Crew Resource Management for Trauma Resuscitation

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PA Trauma Systems Foundation
Director of Accreditation
Learning Objectives

1. Review Impact of Errors
   - Aviation
   - Healthcare

2. Discuss Crew Resource Management Principles

3. Apply CRM to Trauma Resuscitation
Disclosure Statement

- I have no conflict of interest relative to this educational activity.
Successful Completion

• To successfully complete this course, participants must attend the entire event and complete/submit the evaluation at the end of the session.

• Society of Trauma Nurses is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.
UAL Flight 173
American College of Surgeons 1918

“...all hospitals are accountable to the public for their degree of success....

If the initiative is not taken by the medical profession, it will be taken by the public.”
Fast Forward 1991

- The Nature of Adverse Events in Hospitalized Patients. Results of the Harvard Medial Proactive Study II
  - Lucian L. Leape et al
  - NEJM 1991; 324
  - 30,000 patients

- 3.7% disabling medical errors
- Suggested system accountability
1999 Institute of Medicine: To Err is Human

- 98,000 Americans die each year as a result of errors
- Cost of $29 billion annually
- SIGNIFICANT errors in as many as 4% of patient encounters
- 2 significant errors/day in ICU
Institute of Medicine Recommendation

“Healthcare Organizations ...establish interdisciplinary team training programs for providers to incorporate proven methods of team training, ...

as exemplified in aviation.”
2002 Trauma Application

  - Prospective study of university surgical service (general, trauma, cardiothoracic, vascular)
    - Complications analyzed (including disease related)
  - Total complication rate of 32.1%
    - Major and Minor Complications: 49% avoidable
    - Of the 128 deaths, 38 (30%) were avoidable

- Conclusion: Complications of surgical patients are 2-4 time GREATER than those identified by the IOM report.
Levels Of Errors:

- Provider
- Team
- Technical
- Organization
- Funding/Resources
Contemporary Approaches

- Improving recognition and reporting
  - Just Culture
  - Error = Event
- Standardized classification (JCAHO Taxonomy)
  - Understanding factors
- Stakeholder “support”
- Crew Resource Management
Performance Improvement:
Reviews errors today to improve patient care tomorrow

VS

Crew Resource Management:
Seeks to prevent errors before they occur on today’s patients
Goals of CRM Training in TRA

- Optimize an environment of quality and safety
- Provide structure for trauma resuscitation communication
- Incorporate concepts of Advance Trauma Life Support (ATLS® and ATCN®)
- Enhance collaboration and teamwork
Team Responsibilities

- *Focus on the patient*
- Provide SAFE and EFFECTIVE care
- Communicate
- Maintain professionalism
Leaders:
During trauma care, there may be different leaders depending on the situation.

The team leader vs. The situational leader
Shared Mental Model

- A mental model is a mental picture or sketch of the relevant facts and relationships defining an event, situation, or problem.

- The same mental model held by members of a team is referred to as a shared mental model.
Briefings

- What
- When
- Components
  - Directed by “Leader”
  - Introductions
  - Patient factors
- Goals
  - Roles
- Concerns
Patient Factors

- Patient Name/Age/Gender
- Mechanism of Injury
- Vital Signs
- Airway Status
- Glasgow Coma Score
- Injuries Found
- Treatments/Interventions
- Patient Response to Therapy
Transitions and Handoffs: Continuing the Shared Mental Model

- Pre-arrival notification
- Patient arrival
- Personnel changes
- Location changes
- Communication with:
  - Consultants
  - Staff
  - Family
Check Out

Be sure to check out with the Team Leader before leaving the Trauma Room
Barriers to Effective Communication in Trauma Resuscitation

- Personality types
- Knowledge levels/experience
- Noise volume
- Lack of team organization
- Role expectations/perceptions
- Different team members
Effective Communication Techniques

- Eye contact when possible
- Actively listen
- Focus on the issue
- Confirm an understanding
- Be brief but clear
Situational Awareness

What is happening in front of you and around the patient, processing what is happening, and making decisions upon it.

Anticipate the consequences.
Factors Affecting Situational Awareness

- Team workload
- Staff availability and fatigue
- Emerging situations and potential problems
- Failure to share information with the team
- Failure to request information from others
Error Prevention Strategies

• Communication safety
• Assertiveness
• Vigilance / Accuracy
• Stop the Line!
Communication Safety

- All verbal instructions and orders are to be verified *verbatim*.
- All instructions and orders are questioned if they:
  - are not perfectly clear
  - may be incorrect
  - require prioritization
Assertiveness

- Direct communication
- Seeking clarification or resolution of an order
- Speaking up when an error is imminent

Goal = Best Patient Outcome
Vigilance / Accuracy

Watching out for each other to decrease the chance of error
Stop the Line

- Any team member can stop the line
- We are obligated when we:
  - Sense safety breeches
  - Need time to confirm the correct procedure is being followed
  - Sense the patient is in imminent danger
Common Ineffective Approaches to Conflict Resolution

- Compromise
- Avoidance
- Accommodation
- Dominance
- Gossip
Effective Conflict Resolution: Debriefing

- Venue
  - Not in the heat of battle
- Timing
  - Team debriefings
- Participants
- Confidentiality
Change requires effort and commitment
A Crew Resource Management Program Tailored to Trauma Resuscitation Improves Team Behavior and Communication

K Michael Hughes, DO, FACOS, FACS, FCCM, Ronald S Benenson, MD, Amy E Krichten, RN, BSN, CEN, Keith D Clancy, MD, MBA, FACS, James Patrick Ryan, MD, Christopher Hammond, DO

BACKGROUND: Crew Resource Management (CRM) is a team-building communication process first implemented in the aviation industry to improve safety. It has been used in health care, particularly in surgical and intensive care settings, to improve team dynamics and reduce errors. We adapted a CRM process for implementation in the trauma resuscitation area.

STUDY DESIGN: An interdisciplinary steering committee developed our CRM process to include a didactic classroom program based on a preimplementation survey of our trauma team members. Implementation with new cultural and process expectations followed. The Human Factors Attitude Survey and Communication and Teamwork Skills assessment tool were used to design, evaluate, and validate our CRM program.

RESULTS: The initial trauma communication survey was completed by 160 team members (49% response). Twenty-five trauma resuscitations were observed and scored using Communication and Teamwork Skills. Areas of concern were identified and 324 staff completed our 3-hour CRM course during a 3-month period. After CRM training, 132 communication surveys and 38 Communication and Teamwork Skills observations were completed. In the post-CRM survey, respondents indicated improvement in accuracy of field to medical command information (p = 0.029); accuracy of emergency department medical command information to the resuscitation area (p = 0.002); and team leader identity, communication of plan, and role assignment (p = 0.001). After CRM training, staff were more likely to speak up when patient safety was a concern (p = 0.002).

CONCLUSIONS: Crew Resource Management in the trauma resuscitation area enhances team dynamics, communication, and, ostensibly, patient safety. Philosophy and culture of CRM should be compulsory components of trauma programs and in resuscitation of injured patients. (J Am Coll Surg 2014; 219:545—551. © 2014 by the American College of Surgeons)
Study Baseline

- Independent observer at 25 trauma activations graded them using a 25 point Communication and Teamwork Skills (CATS) Assessment instrument

- A pre-implementation survey of personnel (n=160) responding to trauma activations identified perceptions on communication, team leadership, and willingness to voice concerns about patient safety issues
### Table #2: CATS ASSESSMENT TOOL

<table>
<thead>
<tr>
<th>Observed Behavior</th>
<th>Pre-CRM Agreement</th>
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<tbody>
<tr>
<td>Briefing</td>
<td>40%</td>
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<tr>
<td>Verbalize plan of care</td>
<td>44%</td>
</tr>
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<td>Establish team leader</td>
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<td>Assign roles</td>
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*P<0.05
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Post CRM Training
One Word Comments

Positive Responses Increased 22% CI 8.4-35.2 P-value 0.0012

Negative Responses Decreased 24% CI 9.6-37.4 P-value 0.001
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Summary

Despite its unique challenges, CRM can be successfully implemented in the trauma resuscitation area.

Building on ATLS® / ATCN® principles, a culture of safety can be established.