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Mass Casualty Incident Triage…

…and then some

Eric S. Weinstein MD MScDM

31 January 2019

World Association for Disaster and Emergency Medicine

LEXINGTON MEDICAL CENTER

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Research Group on Emergency and Disaster Medicine
Onderzoeksgroep Urgentie en Rampengeneeskunde

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https://www.nytimes.com/2017/05/22/world/europe/manchester-concert-explosion.html
accessed 22 May 2017 picture Press Association, via Associated Press

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OBJECTIVES

1. Theory:

   a. Model Uniform Core Criteria “MUCC”

   b. Review of (most) mass casualty triage systems

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Mass Casualty Triage: An Evaluation of the Data and Development of a Proposed National Guideline

E. Brooke Lerner, PhD, Richard B. Schwartz, MD, Phillip L. Coule, MD, Eric S. Weinstein, MD, David C. Cone, MD, Richard C. Hunt, MD, FACEP, Scott M. Sasser, MD, J. Marc Liu, MD, Nikiah G. Nudell, NREMT-P, CCEMT-P, Ian S. Wedmore, MD, Jeffrey Hammond, MD, MPH, Eileen M. Bulger, MD, Jeffrey P. Salomone, MD, Teri L. Sanddal, BS, NREMT-B, Graydon C. Lord, MS(c), NREMT-P, David Markenson, MD, FAAP, EMT-P, and Robert E. O'Connor, MD, MPH

Disaster Med Public Health Prep. 2008 Sep;2 Suppl 1:S25-34. doi: 10.1097/DMP.0b013e318182194e.

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TABLE 1

Comparison of Existing Mass Triage Systems

System	Coding	Status Assigned Based on	Permitted Therapies Before Assigning to Dead Category	Comments
Simple Triage and Rapid Treatment (START)[5]	Immediate: red Delayed: yellow Walking wounded: green Deceased: black	Immediate: respiratory rate >30, slow capillary refill, or cannot follow commands Walking wounded: able to walk Deceased: not breathing after 1 attempt to open airway Delayed: all other patients	1 attempt to open the airway through positioning	1. Modified version replaces capillary refill with no palpable radial pulse
Jump START[6]	Immediate: red Delayed: yellow Minor: green Deceased: black	Immediate: respiratory rate <15, >45, or irregular; or no palpable peripheral pulse; or inappropriate posturing or unresponsive (P or U on AVPU scale) Delayed: unable to walk, regular respiratory rate 15–45; and palpable peripheral pulse; and A or V on AVPU scale Minor: able to walk Dead: not breathing after 1 attempt to open airway and 5 rescue breaths	Open the airway using basic positioning: If there is still on breathing and there is a palpable radial, give 5 rescue breaths Reassess after Immediate and Delayed children have been taken care of	1. Developed for pediatric patients 1–8 y old 2. Developed to parallel structure of START triage system 3. If a child is carried to ambulatory area he or she should be first child assessed in that area 4. Has modification for nonambulatory children

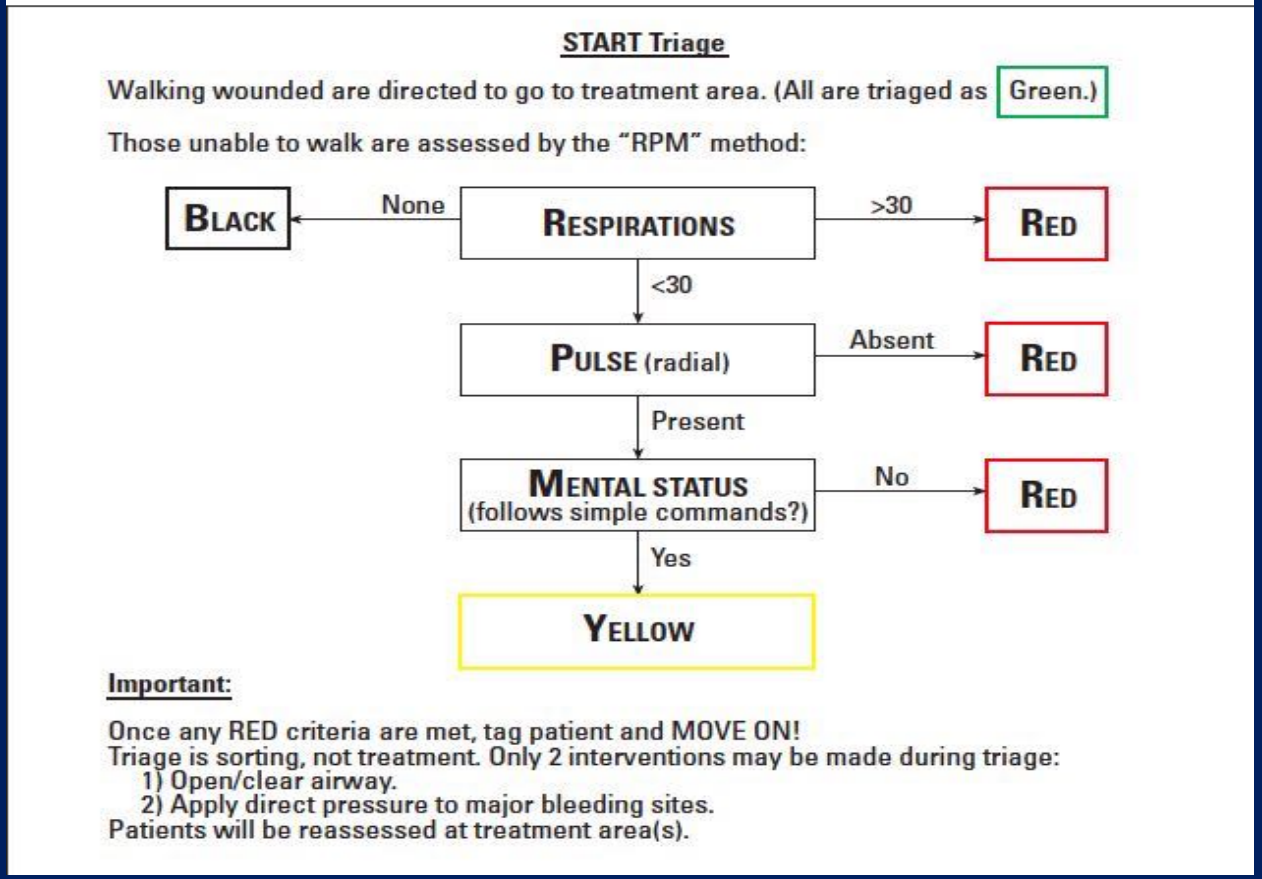
Homebush[7]	Immediate: red Urgent: yellow/gold Not urgent: green Dying: white Dead: black Also assigned radio voice categories: Immediate: A (alpha) Urgent: B (bravo) Not urgent: C (charlie) Dying: D (delta) Dead: E (echo)	Not urgent: anyone who can walk Dead: not breathing Dying: patients assessed as being beyond help Immediate: not walking, breathing, but not able to follow commands, or no radial pulse, or respiratory rate >30 Urgent: nonambulatory patients who do not meet other criteria	One attempt to open airway using basic positioning methods	1. Based on START and SAVE triage 2. Category for dying created so they can receive comfort care 3. Uses geographic triage with flags rather than individual tags
Triage Sieve[8,9]	Priority 1 (immediate): red Priority 2 (urgent): yellow Priority 3 (delayed): green Priority 3: walking Priority 4 (expectant): blue Dead: white or black	Priority 1: not walking with respiratory rate <10 or >29; or capillary refill >2 sec Priority 2: not walking with a respiratory rate 10–29 and capillary refill <2 sec Dead: no airway	Open airway	1. Heart rate of >120 bpm is substituted for capillary refill in cold conditions or poor light 2. Does not use mental status
Pediatric Triage Tape (PTT)[10]	Immediate: red Urgent: yellow Delayed: green Dead	Immediate: abnormally slow or fast respiratory rate; or an abnormally slow or fast pulse rate Urgent: not walking with a capillary refill <2 sec Delayed: child that is walking; or an infant that is alert and moving all limbs Dead: not breathing	Does not breathe after airway is opened by jaw thrust	1. Requires a tape that uses height of patient to show providers age-appropriate parameters that should be used to triage a child (provides for 4 sizes of children: 50–80 cm, 80–100 cm, 100–140 cm, and >140 cm) 2. Adaptation of Triage Sieve

System	Coding	Status Assigned Based on	Permitted Therapies Before Assigning to Dead Category	Comments
CareFlite[11]	Immediate: red Urgent: yellow Delayed: green Unsalvageable: black	Delayed: walks Unsalvageable: not breathing with an open airway Immediate: doesn't follow commands or no palpable radial pulse Urgent: does not walk but obeys commands and has a radial pulse	Open airway	1. No respiratory considerations 2. Can be used for pediatric patients
Sacco Triage Method (STM)	Group 1: high rate of deterioration Group 2: moderate Group 2: slow	Assigns an RPM score based on respiratory rate, pulse rate, and motor response	No vital signs score 0 – before scoring open airway, decompress pneumothorax, stop exsanguination	1. Actually provides a score for each patient; grouping of patients changes with availability of resources 2. Transport order by score not group

Military Triage[12]	Immediate Delayed Minor Expectant	Immediate: those who should be treated first, with a list of possible injuries Delayed: those who can have a delay of 6–8 h before treatment Minor: those who will not have significant mortality if no further care is provided Expectant: those with signs of impending death or who require vast resources for treatment	Open airway	1. Based on NATO triage 2. Secondary triage includes system for patient evacuation 3. Colors are often used to mark casualties when they have been triaged, but colors can vary from unit to unit and are not universal
CESIRA	Red Yellow Green	Red: unconscious, hemorrhaging, in a state of shock, insufficient respirations, Yellow: none of the above with broken bones or other injuries Green: able to walk	Not applicable: no dead category	1. No dead category because only physicians can declare death in Italy 2. Based on presenting problem 3. Name is based on order in which conditions are evaluated

AVPU, alert, voice, pain, unresponsive; SAVE, Secondary Assessment of Victim Endpoint; RPM, respiratory rate, pulse rate, and motor response; NATO, North Atlantic Treaty Organization.

Figure (Bozeman).
Summary/adaptation of the START triage system. The Web version of this figure is available in color.



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Mass Casualty Triage: An Evaluation of the Science and Refinement of a National Guideline

CME online

E. Brooke Lerner, PhD; David C. Cone, MD; Eric S. Weinstein, MD; Richard B. Schwartz, MD; Phillip L. Coule, MD; Michael Cronin, PhD, MPH; Ian S. Wedmore, MD; Eileen M. Bulger, MD; Deborah Ann Mulligan, MD; Raymond E. Swienton, MD; Scott M. Sasser, MD; Umair A. Shah, MD, MPH; Leonard J. Weireter Jr, MD; Teri L. Sanddal, REMT-B; Julio Lairet, DO; David Markenson, MD; Lou Romig, MD; Gregg Lord, MS, NREMT-P; Jeffrey Salomone, MD; Robert O'Connor, MD, MPH; Richard C. Hunt, MD

Disaster Med Public Health Prep. 2011 Jun;5(2):129-37. doi: 10.1001/dmp.2011.39.

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TABLE 1

General Considerations

Criteria	Basis (Science, Indirect Science, or Consensus)	Used by Other Systems	Relevant Literature
1.1 Triage systems and all their components must apply to all ages and populations of patients.	Indirect Science	Other Systems	Wang and Hung 2005; Wallis and Carley 2006[1,2]
1.2 Triage systems must be applicable across the broad range of mass casualty incidents where there is a single location with multiple patients.	Consensus		Hodgetts 2001; Baker 2004; Cone and Koenig 2005[3-5]
1.3 Triage systems must be simple, easy to remember, and amenable to quick memory aids.	Indirect Science	Other Systems	Kilner and Hall 2005; Wang and Hung 2005[2,6]
1.4 Triage systems must be rapid to apply and practical for use in an austere environment.	Consensus	Other Systems	Lee, Chiu et al. 2002[7]
1.5 Triage systems are resource dependent and the system must allow for dynamic triage decisions based on changes in available resources and patient conditions.	Consensus	Other Systems	Benson, Koenig et al. 1996[8]
1.6 The triage system must require that the assigned triage category for each patient be visibly identifiable (eg, triage tags, tarps, markers).	Consensus		
1.7 Triage is dynamic and reflects patient condition and available resources at the time of assessment. Assessments must be repeated whenever possible and categories adjusted to reflect changes.	Consensus		Okumura, Suzuki et al. 1998; Hodgetts 2001; Kragh, Walters et al. 2008; Kahn, Schultz et al. 2009; Kragh, Littrel et al. 2009; Kragh, Walters et al. 2009[5,9-13]

TABLE 2

Global Sorting

Criteria	Basis (Science, Indirect Science, or Consensus)	Used by Other Systems	Relevant Literature
2.1 Simple commands must be used to initially prioritize victims for individual assessment.	Indirect Science	Other Systems	Meredith, Rutledge et al. 1995; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005[14-16]
2.2 First priority for individual assessment is to identify those who are likely to need a Lifesaving Intervention. They can be identified as those: (1) unable to follow commands and not making purposeful movements, or (2) those with an obvious life threat (eg, life threatening external hemorrhage).	Indirect Science		Meredith, Rutledge et al. 1995; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005; Kragh, Walters et al. 2008; Kragh, Littrel et al. 2009; Kragh, Walters et al. 2009[10-12,14-16]
2.3 Second priority for individual assessment will be those who are unable to follow the command to ambulate to an assigned place but are able to follow other commands (eg, wave) or make purposeful movement.	Indirect Science		Meredith, Rutledge et al. 1995; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005[14-16]
2.4 Last priority for individual assessment will be those who follow commands by ambulating to an assigned place (or making purposeful movements) and have no obvious life threatening conditions (eg, life threatening external hemorrhage).	Indirect Science	Other Systems	Meredith, Rutledge et al. 1995; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005[14-16]
2.5 All patients must be individually assessed regardless of their initial prioritization during global sorting. This includes the assessment of walking patients as soon as resources are available.	Indirect Science		Garner, Lee et al. 2001; de Ceballos, Turegano-Fuentes et al. 2005[14,17]

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https://www.nytimes.com/2017/05/22/world/europe/manchester-concert-explosion.html
accessed 22 May 2017 picture Press Association, via Associated Press

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TABLE 3

Lifesaving Interventions

Criteria	Basis (Science, Indirect Science, or Consensus)	Used by Other Systems	Relevant Literature
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.	Indirect Science	Other Systems	Bellamy 1984; Baker 2004; Kragh, Walters et al. 2008; Kragh, Littrel et al. 2009; Kragh, Walters et al. 2009[3,10-12,18]
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 (ie, less than a minute), and (4) they do not require the provider to stay with the patient.	Consensus		
3.3 Lifesaving interventions include the following: control of life threatening external hemorrhage, opening the airway using basic maneuvers (for an apneic child consider 2 rescue breaths), chest decompression, and auto injector antidotes.	Science		Hemorrhage: Bellamy 1984; Bellamy, Pedersen et al. 1984; Brodie, Hodgetts et al. 2007; Lee, Porter et al. 2007; Doyle and Taillac 2008; Kragh, Walters et al. 2008; Kragh, Littrel et al. 2009; Kragh, Walters et al. 2009[10-12,18-22] Chest Decompression: Barton, Epperson et al. 1995; Eckstein and Suyehara 1998; Davis, Pettit et al. 2005[23-25] Airway: Bellamy 1984[18] Auto injector antidotes: Okumura, Suzuki et al. 1998; Baker 2004[3,26]

TABLE 4

Individual Assessment of Triage Category

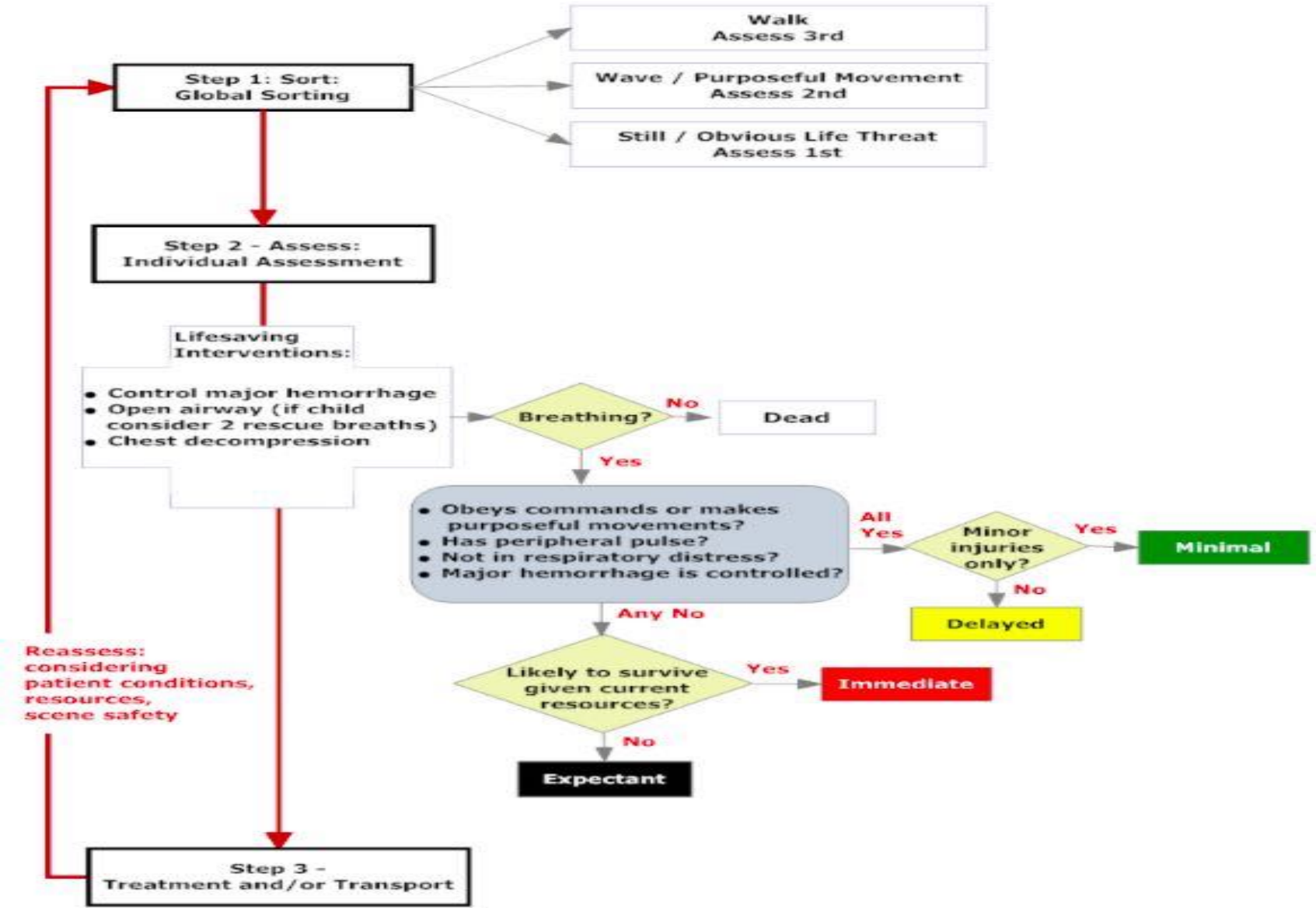
Criteria	Basis (Science, Indirect Science, or Consensus)	Used by Other Systems	Relevant Literature
4.1 Each victim must be assigned to one of five triage categories (Immediate, Delayed, Minimal, Expectant, Dead). Each category must be represented with an associated color: Immediate/red, Delayed/yellow, Minimal/green, Expectant/gray, Dead/black.	Consensus	Other Systems	
4.2 Assessment must not require counting or timing vital signs and instead use yes or no criteria. Diagnostic equipment must not be used for initial assessment.	Indirect Science		Burkle, Newland et al. 1994; Bazarian, Eirich et al. 2003; Waisman, Aharonson-Daniel et al. 2003; Holcomb, Salinas et al. 2005; McManus, Yershov et al. 2005; Sztajnkrycer, Baez et al. 2006[27-32]

4.3 Capillary refill must not be used as a sole indicator of peripheral perfusion.	Science	Other Systems	Schriger and Baraff 1991; McManus, Yershov et al. 2005[29,33]
4.4 Patients who are not breathing after one attempt to open their airway (in children two rescue breaths may also be given) must be classified as dead and visually identified as such.	Consensus	Other Systems	Hogan, Waeckerle et al. 1999[34]
4.5 Patients are categorized as immediate if: they are unable to follow commands or make purposeful movements; OR do not have a peripheral pulse; OR are in obvious respiratory distress; OR have a life threatening external hemorrhage; provided their injuries are likely to be survivable given available resources.	Indirect Science	Other Systems	Koehler, Baer et al. 1986; Koehler, Malafa et al. 1987; Meredith, Rutledge et al. 1995; Quintana, Parker et al. 1997; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005; Holcomb, Salinas et al. 2005; Holmes, Palchak et al. 2005; McManus, Yershov et al. 2005; Kragh, Walters et al. 2008; Kragh, Littrel et al. 2009; Kragh, Walters et al. 2009[10-12,14-16,29,30,35-38]

4.6 Patients are categorized as expectant if: they are unable to follow commands or make purposeful movements; OR do not have a peripheral pulse; OR are in obvious respiratory distress; OR have a life threatening external hemorrhage; AND are unlikely to survive given the currently available resources. These patients should receive resuscitation or comfort care when there are sufficient resources available.	Indirect Science	Other Systems	Burkle, Orebaugh et al. 1994; Meredith, Rutledge et al. 1995; Fong and Schrader 1996; Garner, Lee et al. 2001; Hodgetts 2001; Frykberg 2002; Borden Institute 2004; Frykberg 2004; Christian, Hawryluck et al. 2006; Coule and Horner 2007[5,14,16,39-45]
4.7 Patients are categorized as Delayed if: they are able to follow commands or make purposeful movements; AND have peripheral pulses; AND are not in respiratory distress; AND do not have a life threatening external hemorrhage; AND have injuries that are not considered minor.	Indirect Science	Other Systems	Meredith, Rutledge et al. 1995; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005; Holcomb, Salinas et al. 2005; Holmes, Palchak et al. 2005; McManus, Yershov et al. 2005[14-16,29,30,38]
4.8 Patients are categorized as Minimal if: they are able to follow commands or make purposeful movements; AND have peripheral pulses; AND are not in respiratory distress; AND do not have a life threatening external hemorrhage; AND their injuries are considered minor.	Indirect Science	Other Systems	Koehler, Baer et al. 1986; Koehler, Malafa et al. 1987; Meredith, Rutledge et al. 1995; Garner, Lee et al. 2001; Holcomb, Niles et al. 2005; Holcomb, Salinas et al. 2005; Holmes, Palchak et al. 2005; McManus, Yershov et al. 2005[14-16,29,30,36-38]

4.9 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.	Indirect Science	Other Systems	Garner, Lee et al. 2001; Hodgetts 2001; Einav, Feigenberg et al. 2004; Hines, Payne et al. 2005; Holcomb, Niles et al. 2005; Kahn, Schultz et al. 2009[5,9,14,15,46,47]

SALT Mass Casualty Triage Algorithm (Sort, Assess, Lifesaving Interventions, Treatment/Transport) — Adapted for a Very Large Radiation Emergency



OBJECTIVES

2. Science:
    a. Exercise design and evaluation
    b. Outcome studies
3. Practical:
    a. MCI Planning Process
    b. Exercise design and evaluation
4. Special Considerations (another discussion)
    a. Chem, IGSA & Nuc/Rad
    b. SAVE TRIAGE

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Prehosp Emerg Care. 2009 Oct-Dec;13(4):536-40. doi: 10.1080/10903120802706252.

Pilot test of the SALT mass casualty triage system.

Cone DC[1], Serra J, Burns K, MacMillan DS, Kurland L, Van Gelder C.

50 victims + 2 non-victims
Paramedics 1 week before, 90 min didactic

41/52 SALT verified
13.5% overtriage (50%)
3.8% undertriage (<5%)

Times 42/52, mean 15 sec/pt (5-57)

Safe low undertriage; Needs refinement, pt outcome

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Prehosp Emerg Care. 2010 Jan-Mar;14(1):21-5. doi: 10.3109/10903120903349812.

Use of SALT triage in a simulated mass-casualty incident.

Lerner EB[1], Schwartz RB, Coule PL, Pirrallo RG.

10-11 Manikin & 18-20 Victims
SALT verified
30 min didactic then 1 day later
2 groups, 2 locations, different population
First of 8-11 and then the last of the group
235 victim observations

Initial 81% correct Last 83%
8% over triage 6% over
11% undertriage 10% under

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Prehosp Emerg Care. 2010 Jan-Mar;14(1):21-5. doi: 10.3109/10903120903349812.

Use of SALT triage in a simulated mass-casualty incident.

Lerner EB[1], Schwartz RB, Coule PL, Pirrallo RG.

Conclusion

Minimal Experience

- 63% had prior drill experience
- 29% had prior MCI experience
- 21% heard of SALT

Accuracy Higher than START

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Eur J Emerg Med. 2011 Dec;18(6):314-21. doi: 10.1097/MEJ.0b013e328345d6fd.

Comparison of the SALT and Smart triage systems using a virtual reality simulator with paramedic students.

Cone DC[1], Serra J, Kurland L.

22 Paramedic Students

At least 1 week prior SALT (45 min didactic & 45 min practical
At least 1 week after 25 virtual patients

3 month wash-out

At least 1 week prior SMART

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Eur J Emerg Med. 2011 Dec;18(6):314-21. doi: 10.1097/MEJ.0b013e328345d6fd.

Comparison of the SALT and Smart triage systems using a virtual reality simulator with paramedic students.

Cone DC[1], Serra J, Kurland L.

	SALT	SMART
	383/547 pt 70% (48-88)	506/544 pt 90% (72-100)
	6.8% over	1.8% over
	23.2% under	5.1% under

Virtual Reality

SMART more accurate than SALT

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Am J Emerg Med. 2015 Nov;33(11):1687-91. doi: 10.1016/j.ajem.2015.08.021. Epub 2015 Aug 14.

Simple Triage Algorithm and Rapid Treatment and Sort, Assess, Lifesaving, Interventions, Treatment, and Transportation mass casualty triage methods for sensitivity, specificity, and predictive values.

Bhalla MC[1], Frey J[2], Rider C[3], Nord M[4], Hegerhorst M[5].

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Table 1
Triage outcomes

Triage category	Clinical features
Minor/green tag	Discharged from the ED or hospital without intervention other than minor ED procedure (splint/sling, observation, suture)
Delayed/yellow tag	Patients get an intervention (group together: surgery, blood product transfusion, chest tube, angio procedure) sometime after the first 12 h after arrival to the ED
Immediate/red tag	Patients get an intervention (group together: surgery, blood product transfusion, chest tube, angio procedure) sometime within the first 12 h after arrival to the ED
Dead/expectant/black tag	Patients die within 48 h after arrival to the ED or have a Cerebral Performance Category Scale of 4 or 5 upon discharge

Table 2
Results—triage START vs SALT

	START	SALT
Minor/green	66%	76%
Delayed/yellow	22%	10%
Immediate/red	9%	11%
Dead or expectant/black	3%	3%

5. Conclusion

Neither SALT nor START algorithm was appropriately sensitive for determining a victim's level of triage, especially in the critically injured who would require immediate intervention. Both START and SALT triage algorithms did have high specificity for predicting death.

PLoS Curr. 2016 Aug 19;8. pii: ecurrents.dis.d69dafcfb3ad8be88b3e655bd38fba84. doi: 10.1371/currents.dis.d69dafcfb3ad8be88b3e655bd38fba84.

Qualitative Analysis of Surveyed Emergency Responders and the Identified Factors That Affect First Stage of Primary Triage Decision-Making of Mass Casualty Incidents.

Klein KR[1], Burkle FM Jr[2], Swienton R[3], King RV[4], Lehman T[5], North CS[6].

Emergency Managers	N	%
Advance Practice Nurse	5	1
EMT-Basic	84	21
EMT-Paramedic	129	32
Non-medical	1	0.2
Nurse	9	2
Physician Assistant	115	29
Physician	60	15

RESULTS

402/495 Completed

92% practiced a structured triage
8% gestalt (gut feeling)

CRITICAL APPRAISAL of LITERATURE

Study population: reasonable for MCI
The education: timing, content
The scenario: replicates an MCI
Then the data points: compared to valid
Computer Sim, Blended, Live
Consensus v. Delphi

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

A Report of the FICEMS

FICEMS
Federal Interagency Committee on EMS

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FICEMS

State & Local EMS
Improve MCI Triage Capabilities
Based on MUCC

IV. While there exist multiple systems for mass casualty triage, there is one national guideline: the MUCC for Mass Casualty Incident Triage which can be used to measure the essential elements within various MCI triage systems.

MCI Exercise Design

Education, Training, Maintenance
Exact Aspect of MCI
Triage, Transport, Destination
Triage, Treatment
    over-, under-
    and at what point
Clinical Outcome
Comparisons


TRANSPORTATION RECEIPT
Tag Number
4869
Destination
Via
Time
TRIAGE TAG
Age
First
Last
Address
City
St
Zip
Phone
Religious Pref
If Contaminated
Blast Injury
Blunt Trauma
Burn
C-Spine
Cardiac
Crushing
Fracture
Laceration
Penetrating Injury
Other
AFN
Time
BP
Pulse
Respiration
RE-TRIAGED
EXPECTANT 0
IMMEDIATE 1
DELAYED 2
MINIMAL 3
EVIDENCE CONTAMINATED
AMBULANCE RECEIPT
Personal Property Receipt
EMT
TRANSPORTATION RECEIPT
For Use by Transportation Recordkeeping Only
Tourniquet Applied
Airway Management
OPA
NPA
IVCS Tx In:
IVCS Tx Out:
Known Allergies
Treatment Administered/Comments
Time
Drug/Solution
Dose
INJECTOR TYPE
START
triage system
Initial Ribbon Triage
MINOR
Move the Walking Wounded
RESPIRATIONS
PERFUSION
MENTAL STATUS
R
P
M
IMMEDIATE
Respirations - Over 30
Perfusion - Cap. Refill Over 2 sec. or Radial Pulse Absent
Mental Status - Unable to Follow Simple Commands
DELAYED
All Others
EXPECTANT
No Respirations After Head Tilt
EXPECTANT
Pulseless/
Non-Breathing
IMMEDIATE
Life Threatening Injury
DELAYED
Serious
Non Life Threatening
MINIMAL
Walking Wounded
EVIDENCE CONTAMINATED
AMBULANCE RECEIPT
Personal Property Receipt

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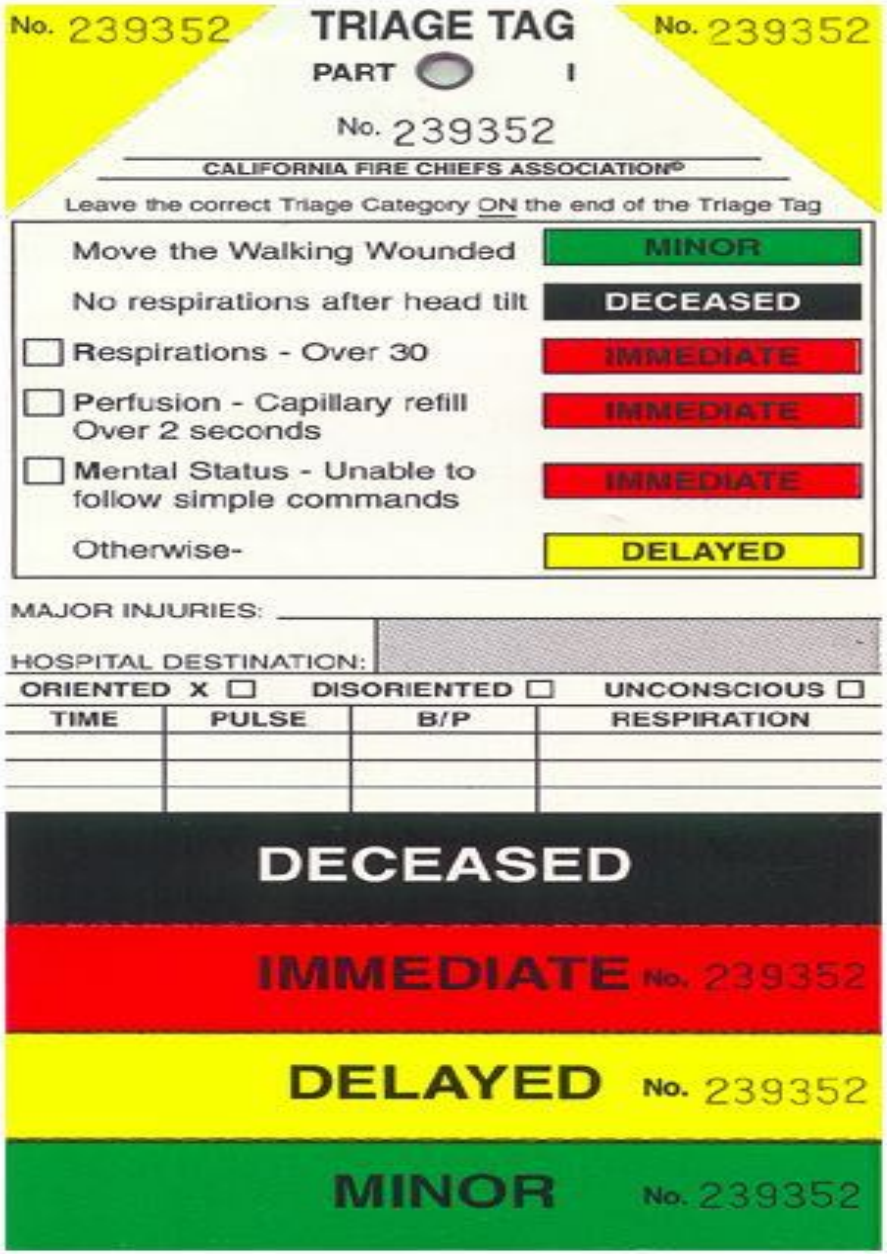
https://www.google.com/searchq=picture+scene+gone+with+the+wind+atlanta&tbm=isch&tbo=u&source=univ&sa=X&ved=2ahUKEwi94c7j1PzfAhWIGt8KHa9mAsYQ7Al6BAgCEA0&biw=1440&bih=862#imgrc=cxdEDrSkVaPXHM: Accessed 20 Jan 2019

THE TRIAGE TAG --



No. 239352

TRIAGE TAG

PART I

No. 239352

CALIFORNIA FIRE CHIEFS ASSOCIATION©

Leave the correct Triage Category ON the end of the Triage Tag

Move the Walking Wounded	MINOR
No respirations after head tilt	DECEASED
☐ Respirations - Over 30	IMMEDIATE
☐ Perfusion - Capillary refill Over 2 seconds	IMMEDIATE
☐ Mental Status - Unable to follow simple commands	IMMEDIATE
Otherwise-	DELAYED

MAJOR INJURIES:

HOSPITAL DESTINATION:

ORIENTED X ☐ DISORIENTED ☐ UNCONSCIOUS ☐

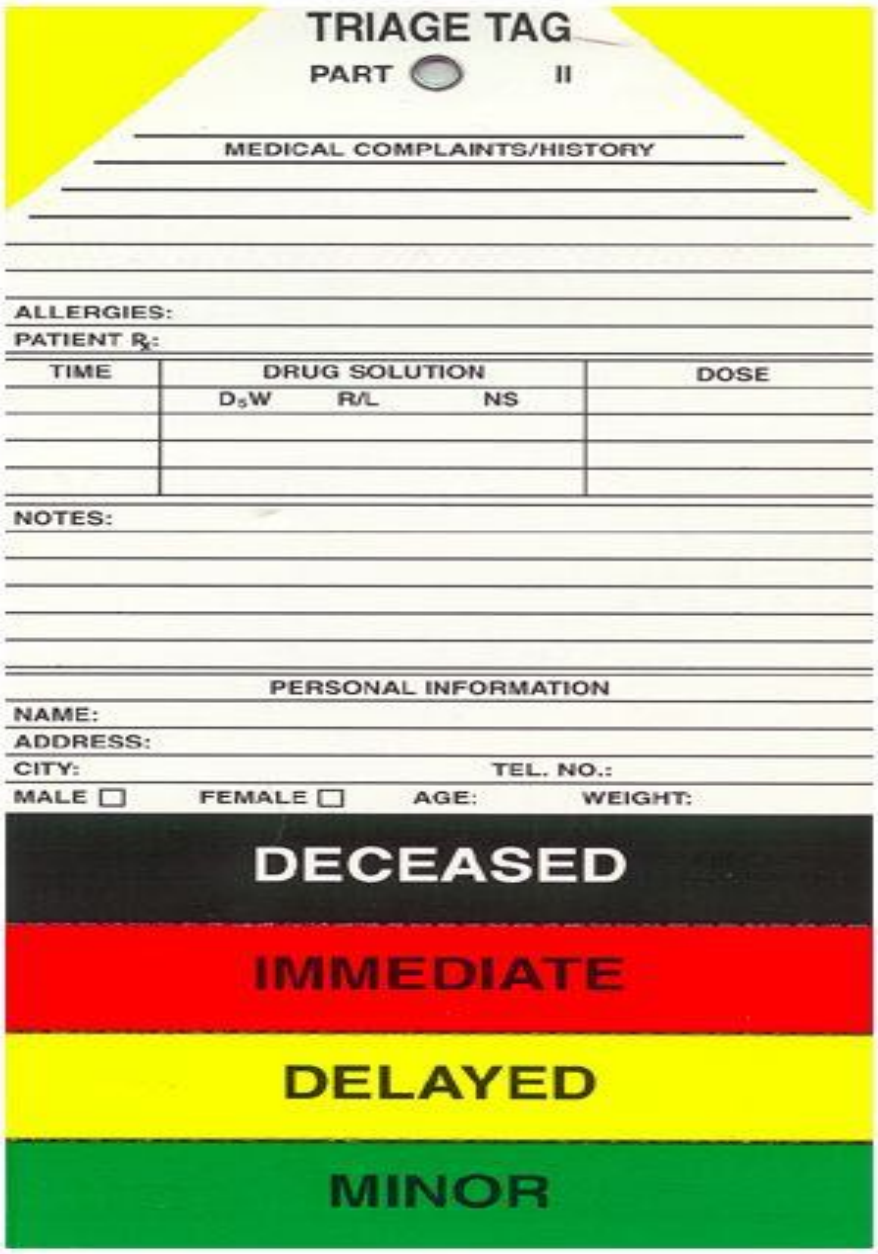
TIME	PULSE	B/P	RESPIRATION

DECEASED

IMMEDIATE No. 239352

DELAYED No. 239352

MINOR No. 239352



TRIAGE TAG

PART II

MEDICAL COMPLAINTS/HISTORY

ALLERGIES:

PATIENT Rx:

TIME	DRUG SOLUTION			DOSE
	D_5W	R/L	NS	

NOTES:

PERSONAL INFORMATION

NAME:

ADDRESS:

CITY: TEL. NO.:

MALE ☐ FEMALE ☐ AGE: WEIGHT:

DECEASED

IMMEDIATE

DELAYED

MINOR

Immediate Response

- Mutual aid arrived at approximately 8:15 PM
- Limited radio and cell phone capability at the scene
- 2 different staging areas established without coordination
  - Football field (1/4 mile from blast site)
  - Community Center (1 mile)

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Prehosp Disaster Med. 2016 Oct;31(5):498-504. doi: 10.1017/S1049023X16000698. Epub 2016 Aug 5.

Primary Triage in a Mass-casualty Event Possesses a Risk of Increasing Informational Confusion: A Simulation Study Using Shannon's Entropy.

Ajimi Y[1], Sasaki M[2], Uchida Y[1], Kaneko I[1], Nakahara S[1], Sakamoto T[1].

Conclusion: Informational confusion in a primary triage area measured using Shannon's entropy revealed that random triage using a low-visibility tag might increase the degree of confusion. Methods for reducing entropy, such as enhancement of triage colors, may contribute to minimizing informational confusion.

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126 Comparative Analysis of Simple Triage and Rapid Treatment and Five-Level Nursing Emergency Severity Index Triage During a Large-Scale Disaster Drill

Reed K, Sarin RR, Cattamanchi S, Rifino JJ, Ciottone G/Beth Israel Deaconess Medical Center, Boston, MA

Volume 64, NO. 4S : October 2014

Annals *of* Emergency Medicine S45

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Prospective: START v. ESI

80 Victims: active shooter then IED

Initial Triage Officer
EMS Transport using START

EM Nurse @ Mock Field Hospital using 5-level ESI

80 Victims: 23 black/expectant on scene

Field: 18 Red (immediate)
14 Yellow (delayed)
26 green (minor)

ESI: 11 Level 1 (critical)
20 Level 2 (severe)
10 Level 3 (moderate)
12 Level 4 (minor)
3 Level 5 (minor)

56: both START by EMS and ESI

84% (47) equivocal by START EMS

14.2% (8) lower severity by START EMS

1.8% (1) higher severity by START EMS

Conclusion

Equivocal prioritization
START in the field & ESI nursing triage at hospital

Some under-triage using START not stat significant

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Am J Disaster Med. 2015 Winter;10(1):13-21. doi: 10.5055/ajdm.2015.0184.

Comparison of START triage categories to emergency department triage levels to determine need for urgent care and to predict hospitalization.

Hong R[1], Sexton R[1], Sweet B[1], Carroll G[1], Tambussi C[1], Baumann BM[1].

233 participants

START	ESI
Black = 0	1 = 1%
Red = 12%	2 = 34%
Yellow = 26%	3 = 51%
Green = 53%	4 = 14%
White = 9%	5 = 1%

ABN Vitals

ESI (1,2,3) 43/49 = 88%

START (Red, yellow) 25/59 = 51%

INTERVENTIONS

ESI (1,2,3) 20/21 = 95%
START (Red, Yellow) 7/21 = 33%

ADMITTED

ESI (1,2,3) 94/96 = 98%
START (Red, Yellow) 46/96 = 48%

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Am J Disaster Med. 2015 Winter;10(1):13-21. doi: 10.5055/ajdm.2015.0184.

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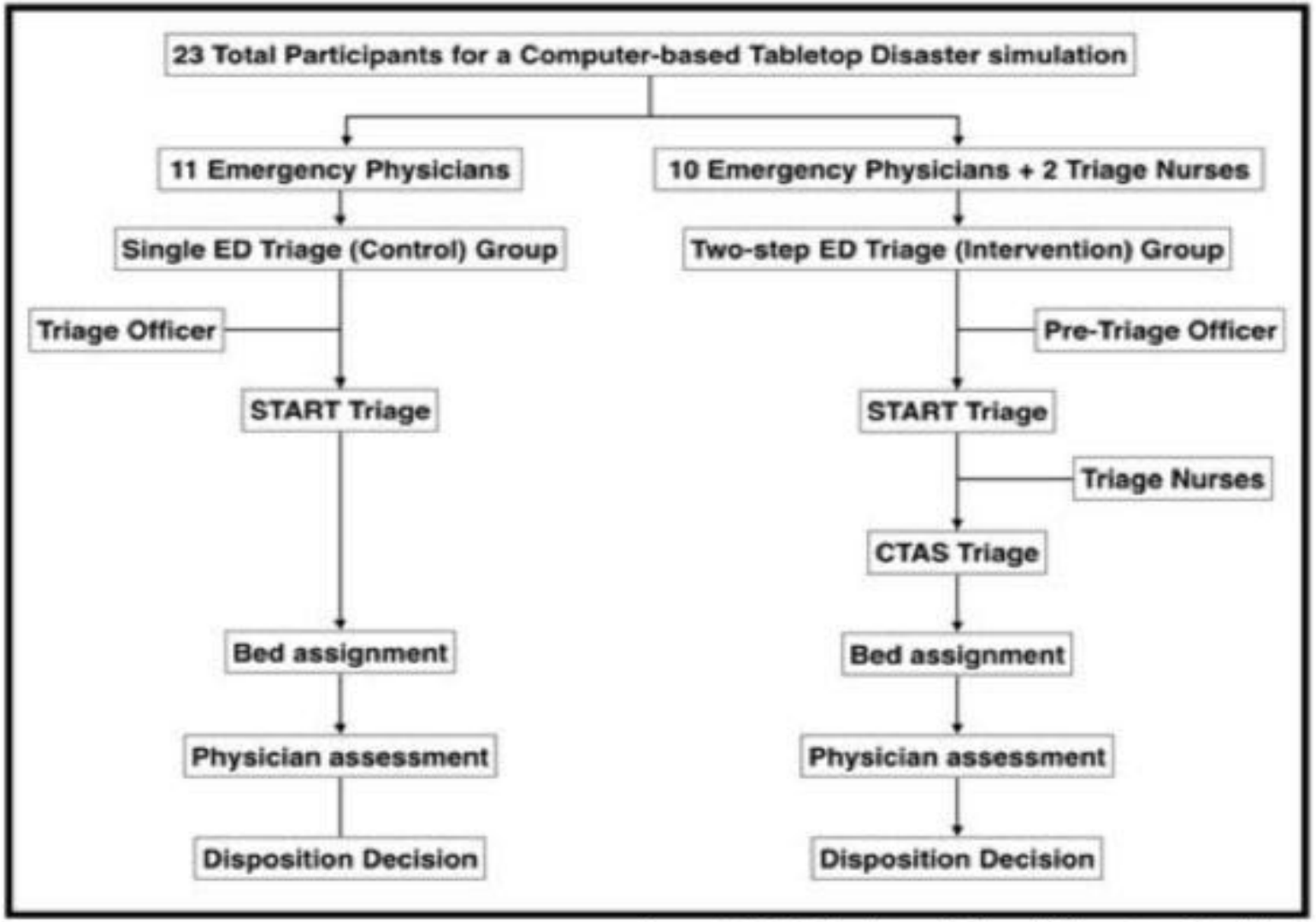
Hong R[1], Sexton R[1], Sweet B[1], Carroll G[1], Tambussi C[1], Baumann BM[1].

CONCLUSION: ESI better identified patients with abnormal vital signs, those who needed emergent interventions, and those admitted than START.

Prehosp Disaster Med. 2015 Aug;30(4):390-6.

Impact of a Two-step Emergency Department Triage Model with START, then CTAS, on Patient Flow During a Simulated Mass-casualty Incident.

Lee JS, Franc JM.



Prehosp Disaster Med. 2015 Aug;30(4):390-6.

Impact of a Two-step Emergency Department Triage Model with START, then CTAS, on Patient Flow During a Simulated Mass-casualty Incident.

Lee JS, Franc JM.

Conclusion

This pilot study of simulating a disaster in the ED found no significant differences in patient flow and triage accuracy when comparing the two-step triage method START, then CTAS, with START alone.

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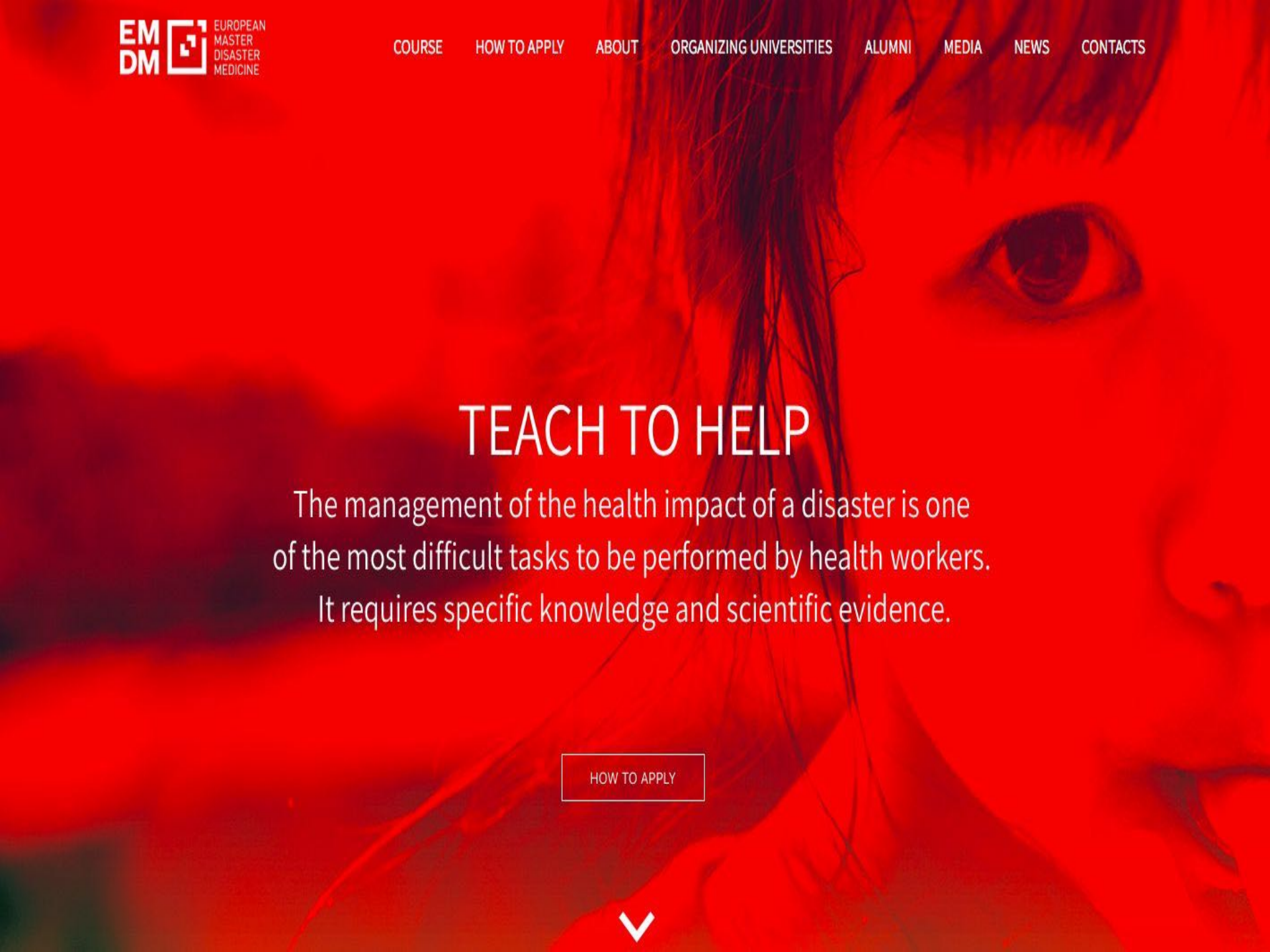
FINAL THOUGHTS

Resource Consumption
Resuscitate, Stabilize, Disposition

First responder v. First Receiver
Keep as close to daily
LSI, dynamic, Transportation decisions

Planning with stakeholders
Critical Literature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COURSE
HOW TO APPLY
ABOUT
ORGANIZING UNIVERSITIES
ALUMNI
MEDIA
NEWS
CONTACTS
TEACH TO HELP
The management of the health impact of a disaster is one of the most difficult tasks to be performed by health workers. It requires specific knowledge and scientific evidence.
HOW TO APPLY

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7-10 May 2019

Brisbane, Australia

http://wadem2019.org/

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Check Out the Congress Keynote Speakers!




WADEM is excited to announce its keynote speakers for the Congress in Brisbane in May. The speakers' full profiles are available on the Congress website at the following URL – http://wadem2019.org/keynote.php.

- **Gregory Ciottone, MD, FACEP** – Harvard Medical School, Beth Israel Deaconess Medical Center, Team Rubicon Global
- **Mark Keim, MD, MBA** – DisasterDoc International, Emory University – Rollins School of Public Health
- **Joanne Liu, MDCM, FRCP** – International President; Médecins Sans Frontières (MSF) / Doctors Without Borders
- **Robert Muggah, DPhil** – Igarapé Institute

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Navigation

Home
- Site news
- Training Center Resource (ADLS, BDLS and CDLS)
- Request Support or Technical Assistance
- **SALT Mass Casualty Tri On-line Training**
- Faculty and Planners Disclosure
- NDLS Course Manuals Order Form
- CHEC Training Center Resources

Courses

SALT Mass Casualty Triage On-line Training

Mass casualty triage is a critical skill. Although many systems exist to guide providers in making triage decisions, there is little scientific evidence available to demonstrate that any of the available systems have been validated. Furthermore, in the United States there is little consistency from one jurisdiction to the next in the application of mass casualty triage methodology. There are no nationally standardized categories or color designations. SALT Triage is the product of a CDC Sponsored working group to propose a standardized triage method. The guideline, entitled SALT (sort, assess, life-saving interventions, treatment and/or transport) triage, was developed based on the best available science and consensus opinion. It incorporates aspects from all of the existing triage systems to create a single overarching guide for unifying the mass casualty triage process across the United States. SALT is compliant with the Model Uniform Core Criteria for Mass Casualty Triage currently contemplated as the proposed national standard for all mass casualty triage systems.

On July 8, 2013 all of the members of Federal Interagency Committee on EMS (members: DOT, DOD, HHS, DHS, and FCC) concurred with the following 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."**

The full text of their implementation plan is available at (this also includes a list of the members of FICEMS):

http://www.nhtsa.gov/staticfiles/nti/pdf/811891-Model_UCC_for_Mass_Casualty_Incident_Triage.pdf

This on-line training program consist of a 22 minute video, links to articles on SALT Mass Casualty Triage and a downloadable powerpoint set for teaching SALT Triage to others. The program has a short 5 question quiz that upon successful completion will result in a certificate of completion.

This free version contains the contact hour information on the certificate sufficient to claim credit for many professional organizations / licenses.

Click on the link below to create an on-line account or log-in.

If you are a first time user of this system you will need to create your account using the "First Time Here" link on the right side of the page and verify your email address. If you have not received the email within a few minutes be sure to check your spam folder for the email.

SALT Triage On-line Training (FREE)

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Enjoyable Learning Experience

"Teach me and I forget,
teach me and I may remember,
involve me and I learn"

Benjamin Franklin

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