Teaching Mass Casualty Triage: Implementing the New MUCC Instructional Guidelines
Today

- Importance of using evidence-based triage systems during mass casualty incident response
- What educators need to know about the model uniform core criteria
- Lessons learned during the implementation of the new MUCC EMS instructional guidelines

Today’s Speakers

- E. Brooke Lerner, PhD, Professor, Department of Emergency Medicine
  - Medical College of Wisconsin
- Kandra Strauss-Riggs, MPH, Education Director
  - National Center for Disaster Medicine and Public Health
- Leaugeay Barnes, MS, EMS Faculty
  - Kapi’olani Community College
Developing a National Guideline for Mass Casualty Triage

E. Brooke Lerner, PHD
Professor of Emergency Medicine
Medical College of Wisconsin

Conflict of Interest

- No financial conflicts related to this material
The Mass Casualty Triage Project

- Started in 2006
- Part of CDC sponsored:
  - Terrorism Injuries: Information Dissemination and Exchange (TIIDE) project
  - Effort to develop national guideline for mass casualty triage

Project Goal

- Review available evidence on mass casualty triage
- Develop a position paper on a national standard for mass casualty triage
Workgroup

- ACEP
  - Eric S. Weinstein
- AMA
  - Phillip Coule
  - Ray Swienton
- ACS-COT
  - Jeffrey Hammond
  - Jeffrey Salomone
  - Eileen Bulger
  - Sharon Henry
  - Howard Taekman
- NAEMT
  - Greg Lord
  - David Markenson
- NAEMS
  - Teri Sanddal
- NAEMSP
  - David Cone
  - E. Brooke Lerner
  - Robert O’Connor
  - Richard Schwartz
  - Ian Wedmore
  - Jason Lui
- NASEMSO
  - Wayne Misselbeck
  - Nick Nudell
  - Joseph Schmider
- Federal Partners
  - Jon Krohmer, DHS
  - Tasmeen Singh, EMSC
  - Gamunu Wijetunge, NHTSA
  - Bob Bailey, CDC
  - Rick Hunt, CDC
  - Scott Sasser, CDC
  - David Marcozzi, ASPR

Compared Existing Systems

- For each triage system assembled:
  - Research evidence
  - Practical experience
  - Compared features of each system
  - Reviewed by consensus
Best Comparison Evidence Identified

- Garner 2001
- Comparison of START, Sieve, Care Flight
- Sensitivities 45-85%
- Specificity 86-96%
- Care Flight did the best
- Done in the ED non-MCI conditions
- Used a resource use criteria to determine accuracy

Triage System Comparison

- Comparison Grid
  - Coding
  - Parameters for categories
  - “Pre-dead” therapy
  - Who can use
  - Cost
  - Training time
  - Validation
  - Key Differences
  - Found many common features
Consensus

- Did not find overwhelming evidence supporting any system
  - Most systems had identified weakness
- Developed new system using best of all systems

SALT Triage

- Sort – Assess – Life Saving Interventions – Treatment and/or Transport
- Simple
- Easy to remember
- Group large numbers of patients quickly
- Applies rapid lifesaving interventions early
- All hazards
- All populations
SALT Triage

- Concept endorsed by:
  - American College of Emergency Physicians
  - American College of Surgeons Committee on Trauma
  - American Trauma Society
  - National Association of EMS Physicians
  - National Disaster Life Support Education Consortium
  - State and Territorial Injury Prevention Directors Association
What Went Wrong?

- Not enough organizations involved
- Representatives did not actually have the power to make decisions on behalf of their organizations
- We made a new thing
- It was a start

Model Uniform Core Criteria

- Yes that spells MUCC
  - Involve more stakeholders
  - Create a check list rather than a system

- Like cardiac arrest treatment
  - ILCOR – consensus on science = MUCC
  - AHA – treatment guidelines = SALT
Workgroup

- Expanded to 30 members
  - Prior members
  - Representatives from more organizations
- Review science again and develop list of recommended criteria
- Identified key components, a triage system should include to meet the national guideline
- Allow flexibility and innovation in triage systems while still creating interoperability
- Foundation SALT Triage

Sample Criteria

<table>
<thead>
<tr>
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<th>Basis</th>
<th>Used by Other Systems</th>
<th>Relevant Literature</th>
</tr>
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<td>3.1 Lifesaving interventions are considered for each patient and provided as necessary, prior to assigning a triage category. Patients must be assigned a triage category according to their condition following any lifesaving interventions.</td>
<td>Indirect Science</td>
<td>Yes</td>
<td>Indirect: Bellamy 1984, Baker 2004, Knag, Walters et al. 2008, Knag, Uebel et al. 2009; Knag, Wides et al. 2009</td>
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<td>3.2 Lifesaving interventions are performed only if: (1) the equipment is readily available, (2) the intervention is within the provider’s scope of practice, (3) they can be quickly performed (i.e., less than a minute), and (4) they do not require the provider to stay with the patient.</td>
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Broader Endorsements

- Endorsed by
  - American Academy of Pediatrics
  - American College of Emergency Physicians
  - American College of Surgeons – Committee on Trauma
  - American Trauma Society
  - Children’s National Medical Center, Child Health Advocacy Institute, Emergency Medical Services for Children National Resource Center
  - International Association of Emergency Medical Services Chiefs
- National Association of County and City Health Officials
- National Association of EMS Physicians
- National Association of State EMS Officials
- National Disaster Life Support Education Consortium
- National EMS Management Association
- Society for the Advancement of Violence and Injury Research
- Concurrence by:
  - HRSA/MCHB Emergency Medical Services for Children Program

Making It a Thing

- Dr. Hunt felt strongly that NGO’s had to endorse before federal agencies considered it
- Grass root efforts were initiated (bottom up)
  - Textbook chapters, training courses, local and state initiatives
- FICEMS considered and released implementation plan (top down)
What’s Next?

- MUCC
  - Build the science
  - Sustain the process so it improves
  - The rest of the event
    - MUCC addresses ONLY the first level of sorting
    - Probably a very short part of the response
    - For example, it does not address:
      - Transport priority
      - Resource allocation
      - Population based triage

Kandra Strauss-Riggs, MPH
Operations Director
National Center for Disaster Medicine and Public Health
Disclaimer

- The views expressed are those of the speaker and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences, the Department of Defense, or the United States Government.

National Center for Disaster Medicine & Public Health

- **Mission:** To improve our Nation’s disaster health readiness through education and science.

- **Vision:** The NCDMPH will be the Nation’s academic center of excellence leading domestic and international disaster health education and research efforts. In collaboration with partners, we create and translate science and education to improve readiness.
Center Overview and History

- Founded: 2008 under HSPD 21 to be “… an academic center of excellence in disaster medicine and public health…”, and “…shall lead Federal efforts to develop and propagate core curricula, training, and research related to medicine and public health in disasters.”
- The National Center is listed as an implementing organization in the National Health Security Strategy 2015-18, and has an important role to play in implementing Strategic Objective 4 – Enhance the integration and effectiveness of the public health, healthcare and emergency management systems.

FICEMS MUCC Implementation Plan

- Approved December 2013
- **Strategy One:** Support the education of EMS personnel, system leaders, clinicians and others on triage protocols that are MUCC compliant
- **Action Steps:** 1.1 DOT/NHTSA should create an addendum to the Instructional Guidelines of the National EMS Education Standards that outlines the MUCC principles and enables educators to instruct students on the use of triage systems that are MUCC compliant and consistent with State and local practice (2013-2014)
Instructional Guidelines

Addendum Creation

- NCDMPH and NHTSA created the addendum and convened experts to review, recommend piloting
  - Sabina Braithwaite
  - Art Cooper
  - Brooke Lerner
  - Juan March
  - Gregg Margolis
  - Ray Mollers
  - Mike Stern
  - Mike Touchstone
  - Jolene Whitney
Oklahoma Pilot

- Seven formal MUCC addendum deliveries to:
  - EMT Classes (Tulsa Community College)
  - Paramedic Classes (Tulsa Community College)
  - Police Officer Training
  - Firefighters Conference
  - School Administrators

Oklahoma Pilot Cont.

- Very positive feedback from instructor and students

- Adapted the Addendum into a presentation for clear content delivery

- Created a table top exercise to implement MUCC utilizing 16 cases
Implementation

- Partnership between TCC and TPD allowed us to implement within the EMT and paramedic education programs as well as in a real world environment with police officers.
  - Anthony First with TPD was instrumental in the development and instruction of the content
  - Provided a short PowerPoint - MUCC in a Nutshell!
  - Utilized a table top exercise to allow practice
- These tools were later successfully utilized to train new nursing students for a multi-agency airport exercise done in Hawai‘i every 3 years for airport accreditation
Why MUCC?

- There are numerous triage systems in use across the country (SALT, START, Etc…)
- The implementation and interpretation of these systems can vary greatly even between neighboring agencies
- Most current triage systems were never meant to be used in the austere environment

What is MUCC (not)?

- MUCC is NOT a new and separate triage system
- MUCC is not to be used for individual patient assessment
- It is hoped that MUCC will standardize the various systems being used across the country
How MUCC was Born

- MUCC is a collaborative effort between federal public safety entities, experts, committees, and others
- The principals of MUCC rely on evidence and research

One Size Fits All

- Your triage method must be applicable to all ages and populations of patients
Any time, Any place

- You must be able to apply your triage system to a wide variety of multiple casualty incidents in which the patients are at a single location

KISS

- Your triage system must be easy to remember and easy to apply by all levels of responders
Danger Zone!

- Your triage system must be rapid to apply and practical in the austere (hostile) environment

Semper Gumby – Always Flexible

- All triage systems are resource dependent
- Your system must be flexible enough to change as your resources change
- It must allow for the changing of patient categories
- Your system must require that patients be reassessed when possible and that their category reflect any changes
Tag’Em!

- Your system must require that each patient be visibly marked and their category be easily recognizable (tags, wraps, etc…)

Appendix A: Diagram of SALT and Tables Detailing MUCC

Figure 2: The Sort-Assess-Lifesaving Interventions-Triage/Treatment (SALT) Triage System

LSI= Lifesaving intervention
1. Global Sorting

- Global sorting refers to initial efforts to sort out large numbers of patients and identify those requiring life saving interventions (LSI)
  - Your first on-scene units usually initiate global sorting
- Instructions to patients should be easy to understand and follow:
  - LSI- red patients
  - Those with purposeful movement- yellow patients
  - Those who can move themselves and follow commands- green patients

2. Individual Assessment

- Occurs AFTER global sorting
  - Employs yes and no responses rather than vital signs/ assessments
- Patients are sorted into one of five categories
  - Red- immediate
  - Yellow-delayed
  - Green- minimal injuries
  - Expectant- incompatible with life with current resources
  - Black- deceased
- Patients are reassessed and categories changed as appropriate
Life-Saving Interventions (LSI)

- LSI must be performed before assigning to a category
  - LSI should last no longer than 1 minute
  - LSI must be within the provider’s scope of practice
  - LSI should be performed only if equipment to do so is readily available
  - LSI must not require a responder to stay with the patient
- If a patient does not respond to an intervention they are assigned expectant
  - Resuscitation and comfort care can be provided as resources dictate

LSI Procedures

- Controlling gross hemorrhage
- Basic airway maneuvers
  - Apneic children may be provided 2 rescue breaths
- Chest decompression
- Auto-injector antidotes
Table Top Exercise

- **Tulsa Cohorts:**
  - Participants were each given a list of patient scenarios and asked to perform the process and categorize each
  - Group discussion

- **Hawai’i Cohorts:**
  - Participants were placed in 4 groups to simulate airport exercise
  - Group 1 & 2 provided global sorting and categorization
    - Paper men with scenarios on each
  - Group 3 & 4 reassessed and re-categorized each patient
  - Role reversal
  - Discussion

Outcomes

- Very successful in both locations
- Paramedic and EMT students performed correctly most of the time with no more than 1 patient incorrectly identified
- Police officers performed correctly 100% of the time
- Nursing students in two cohorts performed correctly most of the time with no more than 1 patient incorrectly categorized which was correctly re-categorized during the individual reassessment phase
- Nursing students were asked where they learned to triage at the exercise where other healthcare professionals and students were participating
Q/A

For more information about the MUCC Instructional Guidelines, visit ems.gov/education

For free SALT training, visit salttriage.org

A recording of this session will be available on ems.gov/ems-focus

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Q/A

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