

National Implementation of the Model Uniform Core Criteria for Mass Casualty Incident Triage

A Report of the FICEMS

July 8, 2013

Table of Contents

Statement by the FICEMS	3
Background.....	4
Soliciting Stakeholder Input.....	7
Advice from the NEMSAC.....	7
Institute of Medicine (IOM) Recommendations for Crisis Standards of Care	11
Analysis	11
Priority Strategies and Actions with Cost Estimates	12
Strategy One: Support the education of EMS personnel, system leaders, clinicians and others on triage protocols that are MUCC compliant	12
Strategy Two: Provide assistance to state, tribal, and local EMS systems for the development of MUCC-compliant triage systems.....	12
Strategy Three: Enhance federal preparedness programs and grant resources in support of MCI triage	13
Strategy Four: Develop a process for ongoing evaluation and revision of the MUCC and national implementation efforts.....	13
FICEMS Members	15
Department of Transportation.....	15
Department of Defense	15
Department of Health and Human Services.....	15
Department of Homeland Security	15
Federal Communications Commission	16
State EMS Director	16
Appendix A: Diagram of SALT and Tables Detailing MUCC.....	17
Appendix B: Summary of the 24 Model Uniform Core Criteria	18
Appendix C: National Organizations that Have Endorsed MUCC.....	20
Appendix D: Letter from the NEMSAC to the FICEMS.....	21
Appendix E: National Prehospital Evidence-Based Guideline Model Process	22

Statement by the FICEMS

The Federal Interagency Committee on Emergency Medical Services (FICEMS) was created (42 U.S.C. 300d-4) by the Secretaries of Transportation, Health and Human Services and Homeland Security to, in part, ... *ensure coordination among the federal agencies involved with state, local, tribal or regional emergency medical services and 9-1-1 systems.* The FICEMS has statutory authority to identify state and local Emergency Medical Services (EMS) and 9-1-1 needs, to recommend new or expanded programs and to identify the ways in which federal agencies can streamline their processes for support of EMS.

At a December 19, 2011, meeting of the FICEMS, the FICEMS' Preparedness Committee presented a concept paper for FICEMS consideration on the national implementation of the Model Uniform Core Criteria (MUCC) for mass casualty triage. The FICEMS' Preparedness Committee was subsequently directed to develop a national MUCC implementation strategy for consideration by the FICEMS with input from the National EMS Advisory Council (NEMSAC).

The FICEMS has prepared this report on national implementation of the MUCC to improve coordination among its member agencies on EMS system mass casualty triage. FICEMS has adopted the following position statement:

The FICEMS recommends that state and local Emergency Medical Services (EMS) systems improve their mass casualty incident triage capabilities through adoption of triage protocols and systems that are based on the Model Uniform Core Criteria. Federal resources may be used to support development of capabilities which improve EMS system preparedness for mass casualty triage.

This report provides background on the national implementation of the MUCC principles and provides recommended strategies and action steps to be taken by FICEMS member agencies to support national implementation of the MUCC.

Background

The Model Uniform Core Criteria (MUCC) for Mass Casualty Triage is a science and consensus-based national guideline that recommends 24 core criteria for all mass casualty triage systems.

MUCC Developed Through Consensus Informed by Evidence

In 2006, the National Association of EMS Physicians (NAEMSP), with funding from the Centers for Disease Control and Prevention (CDC), convened a workgroup (hereafter the SALT workgroup) of subject matter experts from national stakeholder organizations, to examine the science supporting existing mass casualty triage systems and make a recommendation for the adoption of a single system as a national standard. In an article published in *Disaster Medicine and Public Health Preparedness* the SALT workgroup stated that “[t]he committee conducted their work through a series of conference calls and 2 face-to-face meetings. Initially, a list of all mass casualty triage systems was generated and reviewed by all of the members [of the SALT workgroup] to ensure it was complete. Each member was assigned a triage system and asked to conduct an exhaustive literature review and develop a report of the system for the group. This review included peer-reviewed publications as well as other types of reports. Each system had 2 or more members assigned to conduct a review. The reviews were presented to the group and a grid was developed that described each system in regards to several parameters (e.g., color codes, training time and costs, when a patient is designated as dead).”¹

According to the SALT workgroup, responders evaluating patients at a mass casualty incident (MCI) typically use a triage system to help prioritize the use of limited patient care and transportation resources. Multiple triage methods have been developed and are in use in the United States, such as Simple Triage and Rapid Treatment (START) and Jump START, the pediatric equivalent to START. MCIs frequently cross jurisdictional lines and involve responders from multiple agencies that may be using different triage methods. For operational simplicity, communications interoperability, and clinical efficiency, it is logical for all of the responders at a given incident to use the same triage method. However, the SALT workgroup concluded that no MCI triage system had sufficient scientific evidence to justify national adoption. The SALT workgroup proceeded with the development of a new triage system, the Sort-Assess-Lifesaving Interventions-Treatment/Triage (SALT) triage system (**Appendix A**). SALT, a non-proprietary free system, was developed from available research, widely accepted best practices of existing mass triage systems, and consensus opinion from the SALT workgroup.

The SALT workgroup considered the development of SALT to be a first step in creating a national guideline for MCI triage systems. While SALT was developed from a scientific base, adopting SALT as the single national standard for MCI triage would require local, state and federal agencies to significantly change their current practices. Therefore, the SALT workgroup identified the need to develop the Model Uniform Core Criteria (MUCC) for Mass Casualty Triage, which would help to ensure interoperability among multiple existing triage tools.

¹ Lerner, E.B., Schwartz, R.B Coule, P.L., Weinstein, E.S Cone, D.C., Hunt, R.C., et al. 2008. Mass casualty triage: an evaluation of the data and development of a proposed national guideline. *Disaster Medicine and Public Health Preparedness*, 2 Suppl 1:S25-S34.

The MUCC was created by a 30 member CDC-funded workgroup (hereafter, the MUCC workgroup), convened in 2009, that expanded upon the work of the SALT workgroup.² The MUCC consists of four general categories (general considerations, global sorting, lifesaving interventions, and individual assessment) and 24 specific criteria (**Appendix B**) which the MUCC workgroup recommended as model minimum elements which all MCI triage systems should include.

MUCC Represents the Best Available Science

MUCC is a group of 24 criteria (**Appendix B**) that the MUCC workgroup recommended as essential elements of a MCI triage system. Of MUCC's 24 criteria, 15 are currently used by existing MCI triage systems, excluding SALT, which is completely MUCC-compliant. Having a standard for triage systems increases interoperability between MCI triage systems and provides guidelines for the revision of existing MCI triage systems. During a response to an MCI, responders will assess patients in a similar manner if they are using MCI triage systems that are MUCC-compliant.

While the MUCC is supported by the best available science, the evidence base for evaluating MCI triage systems in prehospital settings is limited. The majority of MUCC's criteria are supported by indirect evidence (i.e., evidence that comes from different situations or different patient populations) and consensus decisions, meaning the SALT and MUCC workgroups found gaps in the science. The intent of the MUCC workgroup was to revise MUCC as new evidence becomes available. However, a process and timeline for updating MUCC has not yet been defined.

MUCC Widely Endorsed but Challenges Remain

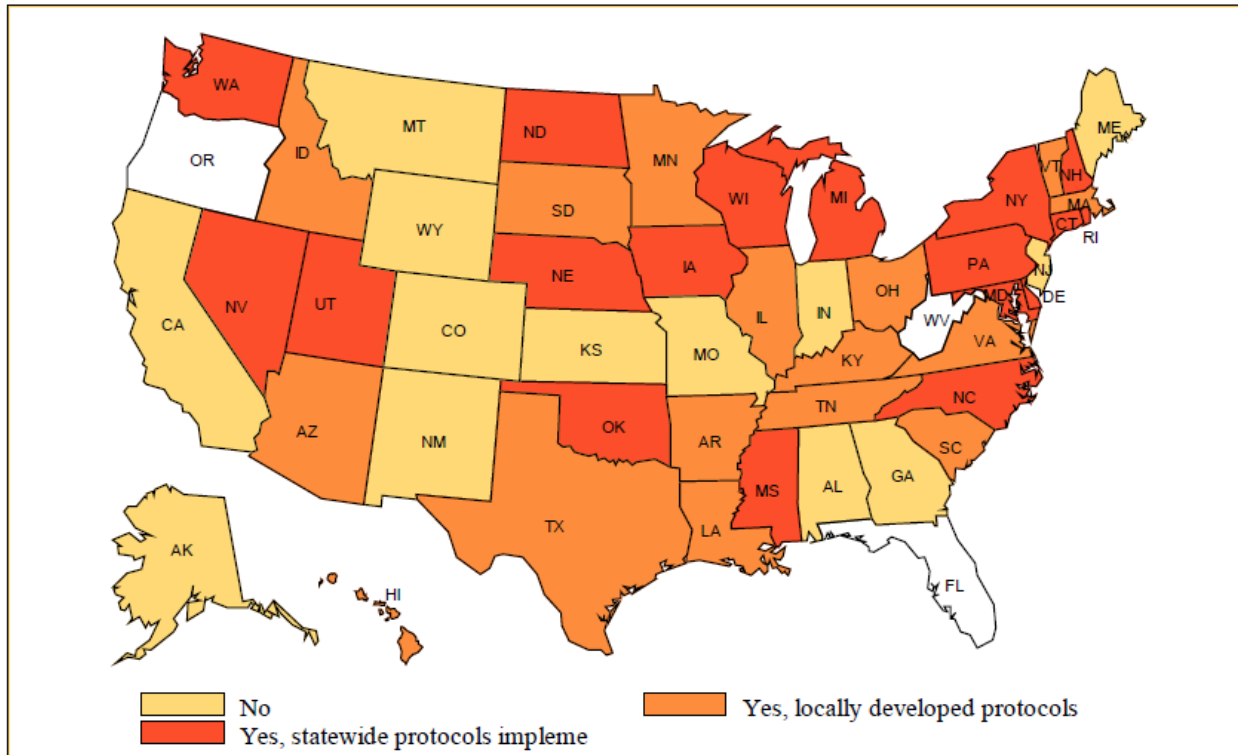
According to the *National EMS Assessment* (FICEMS, 2011) “[o]f the 47 states providing information, 34 (72%) have developed EMS specific mass casualty protocols at either the local and/or state levels. A total of 18 (38%) states have developed and implemented statewide protocols and triage guidelines for local EMS agency use (**Figure 1**).”³ According to a 2008 survey of State EMS Offices conducted by the Maryland Institute for Emergency Medical Services Systems (MIEMSS), thirty-four of forty responding states reported that START (or JumpSTART) was either mandated by the state or the most commonly used mass casualty triage system at the local level.⁴ These data sources indicate variability among the states in the use of mass casualty triage systems. It is possible that assessing MUCC compliance might be feasible at the state level for the eighteen states that have developed and implemented statewide EMS mass casualty protocols. Assessing MUCC compliance for the sixteen states which reported locally developed mass casualty protocols might have to be determined through an evaluation of the multiple protocols within these sixteen states.³

² Lerner, E.B., Cone, D.C., Weinstein, E.S., Schwartz, R.B., Coule, P.L., Cronin, M., et al. 2011. Mass casualty triage: an evaluation of the science and refinement of a national guideline. *Disaster Medicine and Public Health Preparedness*, 5(2):129-37.

³ FICEMS, 2012. *National EMS Assessment: Final Draft*. Downloaded from www.ems.gov on March 7, 2012 at 1400hrs.

⁴ MIEMSS, 2010. *Maryland Survey: Mass Casualty Triage System As of July 24, 2008*. Unpublished results provided to FICEMS Preparedness Committee.

Figure 1: States with EMS specific protocols including triage guidelines for mass casualty incidents for local EMS agency use



National EMS Assessment, 2011

To date, MUCC has been endorsed by, or received concurrence from, a number of national organizations (**Appendix C**). Despite widespread acceptance of the MUCC, there is, to date, a lack of evidence regarding the impact on patient outcomes of using a MUCC compliant MCI triage method versus a non-MUCC compliant MCI triage method.

Recommendation to Support National Implementation of the MUCC

In considering whether to recommend that the FICEMS support implementation of the MUCC, the FICEMS Technical Working Group (TWG) considered several issues including available scientific evidence, current challenges faced by EMS agencies regarding MCI triage, and the endorsements of MUCC by a broad array of national EMS stakeholder organizations. MUCC represents the most comprehensive effort undertaken nationally to develop common uniform criteria for mass casualty triage systems. It is unlikely that a comparable effort will be undertaken in the near future. The endorsement of MUCC by a broad array of national EMS organizations gives further support for the national adoption of MUCC. Federal support could contribute to a more rapid and coordinated transition to MUCC by the EMS community. In reviewing the recommendations of the TWG, the FICEMS solicited input from the NEMSAC on the role of the FICEMS in the national adoption of MUCC, including advice on specific actions that the FICEMS should take to support the process (**Appendix D**).

Soliciting Stakeholder Input

At its December 19, 2011, the FICEMS directed the TWG to seek input from the NEMSAC in developing a MUCC implementation strategy for consideration by the FICEMS. The NEMSAC was formed in April 2007 as a nationally-recognized council of EMS representatives and consumers to provide advice and recommendations regarding EMS to NHTSA and, through NHTSA, to the FICEMS. Administered by NHTSA, the NEMSAC provides expert advice and recommendations to the agency and its federal partners on key EMS issues over the course of a two-year term.

Advice from the NEMSAC

The NEMSAC's responses to the FICEMS' questions are itemized below.

1) Should FICEMS support the national adoption of MUCC?

Yes. FICEMS should support the national adoption of MUCC through a guidance process. After more than a decade since the events of September 11, 2001, the United States still does not have a nationally-recognized triage standard. It is only via a nationally consistent guideline for mass casualty triage tools that the interoperability of multiple EMS agencies and personnel can be facilitated and assured. As the MUCC are based on the best currently available direct scientific evidence, indirect scientific evidence, expert consensus, and are used in multiple existing triage systems, the MUCC are the ideal benchmarks by which to develop consistency among current and future triage tools.

a) What reasonable national metrics could be used by FICEMS to measure adoption of MUCC principles by the national EMS community over time?

As published, MUCC incorporates a series of criteria for the following four main categories: general considerations, global sorting, lifesaving interventions, and individual assessment of triage category. Within each of these four categories is a series of criteria that could easily be transformed into checklists for both the adoption of MUCC principles, and the measurement of compliance with those principles over time. Use of such checklists should be encouraged both for internal assessment of triage tools by vendors and for external assessment by appropriate jurisdictional authorities as desired.

b) Is there a need for a national, state and/or local process, criteria, and organization to determine what triage tools are MUCC compliant?

Yes. There is a need to determine which triage tools are compliant with MUCC principles. In fact, at the time the MUCC were developed, no single triage tool was available that was fully compliant with the MUCC. NEMSAC believes that compliance checklists, based on the four main categories of the MUCC, could be developed, transmitted, and widely disseminated among national, state, regional, and local EMS officials. Development, transmittal, and dissemination of compliance checklist(s), as well as technical assistance in evaluating compliance of state, regional and local EMS systems, could

be carried out by a national EMS organization, such as the National Association of State EMS Officials (NASEMSO).

NEMSAC recommends that the FICEMS rely on individual state, regional or local EMS jurisdictions, as appropriate, to determine MUCC compliance, and take steps to encourage such compliance. It is only by engaging state, regional or local personnel that the federal government can facilitate and ensure interoperability of mass casualty triage across jurisdictional boundaries during catastrophic events of regional, state, or national significance.

2) Should there be an addendum published to the National EMS Education Standards referencing the principles of MUCC?

No. There need not be an addendum published to the National EMS Education Standards referencing the principles of MUCC, because the National EMS Education Standards already include a “placeholder” for the principles of mass casualty triage that should be covered for all four nationally recognized EMS provider levels. Therefore, the principles of MUCC are clearly intended to be incorporated within initial EMS education program content. To ensure that such principles are consistently explained across multiple jurisdictions, there should be an addendum published to the Instructional Guidelines supporting the National EMS Education Standards, thereby promoting the fullest possible interoperability among EMS agencies performing mass casualty triage nationwide. Additionally, FICEMS should encourage all appropriate federal agencies and professional organizations to support the development of continuing EMS education program content in the principles of MUCC that could be broadly disseminated among state, regional or local personnel.

a) Should additional actions be taken by FICEMS member agencies to support the initial and continuing education of EMS workers in the principles of MUCC, if so what additional actions?

Yes. The FICEMS should request that all member agencies take such additional actions, which at a minimum could include transmittal and dissemination of appropriate supporting materials and guidance documents to all EMS organizations within the spheres of influence of each of the FICEMS member agencies. As just two examples, in collaboration with other FICEMS member agencies, the National Highway Traffic Safety Administration (NHTSA) could facilitate a national effort to standardize initial and refresher training materials in disaster and emergency preparedness for EMS personnel, and the Department of Homeland Security (DHS) could ensure that emergency management and disaster preparedness personnel include education in the MUCC role in NIMS and ICS in their mass casualty training programs and exercises. The development and broad distribution of training materials for EMS personnel on the recently revised “Guidelines for Field Triage of Injured Patients” by the CDC could serve as a model for how these support materials might be transmitted and disseminated nationwide.

3) What are the most significant common barriers that state, territorial and tribal governments might face in supporting adoption of MUCC?

While barriers may exist in supporting the national adoption of the MUCC and MUCC compliant triage tools, the fact is that the MUCC are supported by the best available direct and indirect scientific evidence, as well as national expert consensus. As such, to ensure interoperability of disaster triage by responding EMS personnel in a multijurisdictional event, there is little choice but to promote the adoption of MUCC and MUCC compliant triage tools across the nation. That said, the

most significant common barrier likely to be faced by state, territorial and tribal governments in supporting the adoption of MUCC is the cost to train EMS personnel.

Training in MUCC compliant triage tools could prove especially problematic for career EMS professionals, whose training hours must be paid for and whose lost duty hours must be backfilled by other career EMS professionals within their own EMS agencies. Among volunteer EMS professionals, the time required to train such volunteers will be a common barrier. The added training hours required for introduction to MUCC compliant triage tools will compete with other vital EMS training enhancements.

Decisions regarding investments in time and resources required to train currently practicing EMS personnel in new methodologies and technologies such as MUCC and the use of MUCC compliant triage tools are most often best made at the jurisdictional level, with input from local, regional, and state EMS stakeholders and agencies. However, EMS personnel all currently undergo initial and refresher training in preparation for their important roles in day-to-day out-of-hospital emergency medical care. Therefore, the inclusion of training in MUCC and MUCC compliant triage tools in such programs could be accomplished with little additional cost in dollars or hours over time as future and current EMS personnel are trained and retrained.

a) Are there specific actions FICEMS member agencies should take to support state, territorial and tribal governments in overcoming these barriers to adoption of MUCC?

Yes. There are specific actions FICEMS member agencies should take to support state, territorial and tribal governments in overcoming the above-cited barriers to the adoption of MUCC. NEMSAC believes that FICEMS member agencies should take a leading role in facilitating necessary and appropriate changes to NIMS policies and protocols to effect the adoption of MUCC and overcome whatever barriers to adoption may exist. To the extent practicable, FICEMS member agencies should also provide appropriate supporting materials, such as educational documents, programs, webinars and guidance documents, as well as whatever financial incentives may be available to encourage state, territorial, local and tribal governments to facilitate adoption of MUCC compliant triage tools within EMS systems. However, given the limited funding currently available to most local EMS agencies nationwide, financial disincentives to penalize those that defer such adoption should be considered only as a last resort.

4) Are there specific actions FICEMS should undertake to engage non-federal national EMS stakeholder organizations in supporting national implementation of MUCC?

Yes. There are specific actions FICEMS member agencies should undertake to engage non-federal national EMS stakeholder organizations in supporting national implementation of MUCC. NEMSAC believes that FICEMS member agencies should take a leading role in facilitating necessary and appropriate changes to NIMS policies and protocols to effect the adoption of MUCC and overcome whatever barriers to adoption may exist.

To the extent practicable, FICEMS member agencies should also provide appropriate supporting materials, such as educational documents, programs, webinars and guidance documents, in addition to whatever financial incentives may be available to encourage non-federal national EMS stakeholder organizations to facilitate adoption of MUCC compliant triage tools within state, regional and local EMS systems over which they may exert some influence. However, given the limited funding

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currently available to most local EMS agencies nationwide, financial disincentives to penalize those that defer such adoption should be considered only as a last resort.

Institute of Medicine (IOM) Recommendations for Crisis Standards of Care

On July 31, 2012, the Institute of Medicine (IOM) published *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response* (CSC Report). The CSC report, funded by the U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response (ASPR), NHTSA, and the U.S. Department of Veterans Affairs (VA), is a manual to guide health care organizations, public health agencies, EMS, and government agencies in delivering efficient and effective care during disasters.

In the CSC Report, the IOM recommends a system-based approach to allocating resources and delivering care during crises. The CSC Report also provides tools and templates to help different stakeholders involved in disaster planning and response identify core functions and responsibilities, while promoting coordination and integration of response partners.

According to the CSC Report, the IOM's CSC committee "emphasized the use of a systems approach that integrates CSC planning into the larger context of overall surge capacity planning." Among other recommendations, the CSC Report recommended the formation of State Disaster Medical Advisory Committees (SDMAC's) to guide medical decision making during a disaster. The SDMACs play a critical function in developing statewide CSC plans, including recommending mass casualty triage guidelines for prehospital care. Existing SDMACs would likely serve a key role in coordinating statewide MUCC implementation.

Analysis

Qualitative and quantitative data sources reviewed by the Preparedness Committee indicate variability across the nation in the MCI triage systems used by state and local EMS systems.

In developing proposed strategies to support the national adoption of MUCC, the Preparedness Committee examined recommendations made by the NEMSAC and the IOM's Crisis Standards of Care committee as well as the National Prehospital Evidence-Based Guideline Model Process (**Appendix E**). Based on these recommendations four strategies are proposed which would support a systems and evidence-based approach to improving national MCI triage interoperability. Potential action steps for each strategy have been prioritized and selected to maximize the effective investment of limited federal resources.

Priority Strategies and Actions with Cost Estimates

The FICEMS has adopted the following priority strategies to help address national gaps in state and local EMS mass casualty triage systems. These strategies to support the MUCC stem from an effort to establish a national MCI triage guideline with sufficient specificity to ensure uniformity and interoperability. Each of these recommended strategies has several action steps, including a specific federal agency to lead each step, for coordinated implementation by FICEMS member agencies.

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 in the use of triage systems that are MUCC compliant and consistent with state and local practice (2013-2014)
- 1.2) DHS/FEMA, in coordination with OHA, should create online training for MUCC compliant triage systems, which are eligible for continuing education credits and can be adopted by and disseminated through various national organizations and federal entities (2014-2015)
- 1.3) All federal medical response and coordinating entities such as HHS/NDMS, DHS/FEMA, and DoD should consider adopting triage protocols that are MUCC compliant into their existing federal response systems, as resources allow.
- 1.4) HHS/ASPR with support from DOT/NHTSA should collaborate with the Federal Education and Training Interagency Group (FETIG) (which includes DHS/OHA, DoD, DOT/NHTSA, HHS/ASPR and VA) and the National Center for Disaster Medicine and Public Health (NCDMPH) to facilitate national adoption of MUCC compliant initial and refresher triage training materials for EMS personnel (2013-2015)

Strategy Two: Provide assistance to state, tribal, and local EMS systems for the development of MUCC-compliant triage systems.

Action Steps:

- 2.1) DHS Office of Health Affairs should collaborate with national organizations, states, and tribes to develop guidelines for assisting local and state agencies with transitioning to triage systems that are MUCC-compliant (2013-2020)
- 2.2) DHS Office of Health Affairs should develop a tool or checklist for assessing triage system compliance with the MUCC (2014-2015)

Strategy Three: Enhance federal preparedness programs and grant resources in support of MCI triage

Action Steps:

- 3.1) FICEMS TWG should collaborate with the Interagency Grant Coordination Committee (established in 2011 by the Memorandum of Understanding between HHS/ASPR, CDC, HRSA, DHS/FEMA and DOT/NHTSA for Emergency Preparedness Grant Coordination) to enhance federal grant coordination efforts to support the implementation of triage protocols and systems that are MUCC compliant (2013-2016)
- 3.2) FICEMS should write a letter requesting the DHS/FEMA/National Integration Center incorporate MUCC compliant triage protocols into relevant NIMS policies and programs (2013-2014)

Strategy Four: Develop a process for ongoing evaluation and revision of the MUCC and national implementation efforts

Action Steps:

- 4.1) FICEMS should incorporate an evaluation of the MUCC implementation efforts into its strategic plan; this may include measuring the number of providers educated on MUCC-compliant triage protocols and systems as well as the impact on prehospital patients (2012-2013)
- 4.2) HHS/ASPR should collaborate with the FETIG (which includes DHS/OHA, DoD, DOT/NHTSA, HHS/ASPR and VA) and the NCDMPH to apply the prehospital evidence based guideline model process (**Appendix E**) to ongoing evaluation and revision of MUCC (2013-2015)

Potential Costs to Federal, State, Tribal and Local EMS Systems

The costs to Federal Departments and Agencies (hereafter referred to as federal) state, tribal and local EMS systems to carry out the FICEMS recommendation to adopt the MUCC will vary considerably from system to system and will stem from material, administrative, and training costs. Material costs could include upgrading systems' triage supplies, including triage tape, tags, tarps, flags, tracking sheets, and software upgrades for electronic systems, in order to account for the new, grey category for expectant patients reflected in the MUCC principles. The specific material costs to each system may depend on the type of triage materials utilized by each system, the number of EMS vehicles in an agency, and the degree to which the current systems' triage tools are MUCC-compliant. Administrative costs could include staff wage hours for making any regulatory or policy changes necessary to transition state, tribal and local triage tools and systems to be MUCC-compliant. Such administrative costs will also vary considerably from system to system, depending on the specific system's processes for changing regulations and policies.

Per the NEMSAC's advice, training field providers in triage systems and protocols that are consistent with the MUCC principles has the potential to represent the most significant cost associated with adoption of MUCC. The training costs will stem primarily from that of educational materials and wage-hours of training field providers. The costs associated with training providers are likely to be offset in several ways. The costs for educational materials are attributed to the various federal resources and reflect the development of online training materials, based on the MUCC principles that could be adapted for a variety of triage tools. Federal, state, tribal and local agencies that choose to use these materials will likely have minimal development or instructor costs. However, there is variation in the EMS-specific mass casualty protocols among the federal and states with additional differences at the tribal and local level. Additionally there will be costs to federal, state, tribal and local systems related to the wages associated with the hours that personnel spend in training. The cost of wage-hours of training to each EMS system will vary considerably, dependent on many factors: the number and level of providers at each agency, the salary and/or compensation provided to each provider level, the percentage of volunteer personnel within each EMS system, whether or not training hours are regarded as in-service hours, and whether MUCC training supplements an existing continuing education requirement or can be used to satisfy such a requirement. Consequently determining an exact cost for federal, state, tribal and local systems to adopt MUCC-compliant triage tools is largely unknown.

FICEMS Members

Department of Transportation

David Strickland
Administrator, National Highway Traffic Safety Administration

Department of Defense

David Smith, MD
Deputy Assistant Secretary of Defense
Force Health Protection and Readiness Division

Department of Health and Human Services

Terry Adirim, MD MPH
Director, Office of Special Health Affairs
Health Resources and Services Administration

Linda Degutis, DrPH MSN
Director, National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Ed Gabriel, Chair
Principal Deputy Assistant Secretary
Office of the Assistant Secretary for Preparedness and Response

Susan V. Karol, MD, FACS
Chief Medical Officer
Indian Health Service

Jean Sheil
Senior Advisor, Office of Operations Management
Centers for Medicare and Medicaid Services

Department of Homeland Security

J.D. Polk, DO, MS, MMM, CPE, FACOEP
Assistant Secretary of Health Affairs and Chief Medical Officer

Chief Ernie Mitchell

Administrator, U.S. Fire Administration

Federal Communications Commission

David Furth
Deputy Chief, Public Safety and Homeland Security Bureau

State EMS Director

Robert Bass, MD
Executive Director, Maryland Institute for Emergency Medical Services Systems

Appendix A: Diagram of SALT and Tables Detailing MUCC

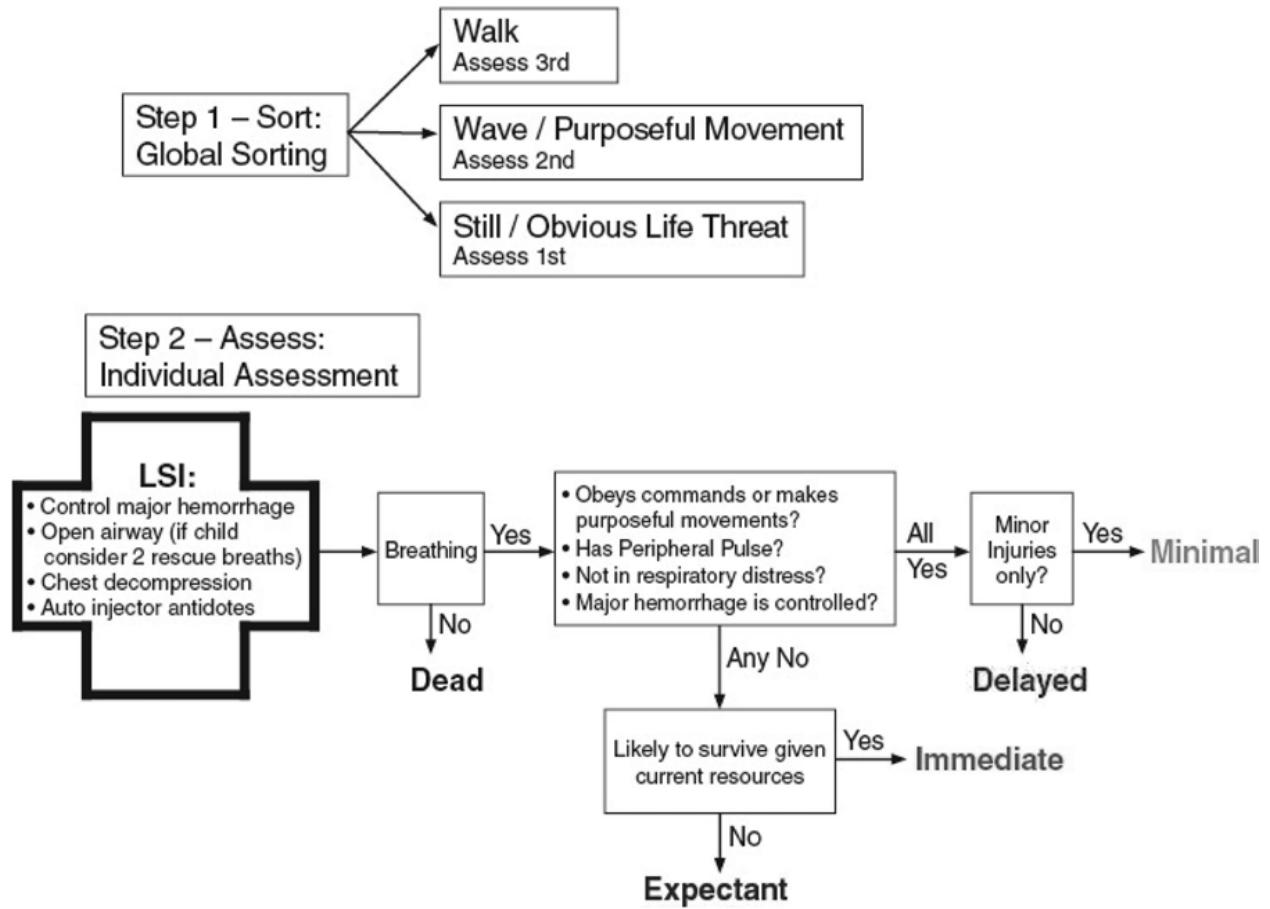


Figure: The Sort-Assess-Lifesaving Interventions-Triage/Treatment (SALT) Triage System

LSI= Lifesaving intervention

Appendix B: Summary of the 24 Model Uniform Core Criteria

CRITERIA	Used by other triage systems
<i>General Considerations</i>	
Triage systems and all of their components must apply to all ages and populations of patients.	Yes
Triage systems must be applicable across the broad range of mass-casualty incidents in which there is a single location with multiple patients.	No
Triage systems must be simple, easy to remember, and amenable to quick memory aids.	Yes
Triage systems must be easy to apply and practical for use in an austere environment.	Yes
Triage systems are resource dependent, and the system must allow for dynamic triage decisions based on changes in available resources and patient conditions.	Yes
The triage system must require that the assigned triage category for each patient be visibly identifiable (e.g., triage tags, tarps, markers).	No
Triage is dynamic and reflects patient condition and available resources at the time of assessment. Assessments must be completed whenever possible and categories adjusted to reflect changes.	No
<i>Global Sorting</i>	
Simple commands must be used initially to prioritize victims for individual assessment.	Yes
The first priority for individual assessment is to identify those who are likely to need a lifesaving intervention. They can be identified as those who are unable to follow commands and do not make purposeful movements, or those who have an obvious threat to life (e.g., life-threatening external hemorrhage).	No
The second priority for individual assessment is to identify those who are unable to follow the command to ambulate to an assigned place but are able to follow other commands (e.g., wave) or make purposeful movement.	No
The last priority for individual assessment is to identify those who follow commands by ambulating to an assigned place (or make purposeful movements) and have no obvious life-threatening conditions (e.g., life-threatening external hemorrhage).	Yes
All patients must be assessed individually regardless of their initial prioritization during global sorting. This includes the assessment of walking patients as soon as resources are available.	No
<i>Lifesaving Interventions</i>	
Lifesaving interventions are considered for each patient and provided as necessary, before assigning a triage category. Patients must be assigned a triage category according to their condition after any lifesaving interventions.	Yes
Lifesaving interventions are performed only if the equipment is readily available, the intervention is within the provider's scope of practice, the intervention can be performed quickly (i.e., in less than 1 min), and the intervention does not require the provider to stay with the patient.	No
Lifesaving interventions include the following: controlling life-threatening external hemorrhage, opening the airway using basic maneuvers (for an apneic child, consider 2 rescue breaths), performing chest decompression, and providing auto-injector antidotes.	No
<i>Individual Assessment</i>	
Each victim must be assigned to 1 of 5 triage categories (immediate, delayed, minimal, expectant, and dead). Each category must be represented with an associated color: immediate/red, delayed/yellow, minimal/green, expectant/gray, dead/black.	Yes
Assessment must not require counting or timing vital signs and instead use yes-or-no criteria.	No

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Diagnostic equipment must not be used for initial assessment.	
Capillary refill must not be used as a sole indicator of peripheral perfusion.	Yes
Patients who are not breathing after 1 attempt to open their airway (in children, 2 rescue breaths may also be given) must be classified as dead and visually identified as such.	Yes
Patients are categorized as immediate if they are unable to follow commands or make purposeful movements, OR they do not have a peripheral pulse, OR they are in obvious respiratory distress, OR they have a life-threatening external hemorrhage; provided their injuries are likely to be survivable given available resources.	Yes
Patients are categorized as expectant if they are unable to follow commands or make purposeful movements OR they do not have a peripheral pulse, OR they are in obvious respiratory distress, OR they have a life-threatening external hemorrhage, AND they are unlikely to survive given the available resources. These patients should receive resuscitation or comfort care when sufficient resources are available.	Yes
Patients are categorized as delayed if they are able to follow commands or make purposeful movements, AND they have peripheral pulse, AND they are not in respiratory distress, AND they do not have a life-threatening external hemorrhage, AND they have injuries that are not considered minor.	Yes
Patients are categorized as minimal if they are able to follow commands or make purposeful movements, AND they have peripheral pulse, AND they are not in respiratory distress, AND they do not have a life-threatening external hemorrhage, AND their injuries are considered minor.	Yes
Patients categorized as immediate are the first priority for treatment and/or transport, followed by patients categorized as delayed and minimal. Patients categorized as expectant should be provided with treatment and/or transport as resources allow. Efficient use of transport assets may include mixing categories of patients and using alternate forms of transport.	Yes

**Appendix C: National Organizations that Have Endorsed MUCC
(as of June 2011)**

- 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 Emergency Medical Technicians
- 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** Health Resources and Services Administration Maternal and Child Health Bureau Emergency Medical Services for Children Program

Appendix D: Letter from the NEMSAC to the FICEMS



National Emergency Medical Services Advisory Council United States Department of Transportation

**Aarron
Reinert**

May 31, 2012

Chair

David Strickland, Chair
Federal Interagency Committee on Emergency Medical Services
Administrator, National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Mr. Strickland:

At the May 30-31, 2012 meeting of the National Emergency Medical Services Advisory Council (NEMSAC), the NEMSAC considered the March 29, 2012 FICEMS request for answers to “Questions for the NEMSAC on the FICEMS Role in Implementation of the Model Uniform Core Criteria [MUCC] for Mass Casualty Incident Triage”.

Developed by the Centers for Disease Control and Prevention (CDC) National Expert Panel on Mass Casualty Triage, the MUCC were published in the June 2011 edition of the journal *Disaster Medicine and Public Health Preparedness*, and were later endorsed by numerous national professional stakeholder organizations in EMS, disaster management, and public health preparedness.

The NEMSAC’s responses to the FICEMS’ questions are itemized below.

1) Should FICEMS support the national adoption of MUCC?

Yes. FICEMS should support the national adoption of MUCC through a guidance process. After more than a decade since the events of September 11, 2001, the United States still does not have a nationally-recognized triage standard. It is only via a nationally consistent guideline for mass casualty triage tools that the interoperability of multiple EMS agencies and personnel can be facilitated and assured. As the MUCC are based on the best currently available direct scientific evidence, indirect scientific

evidence, expert consensus, and are used in multiple existing triage systems, the MUCC are the ideal benchmarks by which to develop consistency among current and future triage tools.

a) What reasonable national metrics could be used by FICEMS to measure adoption of MUCC principles by the national EMS community over time?

As published, MUCC incorporates a series of criteria for the following four main categories: general considerations, global sorting, lifesaving interventions, and individual assessment of triage category. Within each of these four categories is a series of criteria that could easily be transformed into checklists for both the adoption of MUCC principles, and the measurement of compliance with those principles over time. Use of such checklists should be encouraged both for internal assessment of triage tools by vendors and for external assessment by appropriate jurisdictional authorities as desired.

b) Is there a need for a national, state and/or local process, criteria, and organization to determine what triage tools are MUCC compliant?

Yes. There is a need to determine which triage tools are compliant with MUCC principles. In fact, at the time the MUCC were developed, no single triage tool was available that was fully compliant with the MUCC. NEMSAC believes that compliance checklists, based on the four main categories of the MUCC, could be developed, transmitted, and widely disseminated among national, state, regional, and local EMS officials. Development, transmittal, and dissemination of compliance checklist(s), as well as technical assistance in evaluating compliance of state, regional and local EMS systems, could be carried out by a national EMS organization, such as the National Association of State EMS Officials (NASEMSO).

NEMSAC recommends that the FICEMS rely on individual state, regional or local EMS jurisdictions, as appropriate, to determine MUCC compliance, and take steps to encourage such compliance. It is only by engaging state, regional or local personnel that the federal government can facilitate and ensure interoperability of mass casualty triage across jurisdictional boundaries during catastrophic events of regional, state, or national significance.

2) Should there be an addendum published to the National EMS Education Standards referencing the principles of MUCC?

No. There need not be an addendum published to the National EMS Education Standards referencing the principles of MUCC, because the National EMS Education Standards already include a “placeholder” for the principles of mass casualty triage that should be covered for all four nationally recognized EMS provider levels. Therefore, the principles of MUCC are clearly intended to be incorporated within initial EMS education program content. To ensure that such principles are consistently explained across multiple jurisdictions, there should be an addendum published to the Instructional Guidelines supporting the National EMS Education Standards, thereby promoting the fullest possible interoperability among EMS

agencies performing mass casualty triage nationwide. Additionally, FICEMS should encourage all appropriate federal agencies and professional organizations to support the development of continuing EMS education program content in the principles of MUCC that could be broadly disseminated among state, regional or local personnel.

a) Should additional actions be taken by FICEMS member agencies to support the initial and continuing education of EMS workers in the principles of MUCC, if so what additional actions?

Yes. The FICEMS should request that all member agencies take such additional actions, which at a minimum could include transmittal and dissemination of appropriate supporting materials and guidance documents to all EMS organizations within the spheres of influence of each of the FICEMS member agencies. As just two examples, in collaboration with other FICEMS member agencies, the National Highway Traffic Safety Administration (NHTSA) could facilitate a national effort to standardize initial and refresher training materials in disaster and emergency preparedness for EMS personnel, and the Department of Homeland Security (DHS) could ensure that emergency management and disaster preparedness personnel include education in the MUCC role in NIMS and ICS in their mass casualty training programs and exercises. The development and broad distribution of training materials for EMS personnel on the recently revised “Guidelines for Field Triage of Injured Patients” by the CDC could serve as a model for how these support materials might be transmitted and disseminated nationwide.

3) What are the most significant common barriers that state, territorial and tribal governments might face in supporting adoption of MUCC?

While barriers may exist in supporting the national adoption of the MUCC and MUCC compliant triage tools, the fact is that the MUCC are supported by the best available direct and indirect scientific evidence, as well as national expert consensus. As such, to ensure interoperability of disaster triage by responding EMS personnel in a multijurisdictional event, there is little choice but to promote the adoption of MUCC and MUCC compliant triage tools across the nation. That said, the most significant common barrier likely to be faced by state, territorial and tribal governments in supporting the adoption of MUCC is the cost to train EMS personnel.

Training in MUCC compliant triage tools could prove especially problematic for career EMS professionals, whose training hours must be paid for and whose lost duty hours must be backfilled by other career EMS professionals within their own EMS agencies. Among volunteer EMS professionals, the time required to train such volunteers will be a common barrier. The added training hours required for introduction to MUCC compliant triage tools will compete with other vital EMS training enhancements.

Decisions regarding investments in time and resources required to train currently practicing EMS personnel in new methodologies and technologies such as MUCC and the use of MUCC compliant triage tools are most often best made at the jurisdictional level, with input from local, regional, and state EMS stakeholders and agencies. However, EMS personnel all

currently undergo initial and refresher training in preparation for their important roles in day-to-day out-of-hospital emergency medical care. Therefore, the inclusion of training in MUCC and MUCC compliant triage tools in such programs could be accomplished with little additional cost in dollars or hours over time as future and current EMS personnel are trained and retrained.

a) Are there specific actions FICEMS member agencies should take to support state, territorial and tribal governments in overcoming these barriers to adoption of MUCC?

Yes. There are specific actions FICEMS member agencies should take to support state, territorial and tribal governments in overcoming the above-cited barriers to the adoption of MUCC. NEMSAC believes that FICEMS member agencies should take a leading role in facilitating necessary and appropriate changes to NIMS policies and protocols to effect the adoption of MUCC and overcome whatever barriers to adoption may exist. To the extent practicable, FICEMS member agencies should also provide appropriate supporting materials, such as educational documents, programs, webinars and guidance documents, as well as whatever financial incentives may be available to encourage state, territorial, local and tribal governments to facilitate adoption of MUCC compliant triage tools within EMS systems. However, given the limited funding currently available to most local EMS agencies nationwide, financial disincentives to penalize those that defer such adoption should be considered only as a last resort.

4) Are there specific actions FICEMS should undertake to engage non-federal national EMS stakeholder organizations in supporting national implementation of MUCC?

Yes. There are specific actions FICEMS member agencies should undertake to engage non-federal national EMS stakeholder organizations in supporting national implementation of MUCC. NEMSAC believes that FICEMS member agencies should take a leading role in facilitating necessary and appropriate changes to NIMS policies and protocols to effect the adoption of MUCC and overcome whatever barriers to adoption may exist.

To the extent practicable, FICEMS member agencies should also provide appropriate supporting materials, such as educational documents, programs, webinars and guidance documents, in addition to whatever financial incentives may be available to encourage non-federal national EMS stakeholder organizations to facilitate adoption of MUCC compliant triage tools within state, regional and local EMS systems over which they may exert some influence. However, given the limited funding currently available to most local EMS agencies nationwide, financial disincentives to penalize those that defer such adoption should be considered only as a last resort.

The NEMSAC thanks the FICEMS for the opportunity to provide advice regarding the national adoption of MUCC. Nothing in the preceding answers should be so construed as to imply that state, regional or local EMS systems, or local, regional or national EMS stakeholder organizations, should not be free to continue to develop and investigate potential enhancements to currently used mass casualty triage tools, so long as the currently used tools meet all minimum

MUCC, since the interoperability of such tools is fundamental to a coordinated EMS response in a multijurisdictional disaster event.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'A. Reinert', is positioned above the typed name.

Aarron Reinert, Chair
National Emergency Medical Services Advisory Council

cc: Drew Dawson, Designated Federal Official

Prepublication Version

System Inputs

Prehospital components of externally developed guidelines, e.g., AHA, NAESP, BTF, NICE, NZGG
 Protocols from existing EMS systems, e.g., state EMS protocols, Nova Scotia protocols
 External evidence synthesis processes, e.g., Cochrane systematic reviews, EPCs
 Individual researchers, EMS organizations, medical directors, & EMS personnel

Guideline Initiation: EMS Evidence Accumulation & Evaluation

Review proposals for guideline development, adaptation, or adoption
 Identify existing systematic reviews
 Recommend need for (or conduct) systematic review
 Assemble advisory panel with expertise in topic, guideline development, library science, etc.
 Document conflicts of interest for all participants

Evaluation of Effectiveness, Outcomes, Clinical Research, Quality Improvement Evaluations

Guideline/protocol pilot testing & feasibility studies (may occur during development process)
 Monitor local quality improvement benchmarks & indicators, quality improvement processes at all levels
 Apply NEMSIS data in evaluation process
 Outcomes research: EMSOP - local, regional, statewide, national
 Clinical research of specific questions
 Systems research (See EMSOP II & IV)
 Cost effectiveness, cost-utility, cost-benefit analysis (See EMSCAP papers)
 Implementation research - analysis of barriers & facilitators to implementation

Establish Priorities for Guideline Development

Evaluate quality of evidence or guideline, e.g., GRADE, AGREE
 Recommend topics for further guideline development
 Archive material not selected for future use

Guideline Development

Document risks & benefits of intervention - First do no harm
 Develop strength of recommendation, e.g., GRADE
 Document & disseminate rationale for "no recommendation"
 EMS "contextualization"
 Write, adapt, or endorse guideline
 Provide feedback to originating institution or organization

EMS Protocol Development

EMS "contextualization"
 Clinical implications of strength of recommendation

Implementation

Link to national EMS provider certification & recertification
 Link to national EMS agency accreditation
 Develop guideline implementation "tool kits," webinars, manuals, integration into local protocols
 Partner with national orgs. To facilitate interpretation, application & medical direction
 Potentially link to funding and reimbursement, e.g., CMS, 3rd party
 Develop health informatics & clinical decision support software
 Develop quality improvement measures & tools - local, regional, state & tribal

pre-existing protocols

Dissemination of Guidelines/Protocols

Link to EMS Education Agenda for the Future → Core Content → Scope of Practice Model → National EMS Education Standards
 Link to National EMS Education Program Accreditation
 Publications: peer-reviewed journals, trade press, textbooks, government reports
 New products: education materials, quality improvement materials
 Target stakeholder organizations
 Multimedia approach: ems.gov, podcasts, etc.

Appendix E: National Prehospital Evidence-Based Guideline Model Process

Approved by the Federal Interagency Committee on EMS and the National EMS Advisory Council

AGREE - Appraisal of Guidelines Research and Evaluation
 AHA - American Heart Association
 BTF - Brain Trauma Foundation

Abbreviations

CMS - Center for Medicare and Medicaid Services
 EMSCAP - Emergency Medical Services Cost Evaluation Project
 EMSOP - Emergency Medical Services Outcomes Project

NAEMSP - National Association of EMS Physicians
 NEMSIS - National EMS Information System
 NICE - National Institute for Health and Clinical Excellence
 NZGG - New Zealand Guidelines Group