pennsylvania
TRAUMA SYSTEMS
foundation
2018 Registry Education Overview

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PTSF Trauma Registry Auditor
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Policy TR-106 Trauma Registry Educational Visits

Registry data is used in the following ways:
• Trauma Center performance improvement (PI) initiatives
• Utilization of services and systems at the institution level and state level
• Educational programs
• Research and comparison studies
• Public policy questions
• Site Survey accreditation process
Policy TR-106 Trauma Registry Educational Visits

• Pursuing centers:
  – In first year of pursuit:
    • Virtual orientation in Fall (this replaces on site half day meeting)
    • 1st in person visit in Spring (prior to Survey if scheduled)
  – After 1st year, remain in pursuit:
    • Yearly education required until accredited
    • Required visit in year after initial accreditation
Policy TR-106 Trauma Registry Educational Visits

• Accredited centers:
  – After 1st year of accreditation:
    • In 5 years after a successful visit (≥ 96% accuracy)
    • In 2 years if accuracy < 96%
      – Also requires an Action Plan

• Change effective January 2019
  – 1 year visit required if any registry related Significant Issue is identified (at Survey or due to Timeliness review)
2018 Registry Ed Visits

<table>
<thead>
<tr>
<th>Accredited</th>
<th>Pursuing</th>
</tr>
</thead>
<tbody>
<tr>
<td># Adult</td>
<td># Peds</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

- Adult 1: 23%
- Adult 2: 32%
- Peds 1 & 2: 13%
- Adult 3 & 4: 9%
- Pursuing: 23%
Virtual Education

• Virtual Education
  – Traditional record review
    • Only offered to mature centers able to support remote access to HER
  – Adapted education
    • Web-Ex meetings allow us to share screens, review questions on abstraction, coding, or Report Writing
    • Multiple centers can participate (e.g. hospitals in system)
  – Webinars
    • Presentations on our website and hopefully soon on our new Registry page
External Cause for Abuse

• Reminder: Change to how External Cause is coded in cases of Suspected or Confirmed Abuse (April 2018)

• T74… or T76… is always entered as Primary ICD-10 Mechanism

• Secondary ICD-10 Mechanism is **REQUIRED**
  – May be reported mechanism (fall, burn, etc)
  – May be unknown/unspecified (e.g. burn nfs, or X58.XXXA, Exposure to other specified factors, applicable to Accident NOS)
  – Do **not** enter ‘?’ or ‘U’ for Unknown.
Accession Review

• Discussed process to identify PTOS patients at each trauma center that had an education visit this year

• These vary somewhat
  – Standard: ED patients, All patients, Activations, Diagnostic Index
  – Additional: Surgical service, Residents/Trauma AP list, SW/Case management, NAT teams, EMS listings
## 2018 PTOS Identification Review

<table>
<thead>
<tr>
<th>Hospital A</th>
<th>Hospital B</th>
<th>Hospital C</th>
</tr>
</thead>
</table>
| **24 hour ED activity log:**  
• Alerts/Patient complaint  
• Admission/transfer status  
• Provider  
**All admissions:**  
• Initial ICD-10 diagnoses  
**Trauma Registry:**  
• Compare all 3 | **ED patients:**  
• Alert/Consult by Trauma  
**24 hour log:**  
• Trauma Service  
**PI Patient list:**  
• All admissions  
• ICD-10 diagnoses | **24 hour ED activity log:**  
• Alerts/Patient complaint  
• Admission status  
**All admissions:**  
• Initial diagnoses  
**All trauma service admits:**  
• All census:  
Diagnostic Index: |
PTOS Identification

• Be sure trauma program is defining which patients are included when reports are compiled
  – Periodic review is recommended

• Continue to use Diagnostic Index
  – Recommend All patients census with diagnostic index
  – Not all patients that are admitted status in hospital (patient may remain in ED or observation status and qualify for PTOS inclusion)

• Many are using additional reporting/lists
PTOS Inclusion Criteria

• Updated in 2018
  – Changes to ‘No Documented Injuries’
  – Increase in number of submitted records changed to NPTOS

• Changes coming in 2019

• Use current criteria when reporting
  – Inclusion and Exclusion
Data Defaults

• Save time  BUT Must be used thoughtfully
• Many fields are conditional (only open in specific cases)
• Do NOT use data defaults
  – If field would not have opened
    • For example, fields that only open for burns, abuse, deaths
    • Copy to Consults, Consults date/time fields
  – In fields that could change with each record
    • Patient demographics, Pre-Existing Conditions
    • Too easy to forget to review and change
ED Response vs. Consults

• Recording the Provider called and arrived date/time
• Call and arrived date/time is the initial date/time the specific provider was called to respond (or arrived) to the patient, **regardless of whether or not an alert was called.**
• The patient’s physical location at date/time provider was called and/or arrived determines in which tab data is entered
ED Response vs Consults (3 Scenarios)

1. Provider is called and responds while patient is in ED, enter all information in ED Response.

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Prehospital</th>
<th>Referring Facility</th>
<th>Acute Care</th>
<th>Clinical</th>
<th>Outcome</th>
<th>Dx</th>
<th>Procedures</th>
<th>Misc</th>
<th>Rec Fac Dx</th>
<th>Level IV Pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival/Admission</td>
<td>ED Response</td>
<td>Diagnostic and Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was trauma alert called? (Trauma alert, trauma code, etc.) 2 No

Initial Alert Called: [ ] Initial Level of Alert: [ ] Specify:

Was initial level of alert changed?

Alert Called: [ ] Level of Alert: [ ] Specify:

<table>
<thead>
<tr>
<th>Service/If Other</th>
<th>Called</th>
<th>Arrived</th>
<th>PGY</th>
<th>Copy to Consults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending Emergency Physician</td>
<td>01/01/2018</td>
<td>10:00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Medicine Resident</td>
<td>01/01/2018</td>
<td>10:10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ED Response vs Consults (3 Scenarios)

• 2. Provider is called while patient is in ED, responds after patient leaves ED.

• Called information is entered in ED Response, with arrive information marked ‘I’. Click Copy to Consult.
ED Response vs Consults (3 Scenarios)

• 2. Provider called while patient in ED, responds after patient leaves ED.

• Consult tab, Click ‘Copy from ED Response’ and enter Arrived date

[Diagram showing the 'Copy from ED Response' function with details of specialty and arrival date]
ED Response vs Consults (3 Scenarios)

3. Provider is called and responds after the patient leaves the ED, enter all data on the Consults tab.

<table>
<thead>
<tr>
<th>Specialty</th>
<th>If Other</th>
<th>PGY</th>
<th>Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatrics</td>
<td>01/02/2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>01/02/2018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Specification Pop-ups

- Highlight your choice
- Be sure to Click “SELECT” *not* “CONTINUE”

Please note that ISS may be impacted as severity may differ with the location or injury choices. Default codes are not necessarily the correct or best choice.
Occurrences/Pre-existing Conditions

• Requires clinical determination AND

• Match the definition

Teamwork!

• Registry and PI teams work together for accurate reporting
Coding Rib Fractures

• Use plural “RIBS” for multiple fractures
• List as “Ribs fxs R (3,4,5)” or as “3 Ribs fxs Right”
  – Anatomic rib number IS in parentheses
  – NOTE: Total number is NOT in parentheses
• Do NOT use punctuation other than comma
  (e.g. Ribs fxs Right (3 – 5))
  – Tri-Code does not read hyphen as ‘through’, it reads literally as two
    anatomic numbers (Rib # 3 and Rib # 5)
  – You get a code for 2 fx ribs, severity of 2 and may affect inclusion in TQIP
Coding Rib Fractures

- Specific language required!
  - Must use plural ‘RIBS’ for more than one fracture
  - Rib numbers in parentheses
Coding Rib Fractures

- When entered correctly as ‘RIBS’, severity increases
  - Changes to become a TQIP patient
2018 Quality Focus – Head Injuries

- Includes numerous elements to ensure correct abstraction and show how they affect review (ISS, Audit Filters)

<table>
<thead>
<tr>
<th>Diagnoses</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupillary Response</td>
<td>Cranial surgery 24 hours</td>
</tr>
<tr>
<td>Midline shift</td>
<td>Craniotomy for trauma</td>
</tr>
</tbody>
</table>
| Sequential neurological documentation         | CT scan head in resuscitative phase?
|                                               | [Includes at referring facility]                |
|                                               | CT scan (any) this facility in resuscitative phase? |
Pupillary Response

- Make sure you understand the menu options
- Menu options:
  - 5 options: Use one of these only
  - Do not use inappropriate (‘/’ or ‘N/A’)
Pupillary Response

• 2018 - 117 patients with no head injury have Pupillary Response valued (just under 1% (0.98))

• 2017 – 369 patients with no head injury have Pupillary Response valued other than ‘No Injury AIS Head region’ – 1.3%
Midline Shift

• Menu Options
  – 5 options: Use one of these only
  – Do not use inappropriate (‘/’ or ‘N/A’)
Midline Shift/CT Head

• 109 head injured Patients marked ‘Not imaged’ for Midline shift element
  – 57 of those have a value of ‘Yes’ to CT head in Resus.
    • Inaccuracies in data entry lead to inaccuracies in data analysis
Midline Shift 2018

<table>
<thead>
<tr>
<th>Not Imaged (e.g. CT Scan, MRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes CT Head</td>
</tr>
<tr>
<td>No CT Head</td>
</tr>
</tbody>
</table>
Midline Shift 2017

Not Imaged (e.g. CT Scan, MRI)

- Yes
- No
Inconsistent Responses

• 7197 patients have Head injury AIS Region 1
• 6145 pts with yes = CT Head in Resuscitative phase
  – 54 of these answered ‘Not imaged’ to Midline shift
    • Be sure you know menu options
      – 1 = yes, 2 = No, 3 = Not imaged, 4 = no injury AIS head region
    • May be data entry error
• Do not leave blank or answer ‘/’ or ‘N/A’
Audit Filter 3A

- Patient with admission Glasgow Coma Scale score <13 and no head computerized tomography (CT) scan (if CT available in hospital) excluding DOAs head (Audit Filter #3a)
- Trauma Patient; AND
- Signs of Life (SIGN_LIFE) = 2 (Arrived with Signs of Life)
- GCS on Admission (GCS_A) < 13; AND
- "Did patient receive a CT scan of the head?" (CT_SCAN) = 2 (No).
Optional Element and Filter

- Admission
  - 'Order to Change Vital Signs' to Greater than 1 Hour
  - Is there sequential neurological documentation on ED record of trauma patient with diagnosis of skull fx, intracranial injury, or spinal cord injury?
  - Is there hourly documentation beginning with ED arrival?

1. Yes
2. No
3. Head or Spinal Cord Injury Not Present
   /, Inappropriate
   ?, Unknown
Audit Filter 4A

• Trauma Patient; AND
• Any ICD-10-CM diagnosis code (ICD10_01, ICD10_02, ... ICD10_27) that starts with S02.0, S02.1, S04, S06, S07.1;
• AND
• "Is there sequential neurological documentation on ED record of trauma patient with admission diagnosis of skull fx, intracranial injury, or spinal cord injury?" (NURS_N_DOC) = 2 (No).
Audit Filter 10

- Patient with epidural or subdural brain hematoma receiving initial craniotomy > 4 hours after arrival at ED, excluding those performed for ICP monitoring (Audit Filter #10)
- Trauma Patient; AND
- Any ICD-10-CM diagnosis code (ICD10_01, ICD10_02, ... ICD10_27) that starts with S06.4; AND S06.5; AND
- “Did the patient have a craniotomy for trauma?” (CRANIOTOMY) = 1 (Yes); AND
- Any Operative procedure (PR_01_I10...PR_84_I10) = that starts with 0N [8,9,B,R,T,U] [0,1,2,3,4,5,6,7,8,C,D,F,G,]0 OR 00[8,9,B,C,Q] [0,1,2,3,4,5,6,7,8,9,A,B,C,D]0; AND
- the associated time for the earliest (initial qualifying Operative procedure (e.g., O_1_P1_DATE, O_1_P1_TIME) is greater than 4 hours after ED arrival (EDA_DATE, EDA_TIME).
Did patient have craniotomy for trauma?

- Options 1 and 2 for patients who had a craniotomy
  - 1 – Yes: had procedure for trauma
  - 2 – No: had procedure for other reasons
- Option 3 No procedure performed
Head Injury Coding Overview

• Bilateral and Combination codes
  – Some injuries/some body parts have specific codes
  – Refer to AIS Dictionary

• Remember symptoms/signs/sequela are not injuries
  – Pain/Vision loss

• Software does not know all Terminology
  – Basal ganglia intraparenchymal hemorrhage → scalp injury
Loss of Consciousness (LOC)

• Hierarchy for coding LOC
  1. With specific intracranial injury
  2. With diagnosed concussion if no specific intracranial injury
  3. Separately as LOC
     • If diagnosed and meets the criteria for coding
     • Use term ‘Concussive injury’
     • Will not code with fractures
LOC - Without Concussion

- For Tri-Code, just the term ‘LOC’ will not code.
- You must use the term ‘Concussive injury LOC (duration)’.

![Concussive injury LOC 50 minutes](image)

<table>
<thead>
<tr>
<th>ICD10</th>
<th>[ICD9]</th>
<th>ICD10 Description</th>
<th>Severity</th>
<th>ISS.BR</th>
<th>Predat</th>
<th>AIS Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L06.0X3A</td>
<td></td>
<td>Concussion with loss of consciousness of NOS duration, initial encounter</td>
<td>2</td>
<td>1</td>
<td>161005</td>
<td>cerebral concussion w brief LOC 31 to 59 mins</td>
</tr>
</tbody>
</table>
Diagnosing DAI

• Neuropathological exam of brain demonstrates widespread damage to axons in white matter of cerebral hemispheres or cerebellum not associated with contusion, infarct, ischemia, or mass lesions (intracerebral hematoma/hemorrhage).

OR
Diffuse Axonal Injury
Diagnosing DAI

- Clinical diagnosis made by combination of clinical observations and brain imaging study with CT or MRI.
  - Patient sustains coma from time of traumatic event AND
  - Remains in post-traumatic coma for more than 6 hours AND
  - No ischemic damage (prolonged hypotension or infarction on imaging) or mass lesion (epidural, subdural, or intracerebral hematoma) to explain the coma on imaging studies
Diffuse Axonal Injury (DAI)

- **DAI** *(See p. 50 in AIS Dictionary)*
  - Includes intracerebral, subcortical, subpial, subarachnoid, intraventricular hemorrhage and ischemic brain damage due to trauma (these do not receive separate AIS codes)
  - LOC must be immediate and prolonged (> 6 hours)
    - Coma is not attributable to ischemic injury or mass lesion
    - Description must include duration
      - >6 hours and <24 hours OR
      - >24 hours
        - With or without neurological signs
Diffuse Axonal Injury (DAI)

• If specific anatomical description exists use codes under Cerebrum
  – White matter/basal ganglia
  – Corpus callosum

• Otherwise, use the DAI codes under Concussive Injury
  – For LOC duration > 24 hours, always use these
Diffuse Axonal Injury (DAI)

- DAI
  - If death occurs prior to 24 hours
    - Coma is present since the traumatic event AND
    - Imaging shows one or more small hemorrhages in central third of the brain (not cortical or subcortical)
  - If death occurs prior to 6 hours
    - Coma is present since the traumatic event AND
    - Diagnosis is made by pathological exam
Diffuse Axonal Injury (DAI)

• Can DAI be coded if a physician notes that this is a DAI, it is documented in the EMR, but it does not completely meet the definition set forth?

• Short answer → No
24 Hour Rule

• “Surgical and other interventions, such as administering anticoagulants, can increase the size of a contusion or hemorrhage which would artificially inflate its severity. Therefore, coding of brain injuries should be done at 24 hours or at initial confirmed diagnosis if later than 24 hours.”

• AIS Coding Rules: Brain p. 40
Head Injuries

• Vocabulary is very important
  – **Software limitations** (Lobe - only use for contusions)
• Terminology used by physicians may not match definitions in code sets
  – *It is up to the registrar to determine what is injured, how it is injured, and to assign it appropriately for coding purposes.*
• Specific injury is assigned to region (e.g. SDH cerebrum)
• If there is conflict between ICD-10 and AIS, code to correct AIS
2017 Quality focus for Registry Education

- Penetrating injury
  - Blunt is predominant injury type
  - Penetrating injury is second most common

<table>
<thead>
<tr>
<th>EDA_DATE</th>
<th>CNT</th>
<th>CNT/BLUNT</th>
<th>CNT/PENETRATING</th>
<th>CNT/BURN</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>33376</td>
<td>29177</td>
<td>2658</td>
<td>1524</td>
</tr>
<tr>
<td>2008</td>
<td>34579</td>
<td>30257</td>
<td>2674</td>
<td>1629</td>
</tr>
<tr>
<td>2009</td>
<td>36319</td>
<td>31855</td>
<td>2724</td>
<td>1725</td>
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<tr>
<td>2010</td>
<td>37728</td>
<td>32919</td>
<td>2900</td>
<td>1907</td>
</tr>
<tr>
<td>2011</td>
<td>39077</td>
<td>34254</td>
<td>2973</td>
<td>1850</td>
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<td>2012</td>
<td>40545</td>
<td>35703</td>
<td>2925</td>
<td>1913</td>
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<td>2013</td>
<td>40687</td>
<td>35727</td>
<td>2919</td>
<td>2039</td>
</tr>
<tr>
<td>2014</td>
<td>41212</td>
<td>36468</td>
<td>2831</td>
<td>1911</td>
</tr>
<tr>
<td>2015</td>
<td>43136</td>
<td>38109</td>
<td>3152</td>
<td>1875</td>
</tr>
<tr>
<td>2016</td>
<td>44281</td>
<td>39345</td>
<td>3122</td>
<td>1812</td>
</tr>
<tr>
<td>2017</td>
<td>45853</td>
<td>40679</td>
<td>3172</td>
<td>2000</td>
</tr>
<tr>
<td>2018</td>
<td>19191</td>
<td>17037</td>
<td>1238</td>
<td>913</td>
</tr>
</tbody>
</table>
Jan. – June 2018 Injury Type

Blunt = 17037 or 89%

Penetrating = 1238 or 6%

Burn = 913 or 5%

Skin disease = 3 or 0.016%
2017 Injury Type

Blunt = 40679 or 89%

Penetrating = 3172 or 7%

Burn = 2000 or 4%

Skin disease = 1 or 0.002%
Top 3 Etiology 2017 and 2018

Top 3 Etiology 2017 and 2018 (Jan - June)

- **Penetrating Injury 2017**: 5.67%
- **Penetrating Injury 2018**: 5.34%
- **MVA 2017**: 24.33%
- **MVA 2018**: 21.19%
- **Falls 2017**: 52.38%
- **Falls 2018**: 55.58%
Penetrating Injuries - General rule

• Code underlying injuries **only**
  
• Associated injuries to external body region are not coded
Penetrating Injuries

- Penetrating injuries involving bone are coded as open fracture
- Tri-Code does assign Open fx when “GSW” and “SW” used
- No skin/muscle injury coded
Penetrating Injuries

• When no documentation of internal injury (deaths/transfers)
  → Remember severity will increase if documented:
    • Tissue loss (varies by body region)
    • Blood loss (>20%)

• Include in description
  → Example: GSW thorax
    • Severity = 1, ISS = 1
  → Example: GSW thorax with blood loss > 20%
    • Severity = 3, ISS = 9
Penetrating Injuries

Exception- The head

• Penetrating injury is coded to region when severity is higher
  • Cerebrum, Cerebellum, Brain Stem or Skull (unknown or combined)
    • Always code Brain stem injuries separately
  • “Major” = > 2 cm depth
    • Through and through, involving more than one region, or Brain matter visible
• Underlying injuries to brain are not coded in AIS
  • Hemorrhages, contusions, etc.
  • May list with the @ symbol
Penetrating Injury - Head

- We recommend coding to AIS rules
  - 1 code for overlying penetrating injury
    - Cerebrum, cerebellum, brain stem or skull
- Some want to include ICD-10 codes for research/reporting
- Software does not accommodate this
  - Difficult to discern between underlying injury due to penetrating injury or unrelated
Penetrating injuries

- If skull is not penetrated, code as scalp laceration
  - Code underlying injuries

- GSW with entry and exit wounds is coded as a single injury
Inter Rater Reliability (IRR)

Standard 5

8. There must be a plan for ensuring that the data entered into the trauma registry is accurate and reflects the observations made on the patient. (Inter Rater Reliability)

   – A. This plan must reflect compliance with PTOS Operations Manual and definitions for data entry
Inter Rater Reliability (IRR)

• Orange Book Ch. 15 Trauma Registry
  – Data Validation and Quality

• “In addition, a plan for ensuring that the data entered are accurate and reflect the observations made on the patient should be established. One approach is to re-abstract 5 to 10 percent of patient records. The medical director, trauma program manager, and trauma registrar then can perform a systematic review of the differences to establish levels of inter-rater reliability.”
Inter Rater Reliability (IRR)

• Variety of methods
  – Full record reabstraction
    • Structured, consistent, reabstraction
    • Some have developed template
  – Focused review
    • Topic focused, need focused
  – Potential software product?
Education Overview

• Note change for initial orientation webinar in place of initial visit for pursuing centers
  – Followed by in person review Spring

• Change in policy to require visit in the year following if Registry SI is identified at survey or due to timeliness of submission

• Remember: Education can be requested at any time!
  – Recommended with staffing changes or presence of OFI (registry)

• 2019 Focus – Prehospital Records
Questions/Issues?

Notice errors or discrepancies when abstracting?

Have suggestions?

Send me an email (Include a screenshot if possible.)

Questions about this presentation or education?

Email gwenger@ptsf.org or RegistryQuestions@ptsf.org

Thank you!
References


References