recorded on TARN with documented evidence in patient notes of a copy to the patient, GP and ongoing care provider if applicable.
- Any coroners’ cases are flagged within TARN as being subject to delay to allow later payment.
- If the patient is transferred as a non-emergency they must be admitted to the major trauma centre (MTC) within two calendar days of referral from a trauma unit (TU).
- Patients with a Glasgow Coma Scale (GCS) <9 have documented evidence of intubation being considered within 30 minutes of arrival at the MTC.

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

- If the patient is admitted directly to the MTC or transferred as an emergency, they must be received by a trauma team led by a consultant in the MTC; the consultant can be from any specialty, but must be present within five minutes.
- Patients admitted directly to a major trauma centre with a head injury abbreviated injury scale (AIS) 1+ and a 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.
- Tranexamic acid is administered within one hour of arrival at scene (or arrival at the MTC for self-presentations) for patients with at least one injury associated with significant bleeding.
- All patients 65 years or older have a Clinical Frailty Scale completed within 72 hours of admission by a geriatrician (defined as Consultant, Non-Consultant Career Grade (NCCG) or Specialist Trainee ST3+).

Further explanation of these measures can be found in the BPT 19-20 Data Entry Guidance Document on the TARN website resources.

Process

All trauma submissions that are TARN eligible should be completed and dispatched to TARN within 25 days of patient discharge/death. Once the submission has been dispatched to TARN, coding and approval will be completed.
All questions required for the Major Trauma Best Practice Tariff will be in both the Core and Extended versions of the eDCR. Questions relevant to the tariff will be in the ‘Opening Section’, ‘Incident’, ‘Pre Hospital/At Scene’, ‘ED’, ‘ED Attendants’ ‘Critical Care Attendants’, ‘At Discharge’ and Ward (if patient is admitted directly to the ward).

NOTE: It is important that you record the patient NHS Number. If it is not possible to access the NHS Number from any part of the clinical notes/electronic records, please use the default number for ‘missing’: 9999999999.

Opening Section

Within the Opening Section there will be the following BPT questions:

1. GP Search Facility
2. Rehabilitation Prescription
3. Transfer in – Date & time of arrival at 1st hospital
4. Date and Time of transfer request

GP Search Facility

It is important that you tell us about the Patient’s GP so we can identify the GP Practice Code. The GP Practice code will then allow us to match the patient to their Commissioning Group. This will help Commissioners to issue a tariff payment.

1. If the patient notes identify that the patient has a GP, click on ‘Yes’.
2. Clicking ‘Yes’ will generate a new question prompting the user to enter the GP Practice Code. This can be entered in the text box. The GP Practice Code may not be readily available in the patient notes so alternatively, click on ‘Find GP Practice’
3. Clicking on ‘Find GP Practice’ will generate a pop up box. To search for the GP Practice, enter at least 3 characters from either one of the following:
   - Post code
   - GP Name
   - GP Practice Name
   - Line of address
   - Town/county

   This will identify a list of potential GP practices. Select the correct GP Practice from the drop down menu and click on ‘Select code’. This will auto populate the pop up menu and also the GP Practice code on the opening section.
Rehabilitation Prescription

The key questions required for the Major Trauma Best Practice Tariff will be set as mandatory.

Patients that are transferred into a Major Trauma Centre

If you have the information accessible from the patient notes, it is important to tell us the date and time of arrival at the 1st receiving hospital and the date and the time of the Referral request. This will assist in calculating whether the patient was transferred within 2 calendar days of the referral request.

1. If a patient has been transferred in, select ‘Transfer In’ from the ‘Was the patient transferred?’
2. If details are available, complete ‘Date arrived at 1st hospital’ and ‘Time arrived at 1st hospital’
3. Complete the date of Referral request and, if available, the time.

ED & ED Attendants

To measure whether a patient was seen by a Consultant led trauma team within 5 minutes of arrival, the following mandatory questions will need to be completed:

1. In ‘ED Attendants’, complete the date and time the patient was seen
2. Select ‘Doctor & Senior Nursing Grades’ from ‘Type of Attendant’ to record that the patient was seen by a Doctor
3. Complete ‘Grade’ and Speciality’ of the Doctor.

Critical Care Attendants

Patients that are transferred as an Emergency (i.e. within 12 hours), into the Major Trauma Centre will also need to be seen by a Consultant within 5 minutes of arrival, however, these patients may bypass the Emergency Department and go straight to Critical Care. A new location has been created in the ‘Core’ to record critical care attendants that works in exactly the same way as ‘ED Attendants’.

1. If a patient has been transferred in directly to critical care, click on ‘Critical Care Attendants’ from the left hand side navigation. If you are in the ‘Extended Dataset’ click on ‘Critical Care’ and then enter the attendants by clicking on ‘Attendants’
2. Complete date and time the patient was seen.
3. Select ‘Doctor’ from ‘Type of Attendant’ to record that the patient was seen by a Doctor

Tranexamic Acid & Blood Products

In the Core version of the eDCR, Blood, Blood Products and Tranexamic Acid can be recorded as an ‘Intervention’. Please ensure that you record both the date and time that tranexamic acid was administered. Please also check whether blood products were given to the patient and record date, time and blood product type. If dates and times aren’t recorded, then this will affect tariff payment.

Tranexamic Acid

Tranexamic Acid can be recorded in the following locations:
- Pre-Hospital
- ED

It can also be recorded in any location within the Extended system.

Blood Products

Blood product type and volume can be entered within any location in the extended system and can also be entered in the following sections within the core:
- Pre-Hospital
- ED
- Critical Care
CT scan within 1 hour
It is important to record the date and time of the first CT scan to each body region and any subsequent scans that showed injuries. These can be recorded in the imaging section of the CORE dataset or under investigations in the Extended dataset.

At Discharge/Outcome: Patients awaiting Post Mortem
To ensure that all patients receive the Major Trauma Best Practice Tariff, an option is available on the Post Mortem drop down list called ‘Awaiting Post Mortem’ and allows a user to dispatch a submission without injury details if the patient outcome is ‘Death’ and ‘Awaiting Post Mortem’ is selected.

BPT reports
A BPT report can then be produced, simply click on:
1. Audit
2. Best Practice Tariff
3. Select Hospital
4. Start and End Date
5. Date for Selection (use Arrival date)
6. Generate Report

This report highlights ALL approved submissions that were dispatched to TARN with an ISS>8

The report will allow you to cross check the following fields:

<table>
<thead>
<tr>
<th>General details</th>
<th>Key Fields for Best Practice Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Date</td>
<td>Days to Dispatch (including those dispatched &gt;25 days)</td>
</tr>
<tr>
<td>Discharge Date</td>
<td>Consultant led trauma team within 5 minutes</td>
</tr>
<tr>
<td>Outcome</td>
<td>Tranexamic Acid within 1 hour for patients with injury associated with significant bleeding</td>
</tr>
<tr>
<td>Dispatch Date</td>
<td>Rehabilitation Prescription completed</td>
</tr>
<tr>
<td>Outcome</td>
<td>Transferred within 2 calendar days (non emergency transfer)</td>
</tr>
<tr>
<td>Approval date</td>
<td>ISS</td>
</tr>
<tr>
<td></td>
<td>CT scan within 1 hour of arrival</td>
</tr>
<tr>
<td></td>
<td>GCS &lt;9 intubation considered</td>
</tr>
<tr>
<td></td>
<td>Clinical Frailty Scale completed for 65 and older</td>
</tr>
<tr>
<td></td>
<td>Current BPT level if applicable</td>
</tr>
</tbody>
</table>

Demographics
- Patient’s CCG
- Hospital treating the patient

Fields highlighted in **RED** will alert a user of information that currently results in no BPT payment, this may include cases dispatched >25 days who are ineligible for BPT.

Fields highlighted in **YELLOW** alert a user to information that is currently affecting the BPT payment level. These provide the user with advance warning that the submission may need to be checked to ensure that the correct details have been entered.
Commonly asked questions

How will I know that the patient has been seen by a consultant within 5 minutes?
A consultant of ANY specialty should be present within 5 minutes of patient arrival and be ‘part of’ the team seeing the patient.

If the patient is given tranexamic acid and blood products, does there have to be a minimum blood volume given to qualify for tariff payment?
No, the criteria are not dependent on the amount of blood given but details of the date and time of both any blood, blood products and Tranexamic acid is essential.

What if the patient is seen by a consultant but no indication that a trauma team was present?
If no trauma team is indicated in the notes, but states that a consultant has seen the patient within 5 minutes of arrival (where applicable), then this will still qualify for the tariff this year.

What is the difference between an ‘Emergency Transfer’ and an ‘Urgent’ Transfer?
An Emergency Transfer is a patient that has been transferred within 12 hours.
An ‘Urgent’ Transfer (non-emergency) is a transfer within 2 calendar days of Referral request.

For Level 1 patient it states that ‘If the patient is transferred as an urgent transfer (non-emergency), then the transfer should take place within 2 calendar days of referral from the Trauma Unit.’ How will this be calculated?
If you have the date and time of Referral request from the Trauma Unit, then this should be entered on screen in the opening section as described above. This will enable us to calculate if the patient has been transferred within 2 calendar days of the request. There would be no financial loss to the Major Trauma Centre unless the patient was not transferred within 2 calendar days if it was an ‘urgent’ (non emergency) transfer.

What if the patient is transferred in? Do they still need to be seen by a consultant within 5 minutes?
Only if they are an Emergency transfer. If the patient is an ‘emergency’ transfer (defined as being transferred within 12 hours of arrival at 1st hospital), then they may be transferred in and seen in the ED or sent straight to theatres or critical care.

What if the patient is awaiting a Post Mortem? Will this affect payment of the Best Practice Tariff?
No, it won’t affect payment of the Best Practice Tariff. As highlighted in this document, TARN has modified the system so it allows trusts to dispatch a submission of a patient who has died without injury details. We understand that there can be a delay in receiving a post mortem, and in some cases, can result in a delay of many months. We have therefore amended the ‘Post Mortem’ question to include an option ‘Awaiting Post Mortem Report’ to monitor these patients. The report is accessible to both the Trust and the PCT so any outstanding patients can be reconciled by the PCT. The tariff for these patients will apply if the submission is dispatched within 25 days of death and the deceased patient meets either the level 1 or level 2 criteria.

Will a Trauma Unit also be paid the Best Practice Tariff?
The Tariff is only applicable to Major Trauma Centres, but Trauma Networks will be encouraging Trauma units to submit data so the full patient care can be matched between both Trusts and the overall level of care can be completely assessed.
<table>
<thead>
<tr>
<th>Question</th>
<th>Important Data to Record</th>
<th>Question Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NHS Number</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **If Transfer IN** | • Date / Time of Arrival at 1st Hospital  
• Arrival Date/Time  
• Date/Time of Referral Request | Opening Screen |
| **GP Details** | | |
| **Rehabilitation Prescription** | | |
| **Tranexamic Acid** | • Date  
• Time | Pre-hospital ED |
| **Blood Products** | • Date  
• Time  
• Blood Product Type | Pre-hospital ED  
Critical Care |
| **GCS<9 intubation considered** | • GCS  
• Date  
• Time  
• Intubation/ reason not intubated | Pre-hospital ED  
Critical Care |
| **Consultant within 5 minutes** | • Date/ Time  
• Grade  
• Speciality | ED Attendants (CORE)  
Critical Care Attendants (CORE) |
| **Trauma Team** | | ED |
| **CT within 1 hour** | • Time  
• Date  
• Body region scanned | Imaging (CORE)  
Investigations (EXTENDED) |
| **Clinical Frailty Scale (>65)** | • Date  
• Time  
• Grade  
• Speciality | At Discharge |
| **Outcome (if Dead)** | Awaiting Post Mortem | At Discharge |