The Culture of Safety Event Taxonomy: Overview

The Patient Safety Taxonomy

**Discloser:**
- This presentation is based on the work of Donald Jenkins, MD & Carol Immermann, RN
- Content from the TOPIC program is being utilized with permission.
The National Quality Forum Taxonomy

• Recommended as best practice
  – ACS COT PIPS committee
  – ACS VRC leadership
• Inclusion next Optimal Resource book.
The Problem (Analogy)

Registry
Data Quality → Poor interrater reliability

PI Program
Preventable
Pot preventable
Non preventable → Poor interrater reliability

Mikhail slide
Taxonomy is the Fix

• Building blocks
  • Common definitions
  • Clear terminology

• Scope
  • Comprehensive tool
  • Applicable to all settings
  • Includes multiple levels of patient harm

• Addresses:
  – Sentinel events
  – Adverse events
  – No harm events
  – Near misses
  – Close calls
  – Potential events
Taxonomy Implementation

- PI process like you normally do
- Examine the “bad case”
- Classify factors according to taxonomy
- Develop computerized application
  - NTDS complications as baseline sentinel events
  - Allow users to add additional sentinel event types
2008 Ivatury
764 deaths reviewed

Patient Safety in Trauma: Maximal Impact Management
Errors at a Level I Trauma Center

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Background: The Division of Research at JCAHO developed a taxonomy (common terminology and classification schema) to promote consistency in reporting and facilitate root cause analysis. We undertook a review of trauma management errors at our institution with maximal impact (death). The analysis was based on the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) taxonomy.

Methods: Trauma deaths between 2001 and 2006 at our Level I trauma center were peer-reviewed to identify errors in management. The errors are classified according to type, domain, and cause.

Errors: ED or the resuscitative phase. Human errors predominated.

Results: Seventy-six (9.9%) of 764 deaths had management errors contributing to potentially preventable deaths in 60 patients. In 36 patients, the errors were classified as ED and OR.

Conclusions: Management errors in the basics of trauma care continue even in established trauma centers, despite guidelines, protocols, and continuous performance improvement. Standardized reporting such as the taxonomy may result in progressive collection of patient safety data and lead to innovations to minimize these errors.

Key Words: Preventable deaths, Patient safety, Adverse events.

Taxonomy
(Ivatury et al. JT, Feb 2008)

- **Impact**: Outcome or effect of event
- **Type**: Processes that were faulty
- **Domain**: Setting or phase of care
- **Cause/Factors**: Factors leading to incident
- **Prevention Mitigation**: Universal, selected, action plan
Framework of the Taxonomy

I. Impact

Impact: Severity of harm

II. Type

Type: Health care service provided

III. Domain

Domain: Discipline Setting

IV. Cause

Cause: Over/Under Use Misuse Active & latent failures Negligence
Primary Classifications Further Defined

1. **Impact**: the outcomes or effects of medical error and systems failure, commonly referred to as harm to the patient.

2. **Type**: the implied or visible processes that were faulty or failed.

3. **Domain**: the characteristics of the setting in which an incident occurred and the type of individuals involved.

4. **Cause**: the factors and agents that led to an incident.

5. **Prevention and Mitigation**: the measures taken or proposed to reduce the incidence and effects of adverse occurrences.
Classification: Impact

Medical

Psychological

I. No harm/no detectable harm
II. No detectable harm
III. Mild temporary harm
IV. Mild permanent harm
V. Moderate temporary harm
VI. Moderate permanent harm
VII. Severe temporary harm
VIII. Severe permanent harm
IX. Profound mental harm

Physical

I. No harm/no detectable harm
II. No detectable harm
III. Mild temporary harm
IV. Mild permanent harm
V. Moderate temporary harm
VI. Moderate permanent harm
VII. Severe temporary harm
VIII. Severe permanent harm
IX. Death

Non-Medical

Legal

Economic

Social

Patient/Family Satisfaction

Extremely satisfied
Satisfied
Neutral
Dissatisfied
Extremely dissatisfied

Patient/Family Satisfaction
Differentiating Levels of Harm

- **None** – patient outcome is not symptomatic or no symptoms detected and no treatment is required (I. & II. Impact)

- **Mild** – patient outcome is symptomatic, symptoms are mild, loss of function or harm is minimal or intermediate but short term, and no or minimal intervention (e.g., extra observation, investigation, review or minor treatment) is required (III. & IV. Impact)

- **Moderate** – patient outcome is symptomatic, requiring intervention (e.g., additional operative procedure; additional therapeutic treatment), an increased length of stay, or causing permanent or long term harm or loss of function (V. & VI. Impact)
Differentiating Levels of Harm

• **Severe** – patient outcome is symptomatic, requiring life-saving intervention or major surgical/medical intervention, shortening life expectancy or causing major permanent or long term harm or loss of function *(VII. & VIII. Impact)*

• **Death** – on balance of probabilities, death was caused or brought forward in the short term by the incident *(IX. Impact)*
IMPACT
Level of Harm to Patient

Physical

1. **No Harm & No Undetectable Harm**- Sufficient information determines no harm occurred
2. **No Detectable Harm**- Insufficient information or unable to determine any harm
3. **Minimal-Temporary Harm**- Requires little or no intervention
4. **Minimal Permanent Harm**- Requires initial but not prolonged intervention
5. **Moderate-Temporary Harm**- Requires initial but not prolonged hospitalization
6. **Moderate-Permanent-Harm**- Requires intensive but not prolonged hospitalization
7. **Severe-Temporary Harm**- Requires tx to sustain life but not prolonged hospitalization
8. **Severe-Permanent Harm**- Requires tx to sustain life and prolonged hospitalization, long-term care, or hospice
9. **Death**
Classification: Domain
Classification: Cause

- Structure/Process
  - Organizational
    - External to organization
      - Organizational culture
    - Management
      - Protocols/procedures
    - Facilities
      - External
  - Technical
    - Transfer of knowledge
- Human (actual or near misses)
- Practitioners
  - Skill-based
  - Rule-based
  - Knowledge-based
  - Unclassifiable
- Patient
  - Patient factors
- External
  - Other
    - Negligence
    - Recklessness
Classification: Prevention (P) & Mitigation (M) [Action Plan]

Universal
- Improve the accuracy of patient identification (P)
- Improve the effectiveness of clinical alarm systems (P)

Selective
- Improve the effectiveness of communication among caregivers (P)
- Eliminate wrong-side, wrong-site, wrong-procedure surgery (M)

Indicated
- Reduce the risk of healthcare-acquired infections (M)
- Improve the safety of using high-alert medications (P)
- Improve the safety of using infusion pumps (P)
Case Study

- 24 y/o male MVC Transfer
- Level III to Level I Center
- Transferred in the evening
- 10 hours post injury
- At request of family

Level III
- Initially hypotensive
- 5 units PRBCs
- 6 L crystalloid in first 8 hours
- Stable vital signs prior to transfer
Case Study cont.

Level I

- Arrives intubated with known pulmonary contusions, rib fractures, open tib/fib fracture, GCS 8, moving all 4 extremities
- Secondary survey & adjunctive studies negative except for suspicion of lower T-spine fracture on CT
Case Study cont.

- Ortho consult for open tib/fib fracture
  - Requests neuro clearance
- Neuro consult recommends MRI to evaluate T-spine
  - Goes for MRI at 2 am
- During MRI
  - Nurse notes patient cyanotic despite good rhythm on monitor
  - Patient pulled out of scanner- asystole on regular monitor
- CPR, Resuscitated- severe anoxic brain damage
- Support withdrawn 5 days later
- PI review of case found patient had severe base deficit on arrival and collapsed inferior vena cava
Example Case Taxonomy

- Impact:
  - Medical: Death
  - Non-Medical: Family dissatisfied
  - Non-Medical: Potential litigation

- Type:
  - Communication: Questionable advice
  - Patient Management: Questionable delegation
  - Clinical Management (Intervention): Correct procedure/untimely

- Domain:
  - Setting: Diagnostic procedures
  - Staff: Resident
  - Target: Diagnostic

- Cause:
  - Organizational: Organizational culture
  - Human: Practitioner knowledge
### Figure 3. Sample Sentinel Event Tracking Form for Root Cause Analysis

<table>
<thead>
<tr>
<th>Demographics</th>
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<tbody>
<tr>
<td>Date of report</td>
<td>Medical record No.</td>
<td>Trauma registry No.</td>
<td>Event date &amp; time</td>
</tr>
<tr>
<td>Nature of event</td>
<td>Patient Name</td>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>Diagnoses:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of Disease:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coexisting Conditions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Pertinent Information:</td>
<td>Report completed by:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source of information (✓)</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma nurse coordinator</td>
<td>PIPS coordinator</td>
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</tr>
<tr>
<td>Nurse management</td>
<td>Patient Relations</td>
<td></td>
</tr>
<tr>
<td>Case manager</td>
<td>Rounds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Registry</td>
<td></td>
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<tr>
<td></td>
<td>Other:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact (✓)</th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Psychological</td>
<td>Legal</td>
<td></td>
</tr>
<tr>
<td>No harm</td>
<td>No harm</td>
<td>Risk management contacted</td>
<td></td>
</tr>
<tr>
<td>No detectable harm</td>
<td>No detectable harm</td>
<td>Complaint registered</td>
<td></td>
</tr>
<tr>
<td>Mild temporary harm</td>
<td>Mild temporary harm</td>
<td>Suit filed</td>
<td></td>
</tr>
<tr>
<td>Mild permanent harm</td>
<td>Mild permanent harm</td>
<td>Case dropped</td>
<td></td>
</tr>
<tr>
<td>Moderate temporary harm</td>
<td>Moderate temporary harm</td>
<td>Case dismissed</td>
<td></td>
</tr>
<tr>
<td>Moderate permanent harm</td>
<td>Moderate permanent harm</td>
<td>Settled</td>
<td></td>
</tr>
<tr>
<td>Severe temporary harm</td>
<td>Severe temporary harm</td>
<td>Defense Verdict</td>
<td></td>
</tr>
<tr>
<td>Severe permanent harm</td>
<td>Severe permanent harm</td>
<td>Plaintiff Verdict</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>Profound mental harm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Social | | Economic | |
| Patient / family satisfaction | Unable to socialize | | |
| Extremely satisfied | Homebound, able to socialize | | |
| Satisfied | No social impediments, not socially active | | |
| Neutral | Socially active | | |
| Dissatisfied | | | |
| Extremely dissatisfied | | | |
| | | | |
TJC Taxonomy Via Software

• Advantages
  – Ease of use
  – Improved data collection
  – Improved data collation

• Disadvantages
  – Development time
  – Distribution
  – Training
Why Do This?

- Will be able to PI our PI
- Benchmark our PI
- Incorporate into TQIP
ACSCOT Update

• Connect PIPS with NTDS, NTDB, VRC and TQIP
• Definitions of NQF taxonomy are being ‘traumafied’
• NTDB and TQIP input (worked on at EAST)
• Many NTDB and TQIP adverse events have elements that are not defined in the NQF taxonomy (Worked on at EAST)
• Evaluate best practices
• Advise low performing centers on these
Benchmark Comparison with NTDB

Compare your trauma hospital data with national data

**Examples:**
- Patient Demographics
- Hospital demographics
- Survivors vs. non-survivors:
  - LOS
  - mean ISS & ICU days
  - Age

**Examples:**
- Blunt vs. penetrating
- ISS by age group
- Mortality rates
- Mortality by ISS
- ED disposition
- Hospital disposition
- ISS and hospital charge
- Mechanism of injury and restraint usage
- ISS with LOS
Benchmarks and Measurements: Outcome Data

Report Examples:
• Functional status on discharge (FIM Scores)
• Results of patient satisfaction surveys
• Complication rates
• Compliance with practice management guidelines
• Mortality and morbidity
• Severity-adjusted mortality and morbidity
• Unplanned return to OR
• Unplanned upgrade to an intensive care unit
• Unplanned hospital readmission
• Surgical wound infections
• Organ donation activity
MTQIP: Proposal

- Request X centers to beta test the process for the COT
- Request COT to assist with costs for MTQIP analysis, software for pulling data over
- Assist registry vendors to providing electronic version
- Provide training to beta test sites
MTQIP

• Opportunity to be on the front end of what will become the standard
• Opportunity for input on refining definitions or categories for PI