Performance Improvement

Joann Burrington, RN, BSN, MBA
Trauma Program Manager
Providence Hospital, Southfield

Amy Koestner, RN, BSN, MSN
Trauma Program Manager
Spectrum Health Medical Center

Michigan Trauma Coalition

mitrauma.org

Objectives

- Define the role of performance improvement (PI) within a trauma program.

- Describe the components of a PI program and importance of linkage to hospital PI Program.

- Describe loop closure in the PI Program.

- Identify the PI process in a PI Scenario.

What Is
Performance Improvement (PI)?

- PI is a mechanism for evaluation, action, correction
  - Patient care and outcomes
    - Identify opportunities avoid placing blame
    - Identify and provide a forum to implement best practices
    - Integrates and improves care
  - Operational / System care and outcomes
    - Identification of resources, changes in process

Michigan Trauma Coalition

mitrauma.org

Performance Improvement

Actions:

- Development of action plan to address problem

Correction/ Resolution:

- Provider response and education
- System change or collaboration
- Process change - guideline

Michigan Trauma Coalition

mitrauma.org

PI Goals

- Promote a culture of safety

- Improve care of trauma patients

- Improve communication & collaboration in-house and across the region (referring & receiving hospitals and EMS)

- Meet the requirements of State of Michigan / ACS for Performance Improvement

Michigan Trauma Coalition

mitrauma.org

Considerations

- When do you start a PI program?

- How is it integrated into the hospital?

- Determine if trauma PI committee is stand alone or incorporated into established committees.

- Are there regional or system integration capabilities?

Michigan Trauma Coalition

mitrauma.org

The PI Plan: Drives the Process

- Identifies what clinical & operational issues or process are reviewed
  - Defines how you evaluate and address each one
- Describes infrastructure
  - Responsible & Roles of TMD, TPM, registry, etc
- Identifies integration & protection with hospital QA program
- Define metrics & communication flow

Michigan Trauma Coalition

mitrauma.org

PI Plan

- Case & audit filters start PI process
- Clinical PI should move to guide compliance
  - appropriate transfers from ED & ICU
  - Massive Transfusion Protocol (MTP)
  - VTE
  - Fracture care/antibiotic use in open fractures/time to OR if you keep any surgical patients
- Understand your center's role in own PI process and that of the State with regional participation in PI.

Michigan Trauma Coalition

mitrauma.org

Components of a PI Plan

- Philosophy/ Mission/ Vision
- Authority/Scope
- Indicators/Audit Filters
- Event Identification
- Data Management
- Committee Structure
- Team Members
- Roles/Responsibilities

- Levels of Review
- Peer Determinations
- Corrective Action Plan and Implementation
- Event Resolution and Re-evaluation
- Confidentiality
- Integration into Hospital PIPS
- Regional PI integration

Michigan Trauma Coalition

(TOPIC-2015)

mitrauma.org

Registry: Key to success

- Data needs to be accurate to the data dictionary definitions.

- Input needs to be timely to assist with PI process

- Ability to run reports & drill down on data to provide compliance and thresholds.

ACS NTDB
NATIONAL TRAUMA
DATA STANDARD:
Data Dictionary
2015 ADMISSIONS
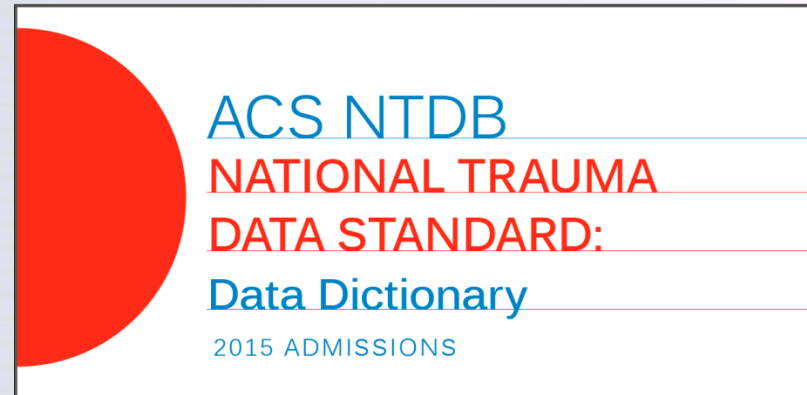
Process Outcomes

- Identify event and "opportunities" not blame
  - Where and how to find
  - Every error has the potential to become an opportunity to improve
  - Instills a culture of safety in practice, communication, etc.
- Validate event with data and review (Registry key)
- Emphasize team work to correct adverse events based on best practices
- Integrates and improves care throughout patient hospital stay – examples MTP, VTE
- Obtain feedback from practitioners on effectiveness of actions

Michigan Trauma Coalition

mitrauma.org

Identification of Events

- An Event is defined as any type of error, mistake, incident, accident or deviation, regardless of whether or not it resulted in patient harm.
  - TJC 2008
- Patient Safety is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.
  - TJC 2008
- Sources of Events can be found anywhere, any day
  - Rounds, reviews, registry abstraction, etc
  - Hospital incident system, any staff member, EMS, etc
  - Can be done retrospectively or concurrently

Michigan Trauma Coalition

mitrauma.org

Audit Filters

- Triggers to monitor / measure processes for safe, effective care of injured patients:
    - Physician Response times for highest activation: Surgeon (Level III), ED physician or Mid-level within 30 minutes for Level IV
    - ED length of stay
    - Transferred patients
        - Transfer time ≥ 6 hours from "ED admit to definitive hospital admit" with ISS > 15 (Michigan work plan)
        - Pediatric cases, cases transferred from in-patient

Audit Filters

- Trauma deaths / sentinel or adverse events

- Missing EMS reports

- Bypass and diversion events

- Under and over triage

- Radiology misread rate

- Admissions to non-surgeons / timing of in-patient consults

Michigan Audit Filters:

- System & process issues
- All trauma deaths
- Clinical care issues, including identifying and treatment of immediate life threatening injuries
- Issues regarding transfer decision
- Trauma team response times (highest level)

ACS Audit Filters

- Activation response times / criteria
- Lab / blood bank / MTP
- Radiology resources
- Airway and ICU coverage
- Transfer plans
- ATLS for Advance Practice Providers
- PI

Refer to ACS 2014 Resource Book

Levels of Review

- Primary – trauma program manager (TPM)
  - Initial review & confirms event
- Secondary – TPM and trauma medical director
  - Decide if further review required or close
  - Should include identification of system issues, nursing, etc.
- Tertiary – review committee(s)
  - Trauma, hospital, system operations
- Actions items may be multi-focused
  - Education
  - Counseling
  - Periodic reporting
  - Guideline development
- Loop closure can occur at any level of review

Michigan Trauma Coalition

mitrauma.org

Identification, Monitoring and Reporting

- Use your trauma registry
- Identification is the responsibility of the whole trauma team
  - "Rounders" can inform TPM /registrars of complications, transfer of patients to other services
  - Correct concurrently when appropriate
  - Develop practice guidelines in a timely manner
- Set specific times for reporting
  - Monthly to trauma peer review
  - Quarterly to operations committee
  - Annually to hospital leadership

Michigan Trauma Coalition

mitrauma.org

PI Review

- Establish a process for reviewing issues both patient related and operational

- Consistent among registrars, TPM, and TMD.

- Develop a chart review process that includes audit filters, and other process outcomes

PI chart abstract tool

Spectrum Health Trauma Service – Chart Audit Tool

Patient's MR#: _____   Admit Date: _____   TB # _____

Prehospital Phase		
Airway managed	Fluids managed appropriately	Scene time < 20 min.
C collar / back board	VS/GCS	Timely transport
CPR / ACLS	Pre arrival info appropriate	Prolonged Extrication
IV's started		

Care was appropriate: Yes   No   **If no, explain:**

ED Phase		
Trauma team members present	Temp. & Interventions (< 36.5)	Specialty consults timely
ATLS protocols followed	Time off backboard documented	X-rays timely
Airway managed	Pain meds given	Wet reading done
Fluid resuscitation document	VS w/proper interventions	Injuries documented
Blood given timely	VS stable prior to CT transport	Elderly considerations?
MTP appropriately initiated	FAST exam documented	ED dwell time:
Neuro standard assessment	Trauma labs collected	
GCS checked @ intervals	ABG/VBG	

Activation Status Appropriate: Yes   No   If no, explain:

Michigan Trauma Coalition

mitrauma.org

PI Committees

- Multidisciplinary Peer Review (required attendance Level III and IV)
- Multidisciplinary System Operations
  - Focus on process
  - Includes all departments, possibly EMS,
- Other hospital committees
  - Allow collaboration or timeliness with event resolution
  - Allow incorporation of trauma to minimize meeting frequency

Michigan Trauma Coalition

mitrauma.org

Multidisciplinary Peer Review

- Physician committee
- Goal: Review the efficacy, efficiency and safety of the care provided in the trauma center
- Awareness of state laws protecting peer review
- Limited access forum (driven by hospital bylaws) – physicians only but needs to include trauma staff as appropriate

Michigan Trauma Coalition

mitrauma.org

Multidisciplinary Peer Review

- Physician-focused
  - Evaluation among specialties
  - Selected deaths
  - Complications
  - Sentinel events
  - Unusual / uncommon cases / unexpected outcomes
- Morbidity & Mortality Review
  - Mortality without opportunity for improvement
  - Mortality with opportunity for improvement

Committee Membership

Level III / IV

- Trauma Medical Director*
- Trauma surgeons* (Level III)
- Orthopedics*
- Emergency Medicine*
- Anesthesia*
- Radiology*
- Neurosurgeon (Only Level 3 center that admit TBI)
- Medical Examiner (not required)
- Hospitalist / Internal Medicine
- Trauma Program Manager**
- Trauma Registrar**

*required members

Michigan Trauma Coalition

mitrauma.org

Multidisciplinary Peer Review Roles

- **Trauma Medical Director**
  - Identifies issues for higher committees
  - Follows up with provider related issues
  - Refers cases that have potential privileges / credentialing issue to Hospital Executive Committee
- **Trauma Program Manager/Coordinator**
  - Preparation of materials and presentation of cases
  - Provides dashboard on admissions, response times, attendance
  - Takes minutes or assigns designee
  - Documents results in trauma registry
- **Liaisons** –
  - Review cases as requested, communicates issues & changes to their associates

Michigan Trauma Coalition

mitrauma.org

System Operations

- Includes all areas of care – ED, ICU, OR, lab/blood bank, radiology, respiratory, pharmacy, nursing, Physicians, nutrition, PT/OT, QA, pre-hospital
- Potential to integrate into other hospital committees
- Frequency of meetings based on needs
- Chaired by trauma service leadership
- Examines system issues and processes for improvements
- Discuss verification/designation readiness and preparation
- Provide trauma dashboard with data on progress of trauma

Trauma Committees . . .

- Collaborative – decrease variations in care Promote a culture of safety and best practices

- Identify opportunities to implement evidence based practice/guidelines

- Develop effective plans of action / next steps to improve care and processes

- Identify needs for development of policy, procedure, guideline

- Follow up for loop closure

Michigan Trauma Coalition

mitrauma.org

Caveats to Committee structure for Level III Trauma Centers

- Committee structure varies but process are the same
- Example A – separate minutes would be needed for each mtg
  - **Trauma System Operations Committee**
    - Meeting held and then adjourned
  - **Trauma Multidisciplinary Peer Review Committee**
    - Follows Trauma Program Operational Process Performance Committee but closed to selected participants
    - Fosters utilization of physician's time
    - Physicians in same private practice may request external review for some cases
    - May utilize the regional system closed PIPS committee as an external review process
- May consider incorporating into institutional PIPS committee
  - Trauma review is included in hospital review process
  - Review and determination of trauma patient issues must be managed through the trauma program – Trauma Medical Director and Trauma Program Manager

Michigan Trauma Coalition

mitrauma.org

Caveats to Committee structure for Level IV Trauma Centers

- Consider incorporating into institutional PIPS committee
  - Trauma review is included in hospital review process
  - Trauma program – Trauma Medical Director and Trauma Program Manager would be responsible for case identification, presentation, action plan, event resolution.

Michigan Trauma Coalition

mitrauma.org

Loop Closure

- The Loop is the cycle of monitoring, identifying, fixing, and re-evaluation
  - Synonymous with event resolution
- Event resolution / Outcome improvements
  - Resolution can take time
    - Examples of improvement / loop closure
  - Should be integrated throughout the institution
    - Needs to be part of hospital quality and provide reports to them on a regular basis
- Examples of Outcomes
  - New paging system improves response times
  - Additional in house hours for CT technicians – assist in decision to transfer
  - Delay to OR at night: prompts in-house staffing for OR and anesthesia
  - Improved DVT prophylaxis after development of order set

Michigan Trauma Coalition

mitrauma.org

Event Resolution

- Resolution monitoring
  - Define when a loop is closed - six months without recurrence, a year?
    - Who makes that decision?
  - Did the PI process make a difference in the outcome?
  - How are you measuring change and how often?
  - Report the results
    - Define where and how, e.g. charts at committee meetings
  - Even if closed, need to be included in periodic analysis to ensure actions are sustainable
- If not resolved over time, explore reasons, barriers to change, financial, administrative support, competing priorities
  - Or was it the wrong plan for that event?
  - Seek ideas from others

Documentation

- Detailed minutes, if emailed use return receipt to track and keep them
  - If items are taken to other committees, obtain minutes that show how they were addressed and any education provided
- Periodically review and report to show improvement
  - Example, time to transfer
- Use on-call logs to document time called and arrived
- Keep a tracking document that includes loop closure

Prevention, Mitigation, Monitoring

- Reports generated by trauma registry
    - Determine frequency, monthly, quarterly, annually
    - Standard reports
        - ED disposition, surgeon response times
    - Hospital specific reports
        - Complications, any frequent issues

Michigan Trauma Coalition

mitrauma.org

Michigan Trauma Coalition

mitrauma.org

Scenario

Scenario 1

Level III Hospital

- Receives a 30 year old male motorcycle crash with head laceration, no LOC reported, no pre-notification vitals

- Airway patent (hollering), Breath sounds equal

- Circulation – Blood oozing through dressing on head lac

- GCS 14 (minus one verbal – confusion)

- Exposure - road rash

- VS **BP 98/70** Pulse 145 Resp 28

- IV NS 1 Liter bolus; Medicated for pain

- Scalp wound **14 cm full thickness laceration to bone** – freely bleeding; Pressure applied while work-up continues

- Chest and C-spine x-rays ordered

Michigan Trauma Coalition

ED Course

- One hour after arrival
  - In **X-ray to complete C-spine series**
  - VS 104/82 Pulse 136 Resp 28
  - GCS 12 after Fentanyl – "Resting"
  - IV NS 2nd liter hung
- Ninety minutes after arrival
  - Wound care begins
  - VS **BP 88/68** Pulse 142 Resp 28
  - GCS 10
- Physician concerned with GCS
  - CT obtained
- **Epidural** hematoma on CT
- **GCS now 8**
- Helicopter transport ordered
- Patient intubated to protect airway
- **Transfer to Tertiary Trauma Care 2.5 hours after arrival**

Tertiary Trauma Care Hospital

- Level 1 Trauma Team Activation upon transfer call
- ABCDE
  - Airway – Intubated
  - Breathing – Bilateral breath sounds
  - Circulation – Scalp wound stapled. No bleeding
  - Disability – GCS 3T Pupils reactive
  - Expose – Left tib/fib area swollen from road rash, early compartment syndrome with fracture
- CT from referring facility viewed
- Left Epidural Hematoma identified
- Patient to OR in 15 minutes
- Hematoma successfully evacuated
- ICU for 3 days. Acute care 3 days.
- Discharged home on day six.
  - Tib/Fib fracture - non-surgical fixation

PI Review – Level III

Transfer out audit filter triggered

- – Primary review
  - Trauma Coordinator pulls record and prepares summary report for trauma medical director
- – Secondary review
  - Trauma medical director reviews care
  - Has note from receiving hospital that patient had good outcome
  - Determines no issues

- Are these correct? What other audit filters should be triggered at the Level III facility?

Michigan Trauma Coalition

mitrauma.org

What Do You Think?

- Transfer out
- Under triage at Level III center – did not activate the trauma team even when with hypotension and deteriorating mental status
- Failure to follow principles of ATLS/Rural Trauma Team Development Course (full head to toe – fully expose – management of shock)
- Spine clearance – how should C-spines be cleared?
- ED Length of Stay
  - Time to CT with obvious head trauma
  - Time to decision to transfer, do you consider 2.5 hours too long?
- Missed injury
- Others?

Michigan Trauma Coalition

mitrauma.org

Outcome / Determinations

- **Impact:**
  - Physical: No detectable harm
  - Non-Medical: potential legal consequences
- **Type:**
  - Communication: Inaccurate or incomplete information
  - Patient Management: Resuscitation
  - Clinical Management (Intervention): Questionable procedure
- **Domain:**
  - Hospital: Emergency Department
  - Non-Hospital: EMS Ground
  - Phase: Resuscitation
- **System Factors:**
  - Performance Standards
  - Training

Michigan Trauma Coalition

mitrauma.org

Scenario 2

Level IV Hospital

- Receives 82 yo female via private vehicle
- Fall in bathroom hitting chest/abdomen on vanity
- VS BP 140/90, pulse 88, respirations 22, no meds
- Considered non-urgent
- CXR done 60 minutes after arrival
- Pain control with Tylenol, admitted to medicine for observation
- HD#2 – SOB, O2 sat 88%
  - CXR repeated, consolidation medicine treats for pneumonia
- HD#3 – decreased LOC
  - Transfer to higher care arranged

Michigan Trauma Coalition

mitrauma.org

Tertiary Hospital

- Patient arrives in respiratory distress
  - VS BP 110/80, pulse 110, respirations 14, O2 sat 92%
  - BiPap started, no intubation
  - Chest CT
    - b/l displaced rib fractures 3-9 right, 5-6 left
  - Family declined rib fixation
  - HD#3 (post injury day 6) patient dies

Level IV Review

Transfer out audit filter triggered

- – Primary review
  - • Trauma Coordinator pulls record and prepares summary report for trauma medical director
- – Secondary review
  - • Trauma medical director reviews care
  - • Has note from receiving hospital that patient died
  - • Determines review needed at PI committee
    - – Trauma team not activated
    - – Transfer patient
    - – Missed injury
    - – Death

Michigan Trauma Coalition

mitrauma.org

Level IV PI Committee

- Invited trauma surgeon from transferring hospital for review
  - TS presented on rib fractures and the elderly
  - Literature provided to physicians in attendance
- Determined this was a mortality with opportunity for improvement
  - Guideline developed on activation and treatment of elderly falls with assistance from outside TS
- Is this loop closed?

Michigan Trauma Coalition

mitrauma.org

Outcome / Determination

- **Impact:**
  - Physical: death
  - Non-Medical: potential legal consequences
- **Type:**
  - Patient Management: Resuscitation & Evaluation
  - Clinical Management (Intervention): inaccurate diagnosis & omission of essential procedure
- **Domain:**
  - Hospital: Emergency Department
  - Phase: Resuscitation, Evaluation, & Acute care
- **System Factors:**
  - Performance Standards
  - Training
- **Human Factors:**
  - Practitioner knowledge-based

Michigan Trauma Coalition

mitrauma.org

TOPIC

- Trauma Outcomes and Performance Improvement Course

- Full day course on PI, evaluation and determination with afternoon interactive scenarios

- August 20, 2015
  Lansing Community College

  – Registration open on the MTC website

Michigan Trauma Coalition

mitrauma.org

ACS Audit Filters:

1. General surgeon response times to trauma activation

2. If the CT technologist takes a call from outside the hospital, the technologist's arrival to the hospital is documented

3. Anesthesiology services availability (within 30 minutes) after notification for **emergency operations**

4. Anesthesiology services availability (within 30 minutes) after notification for **managing airway problems**

5. Radiologists availability (within 30 minutes), in person or by teleradiology, when requested for the interpretation of radiographs.

6. Changes in interpretation between preliminary and final reports, as well as missed injuries are monitored

7. Operating room adequately staffed and available within 30 minutes of a call

8. If an on-call team is used, the availability of operating room personnel and the timeliness of starting operations are continuously evaluated and measures implemented to ensure optimal care

9. Over triage and under triage rates must be monitored and reviewed quarterly

10. Trauma patients admitted or transferred by a primary care physician without the knowledge and consent of the trauma service are monitored

11. Appropriateness of the decision to transfer or retain major orthopedic trauma cases

12. All pediatric trauma admits, pediatric trauma activations

13. Timely response of credentialed providers to the ICU

14. If the trauma surgeon admits more than 10% of injured patients to non-surgical services, all non-surgical admissions are reviewed

15. Occasionally, it is necessary for the physician to leave the emergency department for short periods to address in-house emergencies. Such cases and their frequency are reviewed to ensure this practice does not adversely affect the care of patients in the emergency department

16. Bypass and diversion events

17. Organ donation rate reviewed annually

18. A process to address trauma program operational events

19. The multidisciplinary trauma peer review committee must systematically review mortalities, significant complications, and process variances associated with unanticipated outcomes and determine opportunities for improvement

Michigan Trauma Coalition

mitrauma.org