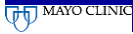


Trauma Performance Improvement

Annual Trauma Center Association of
America Conference
Trauma Center Leadership Course

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- None

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Objectives

- Demonstrate parallels between trauma care and aviation industry team training
- List several demonstrable ways care can improve by adopting CRM
- Discuss how to quantify the beneficial effects of CRM in the trauma center
- How does CRM interface with PI?

Objectives

- Formulate a strategic plan to structure a model Trauma PI program which meets all verification criteria.
- Identify the various components of an effective Trauma PI program which is integrated with institutional and regional performance efforts.
- Discuss various methods to ensure effective collection of valid/reliable PI data from the trauma registry.
- Review your institutional or regional Trauma PI plans and outline how to successfully develop action plans to correct deficiencies and weaknesses which will yield optimal patient outcomes and satisfactory loop closure.





Commitment to Safety

- Establishing a 'just' culture
 - Focused on fixing the problem
 - Not focused on assigning blame
- Establishing a safe practice environment
- Similarities exist between trauma care and the aviation environment
 - When something goes wrong, the pilot and crew are the first ones at the accident scene
- Encourage a flattened hierarchy

Statement of the Problem

- Safety should be job one
- 3-16% of hospitalized patients suffer unintentional harm
- Up to 100,000 people per year may die due to medical errors
- Trauma patients arguably most complex and most vulnerable to poor outcomes from even simple errors

Current Safety Paradigm

- Limit human variability
 - Checklists
 - Practice guidelines
 - Procedural guidelines
 - Time outs
 - Safe hand offs
- This has not eliminated human error

Why is Trauma Different?

- Invasive nature of care required
- Highly technical care and devices
- Use of harmful medications
- Susceptible patient
- Data:
 - The sheer number of data points essential to make even a simple decision is daunting
 - Beware the 'rogue' data
- Time critical nature of the care delivered

The Nature of the Problem

- To err is human
- Organizational and technical factors do have a role but is subordinate to human factors
- Culture, upbringing, hierarchy and tradition
- Team approach to care versus individual expertise

The Aviation Industry

- Until 1977, the aviation industry was a professional-centered hierarchy
- Tenerife disaster (Canary Islands)
 - Taxiing airplane struck by airplane taking off
 - 583 people were killed
 - Poor communication, non-standard language and language barriers compounded situation
 - Steep hierarchy in the cockpit: no one could challenge the captain

Crew Resource Management

- 1979 NASA workshop for human factor training
- Focus on:
 - Threat management
 - Error management
 - Early identification of threat/error
 - Blame-free countering of human mistakes

Can This Really Work in Trauma PI?

- Pre-flight briefing versus procedural pause
 - The aircrew has one destination and no one leaves the plane during the flight
 - Is that realistic for medical and surgical procedures? We have scheduled hand-offs...
- How much curriculum time in nursing school, medical school, critical care fellowship are dedicated to teamwork and leadership?

The Reality

- The traditional critical care environment focuses on individual technical performance rather than the system of care
- Trainees are not recruited because of their teamwork or leadership skills
- Team situational awareness is undervalued and at the time of any 'incident' is deemed the least important matter

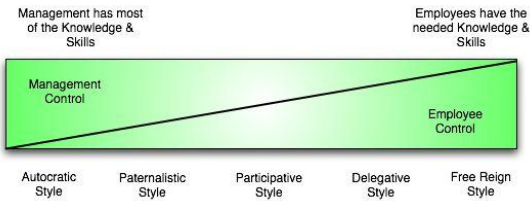
Team Situational Awareness

- Is the ability to identify, process and comprehend the critical elements of information about what is happening to the team as it relates to the mission
- Essential for effective decision making
- A core competence for any professional team

The Leader

- Typical intensivist
 - Highly motivated
 - Technically proficient
 - Type A personality traits (just think of all those details)
 - Can lead to 'vertical' leadership style where others are intimidated

Leadership Styles



Is There Evidence to Support CRM?

- Trauma is a 'team oriented culture' seeking:
 - Shorter LOS
 - Lower nursing turnover
 - Higher quality of care
 - Higher family satisfaction
- Without video tape (the black box of the resuscitation) review, evidence gathering makes it impossible to recreate events/climate

The Surgical Model

- VA experience in surgery
 - 108 hospitals
 - Medical Team Training program
 - Substantially improved operative mortality
- Cultural resistance to adoption of new methods
- Debriefing and 'challenging' authority most difficult part of training to adopt

The Dutch Aviation Model

- 2-day course
- Didactics and interactive sessions
 - Situational awareness/adverse situations
 - Human error and non-punitive response
 - Communication and cross check techniques
 - Management of stress
 - Team structure and climate
 - Leadership
 - Risk-management and decision-making

The 'Two-Challenge' Rule

- Nonconfrontational way of asserting a team member's concern
- If the pilot puts the aircraft in an unsafe condition, the subordinate must challenge the action...twice if necessary
- If no answer or incomprehensible answer is provided, the subordinate takes over the controls

TeamSTEPPS

- DoD and Agency for Healthcare Research and Quality (AHRQ) collaboration
- Evidence-based teamwork system
- Has shown improvement in surgical ICU outcomes; does this relate to trauma?
- Presumes that CRM culture change is necessary

Team Effectiveness

- Team leadership
 - Clear purpose, decisive, caring
- Mutual performance monitoring
 - Understand each other's roles
- Backup behavior
 - Compensates for each member, provides feedback
- Adaptability
 - Adjust strategy to achieve goal
- Team orientation = trust

CRM in Your TC

- Needs to be tailored to your personnel and environment
- Must be a long term investment with refresher training every 3 years
- Must be endorsed and practiced from the top down
- Cannot just be nurse-led or physician-led, it must be multidisciplinary

Effective Communication

- Standard language
- Mutual respect
- Needs of the patient come first
- Seek 'clarity'
- CUS words
 - I am 'concerned'
 - I am 'uncomfortable'
 - I think this is a 'safety' issue

Crucial Conversations

- Mayo Clinic culture of safety
- 'the needs of the patient come first' is not a slogan; it is at the core of every decision
- All new and junior faculty have a 5-day leadership development course
 - Central to the course is 2 days of crucial conversations
 - Quarterly department wide 'all staff' safety meetings



Commitment to Safety

- Initiative to improve bedside care and communication of critically ill
- Optimizes interactions of nursing and physician team
- Weekly 30-45 minute session
- Multidisciplinary
- Addresses all aspects of care and communication



Commitment to Safety Initiatives

- Mid-night rounds
- Use of the 'white board' to communicate goals
- Calling ahead of bedside rounds
- Low threshold to call physician in charge
- Improved documentation
- Improved continuity
- Twice daily face-to-face faculty sign out
- Anesthesia sign-in and sign-out



Simulation

- Zero-risk environment
- Can practice high-risk, low-volume scenarios (malignant hyperthermia)
- Can augment the curriculum for residents and fellows (may not see all the clinical scenarios during a rotation)
- Must be well debriefed and focus on team dynamic, not just technical or intellectual aspects

Simulation

- Keep it simple but realistic
- If you have access to high end simulation, use it but don't lose the benefit of stressful interaction to technological exercise
- Team based thus must be interdisciplinary
- Does not have to be long
- Think of it as the flight simulator
- Perfect opportunity for coaching

Key Concepts in CRM

- What is a leader?
 - Steps back and manages an event
 - Sets clear goals
 - Organizes the team
 - Delegates responsibility
 - Distributes work appropriately
- What is a follower?
 - Assumes assigned responsibility
 - Feeds back event management data
 - Provides task and cognitive support
 - "Owns" delegated problems
 - Roles can be exchanged

Modified from Murray WB, Foster PA. Crisis resource management among surgeons: principles of organizing a multidisciplinary group for crisis resource management. J Clin Anesth 2000;12(9):634

Key Concepts in CRM

- Communication
 - Address people directly: introduce yourself
 - Declare an emergency: urgency, not panic
 - Establish your communication paths
 - Use nonjudgmental comments
 - Close the loop: give feedback
- Global assessment
 - Steps back: physically and mentally
 - Steps back to see the whole picture
 - Delivers verbal review of patient and situation
 - Avoids fixation errors
 - Provides clarity of ideas
 - Generates new ideas

Key Concepts in CRM

- Support
 - Know that asking for help when needed is a sign of maturity, not of weakness
 - Understand that incremental help may be called
 - Identify sources of help available?
 - Know when and whom to call for help
 - Ascertain the type of help needed: advice? hands-on? specialized?
- Resources
 - Prepare for anticipated needs: special carts, memo sheets
 - Understand the infrastructure
 - Know how support systems work
 - Promote internal and external thinking “outside the box”

Follow Through

- Debriefings
- Monthly monitoring meetings
- Update compliance graphics regularly
- Choose small projects at first
- Re-visit progress (don’t ‘lose’ progress made over time—”haven’t we always done it this way?”)

How to Get Started

- Identify key core personnel
- Develop implementation plan
- Start easy/slow
 - Briefing/de-briefing from 'play' scenarios
 - Focus on the things done well
 - Use your readily available materials (checklists and guidelines)
 - Identify team roles
 - Promote effective communication

CRM in the Future

- Sustainment takes
 - Leadership
 - Ownership
 - Effort
 - Time
 - Funding
 - Commitment

Practical Performance Improvement for Trauma Programs

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Where Do We Start?

- Start by looking at the requirements of the ACS/state; what is the criteria
- What is already in place?
- Needs assessment
- Next, what is the performance improvement process like at other trauma centers like yours
 - Don't re-invent the wheel
- What background/education do you have in PI?

Strategic Planning for Trauma Performance Improvement

- Empowerment
- Consensus
- Value
- Outcome
- Non Punitive Environment
- Data Integrity
- Validity/Reliability
- Integration

Strategic Planning for Trauma Performance Improvement

- Trauma Centers have a strong history of mortality tracking
- Medical Staff culture should embrace:
 - monthly mortality peer review
 - standardized approach to the review
 - preventability determinations
 - institutional rate calculations
 - annual trending of mortality for ISS>16
- Promotion of the "blameless culture"
- Education oriented

Strategic Planning for Trauma Performance Improvement

- Define the requirements
 - ACS/state verification
- Define the work
 - Process
 - Opportunities
 - Workload/caseload
 - Accountability
- Define the work roles
 - Teams
 - Team members
 - Team roles
- Define the work support
 - Human resources
 - Technical resources

Strategic Planning for Trauma Performance Improvement

- Evaluation framework
- Literature review
- Consensus
- Identification of indicators
- Evidence for indicators
- Empirical analyses

Strategic Planning for Trauma Performance Improvement

Evaluation Framework

- Face validity: does the indicator capture an aspect of trauma quality that is widely regarded as important?
- Construct validity: does the indicator perform well in identifying true (or actual) quality of care problems?
- Fosters real performance improvement: Is the indicator insulated from incentives for providers to improve their reported performance by avoiding certain cases?
- Application: Has the measure been used effectively in trauma clinical practice? Does it have potential for working well with other indicators?

Strategic Planning for Trauma Performance Improvement

- Bona Fide Peer Review
 - Multidisciplinary
 - Integrity
 - Capture discussion
- Decisions
 - Preventable
 - Potentially Preventable
 - Non-preventable
- Four Step Process
 - Injuries and Sequelae
 - Adherence to Standard Protocols
 - TRISS Methodology
 - Provider Care

Strategic Planning for Trauma Performance Improvement Operational Definitions

- Non-Preventable Death
 - injuries and sequelae
 - non-survivable
 - standard protocols
 - followed
 - not followed without consequence (ACTION)
 - provider care
 - appropriate
 - inappropriate without consequence (ACTION)
- TRISS POS Considered
 - TRISS < 0.25

Strategic Planning for Trauma Performance Improvement Operational Definitions

- Potentially Preventable Death
 - injuries and sequelae
 - potentially survivable
 - standard protocols not followed with potential consequence (ACTION)
 - provider care inappropriate with potential consequence (ACTION)
 - TRISS POS Considered 0.25 < TRISS < 0.50
- Preventable Death
 - injuries and sequelae
 - survivable
 - standard protocols not followed with consequence (ACTION)
 - provider care inappropriate with consequence (ACTION)
 - TRISS POS Considered TRISS > 0.5

Components of Trauma PI Plan

- Philosophy, Mission
- *Authority/ Scope*
- Credentialing
- Patient Population
- Data Collection
- *Audit Filters, Indicators*
- Issue Identification
- *Data Analysis*
- *Levels of Review*
- Peer Review Judgment
- Data Management
- Committees and Team Members Roles & Responsibilities
- *Corrective Actions*
- *Loop Closure*
- Confidentiality
- Integration into Hospital PI

Authority

- Trauma Program Director empowerment
- Reporting structure
- Medical staff bylaws
- Written PI plan
- Credentials office
 - General Surgery
 - Neurosurgery
 - Orthopedic Surgery
 - Anesthesia
 - Radiology

Authority and Leadership

- The top level of administration must set the directions, establish clear values, communicate performance expectations
 - Aware of expectations
 - Circulate standards/criteria
 - Encourage continuous information sharing and improvement in the organization

Authority and Leadership

- Orientation plan for incoming physicians and residents
 - Participation in PIPS program
 - Attendance at Peer Review meetings
 - List of complications and audit filters
 - Data dictionary
 - CME credentialing requirements

Levels of Performance Review

- Primary Review - Finding the issues
 - Concurrent issue identification
 - Retrospective issue identification
 - Validation of issue
 - Immediate resolution and feedback
 - Issues may be closed or trended at this level

Where do you find the issues?

- Review the chart....the next morning
 - Pre-hospital
 - From trauma bay to destination
 - OR/ICU
 - Documentation
 - Rounds/AM report
 - Asking if there were any problems/issues
 - Video review

Levels of Performance Review

- Secondary Review - validation/triage
 - Review by trauma medical director or trauma program manager
 - Investigation and validation of issues
 - Refer to Trauma Multidisciplinary Peer or System Review
 - Refer to Trauma M & M
 - Refer to Hospital PI Committee
 - Issue may be closed at this level

Levels of Performance Review

- Tertiary Review - structured review by group
 - Review at a formal committee
 - Trauma Multidisciplinary Peer Review
 - Trauma M & M Conference
 - Hospital PI Committee
 - Regional and Systems PI Meetings
 - Judgment
 - Action

Data Analysis

- USE THE REGISTRY!
- Know how to use the registry
- Proficiency with Excel
 - Sum, average, mean, mode, standard deviation
- Validate the reports
 - You know your program, use your gestalt
 - Opportunity to identify flawed data and correct
 - Opportunity for improvements
 - Staff can see how the data they abstract is utilized

The trauma center does not demonstrate a clearly defined PIPS program for the trauma population.

The PIPS program is not supported by a reliable method of data collection that consistently gathers valid and objective information necessary to identify opportunities for improvement.

The program is not able to demonstrate that the trauma registry supports the PIPS process.

The process of analysis does not include multidisciplinary review.

The process of analysis does not occur at regular intervals to meet the needs of the program.

The results of analysis do not define corrective strategies.

The trauma program is not empowered to address issues that involve multiple disciplines.

The process does not demonstrate event resolution (loop closure).

PI Pitfalls

- Only looking for complications (M&M program)
- Not addressing questionable care
- Waiting for something bad to happen before taking action
- Not doing surveillance on your own protocols
- Ignoring pre-hospital issues

More PI Pitfalls

- Failing to actually trend and report
- Trauma surgeons need to abstract at least 20 charts/quarter looking for issues
- Doing it by yourself
 - Bring in other consultants services and nurses
- Being punitive
 - No one will participate
- Failure to look at timeliness

Questions?



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