MN Trauma System
Performance Improvement

Lisa Irwin, RN, MPA: HA
MN PI Plan

- Best Practices of other systems
- National recommendations
- Data Driven → MTR with linkages
- Scalable to system implementation
- “Living” document
PI Plan Sections

- Overview
- Sections represent phase of system care
  - EMS
  - Hospital
  - Rehabilitation
  - Regional
  - Statewide
PI Plan Components

- Purpose and goals
- Structure and responsibilities
- Patient population
- Data collection and validation
- Scope of review and key activities
- Evaluation
- Improvement actions
- Documentation and reporting
Purpose and Goals of PI

- Alleviate unnecessary death/disability
  - Reduce inappropriate variation in care
  - Target injury prevention
- Optimize trauma care and outcomes
- Promote efficient, cost effective care
Structure for PI

MDH

STAC

RTRACs

Trauma Centers

EMS
State/Regional PI Committee

- Multidisciplinary
- State/Region-wide representation
- Chaired by surgeon/physician
- Leadership and expertise from regional trauma centers
- MDH provides oversight and guidance
Responsibilities

- Establish expectations and system standards for optimal trauma care
- Evaluate trauma care processes and outcomes
- Identify injury causes and prevention needs
- Develop and implement system improvement initiatives
- Monitor effectiveness of corrective activities
Patient Population

- Injured patients who meet criteria for trauma system care – **Triage Criteria**
- Injured patients who are discharged from the hospital with an ICD-9-CM diagnosis 800.00-959.9, excluding 905-909.9, 910-924.9, and 930-939.9
- All trauma related hospital admissions
- Any trauma related death
- Any trauma transfer either into or out of the hospital
Current algorithm excludes patients who meet trauma IDC-9 criteria but did not have:
- Trauma team activated - Monitor compliance?
- LOS >48 hours – Evaluate triage criteria?
- ICU admit
- Transfer
- Death
Data Sources for PI

- MTR with data linkages - EMS, TBI, HDI
- Hospital medical records
- Prehospital care records
- Public safety reports - FARS
- 9-1-1 dispatch records
- Medical examiner reports
- Hospital PI findings
MN Trauma Registry

- Data elements that meet PI needs – Rehabilitation?
- Standardized data definitions and reporting
- Uniform coding (ICD-9, ISS, E-code)
- Data validation of at least 5% of cases
- Standardized reports and data requests
Scope of Review and Key Activities

Local EMS Agency

- Communications
- Medical control
- Triage and transport
- EMT training and certification
- Equipment & safety
- Documentation
- Case review
Case Review

- Led by physician director or advisor
- Review injured patients who:
  - Die or require CPR
  - Had prolonged extrication
  - Require online medical authorization
  - Meet physiologic or anatomic triage criteria
  - Mass-casualty or multiple patient scenes
  - Helicopter transport or requests
  - Met trauma triage criteria but transported to a non-trauma facility
  - Complaints and referrals from any source
EMS Evaluation

- **Goal of EMS** ➔ Prevent further injury
- **Focus on care processes and outcome**
  - Timely assessment and extrication
  - Appropriate and timely resuscitation/stabilization
  - Safe and rapid transport to appropriate facility
Local Trauma Center PI

- Level I/II $\rightarrow$ ACS
- Level III/IV $\rightarrow$ MN requirements
- MN Trauma PI Plan serves as guide
- Purpose/goals are the same at every level
- Principles are the same at every level
Local Trauma Center PI

- Defined PI program and structure
- Multidisciplinary trauma PI committee chaired by TMD – includes EMS
- Peer review
- Driven by trauma registry data
- Case review
Trauma Committee

- Evaluates care processes and outcomes including EMS
- Reviews cases that “fall out” & deaths
- Evaluates trends → focused audits
- Implements corrective action with f/u
- Refers cases for further review
- Identifies cases for education
Trauma Peer Review

- Process/structure varies
- Chaired by TMD
- Attended by TNC
- Deaths, complications, and sentinel events
- Case determinations
- Outside peer review?
Injury Rehabilitation PI - Goals

- Mitigate injury related disability and secondary conditions by promoting optimal care practices
  
  - Establish system-wide expectations of care
  - Monitor and evaluate care processes
  - Implement PI initiatives for variations
Structure

- Hospitals, Rehabilitation facilities, and State PI Committee
  - Evaluate process of rehabilitative care (therapies, timeliness, access, etc)
  - Evaluate outcomes \(\rightarrow\) function, cognition, mobility, secondary conditions, etc.
  - Develop, implement, and monitor PI initiatives
Disability and Rehabilitation Data

- Develop data “core” within MTR
  - Functional (physical, cognitive, etc.) status measures through care continuum
  - Rehabilitation therapies – timeliness, access, appropriateness, support services, etc
  - Development of secondary conditions
  - Hospital discharge disposition
  - Long-term follow-up – Quality of life
Regional PI

- Multidisciplinary PI Committee (RTAC)
- Lead regional hospital ➔ leadership
- Meet in executive session
- Evaluate system care processes and outcomes
- Review deaths within region
- Develop, implement, and monitor PI initiatives
- Data from MTR, medical records
Evaluation – Process of Care
Appendix A

<table>
<thead>
<tr>
<th>Aspect of Care</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triage</td>
<td>Under and over</td>
</tr>
<tr>
<td>Response</td>
<td>Timeliness of responders</td>
</tr>
<tr>
<td>Access</td>
<td>Hospital, specialists, OR, radiology, lab, blood, etc.</td>
</tr>
<tr>
<td>Care</td>
<td>ATLS and practice guidelines</td>
</tr>
<tr>
<td>Transfer</td>
<td>Timeliness, transport mode, personnel, communication, etc.</td>
</tr>
</tbody>
</table>
### Evaluation – Outcome

**Appendix B**

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Indicator</th>
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</thead>
<tbody>
<tr>
<td>Complication</td>
<td>Any event that deviates from an anticipated uneventful recovery</td>
</tr>
<tr>
<td>Mortality</td>
<td>Any trauma death</td>
</tr>
<tr>
<td>Length of stay</td>
<td>ICU and total hospital days</td>
</tr>
<tr>
<td>Cost</td>
<td>Cost of care and services</td>
</tr>
<tr>
<td>Disability</td>
<td>FIM, DRS, Rancho, GOS, Quality of Life</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Patient perspective</td>
</tr>
</tbody>
</table>
Regional Mortality Review

- Mortality prediction – TRISS or alternate logistic model (ISS, age, BP, and Glasgow motor score)
- Review unexpected outcomes – preventability, trends, improvement opportunities, etc
- Preventability determination based on pre-defined definitions (Appendix D)
- Monitor rates and trends; implement improvement initiatives
Statewide PI

- Multidisciplinary committee (STAC)
- MDH → oversight and staff support
- MTR → reports and data
- Evaluates system processes and outcomes
- Develop, implement, and monitor PI initiatives
Scope of Review – Global Issues
Appendix J

- Examples
- EMS time – 911 to hospital arrival (dispatch, response, scene, transport)
- Air-medical usage
- Triage criteria
- Morbidity and mortality rates
- Disability
- Demographic and injury characteristics
- Data is stratified by county, region, hospital, injury severity, diagnoses, Ps, age, etc.
Process – EMS Response

- Standards established in plan
- Response monitored quarterly
- Benchmarks evaluated annually

![Graph showing EMS response times](chart.png)

*Includes transporting agency times only*
Revisions to protocols, policies, and practice guidelines

Targeted Education – “M & M” Conferences

Provider counseling - physician, TC, EMS, etc.

Change in credentialing or designation

Focused Reviews
Focused Reviews, Audits, Studies...

- **State PI Examples**
- 3rd trimester pregnant trauma – M & M conference, practice guideline
- CHI – M & M Conference, practice guideline (Appendix I)
- Geriatric trauma – M & M, guideline, IP, published
- Triage Criteria – Protocol revision, published
Regional PI Examples

Air-medical utilization – protocol revision, education

Trach/PEG placement – practice guideline

Inter-hospital transfers – M & M conference, protocol, standard form

EMS CPR – protocol, education

Field ETT – protocol revision, training standards, equipment, and education
Documentation and Reporting

- Minutes with discussion, findings, actions
- Annual report (TC, regions, state) – mortality/morbidity rates, improvement initiatives, results, etc.
- Protect against discovery and disclosure
Confidentiality Protection

- Convene in executive session
- Confidentiality statement (Appendix F)
- Meeting materials - # documents, marked “confidential”, statutory citation
- Stored in locked file cabinet
- Legal sanctions for breaches
Recommendations

- Establish specific trauma system PI confidentiality statute (Appendix H)
- Revise MTR inclusion criteria to capture over-triage and measure compliance
- Evaluate MTR data points to assure PI questions can be answered
  - Establish data linkages – EMS, TBI, ME, Vital stats
  - Establish rehabilitation data core
Recommendations Cont.

- Implement data validation process (Appendix K) → surveys
- Provide trauma PI education and support to Level III and IV hospitals, and EMS
- Establish PI structure (RTACs, STAC)
- Adopt methods for evaluating care processes and outcomes
  - Appendix A-E