



ΜΑΖΙΚΕΣ ΚΑΤΑΣΤΡΟΦΕΣ : ΠΑΙΔΙΑ ΚΑΙ ΕΥΠΑΘΕΙΣ ΟΜΑΔΕΣ ΠΛΗΘΥΣΜΟΥ

**Διεθνείς οδηγίες για τη διαχείριση μαζικών
καταστροφών προσαρμοσμένες στα παιδιά**

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ΕΝΟΤΗΤΑ 3^η

ΔΙΕΘΝΕΙΣ ΟΔΗΓΙΕΣ

ΠΑΡΑΔΕΙΓΜΑΤΑ - ΕΦΑΡΜΟΓΕΣ





Κατηγοριοποίηση Διεθνών οδηγιών

- Οι διεθνείς οδηγίες ανεξάρτητα από το είδος και το μέγεθος του συμβάντος στο οποίο αναφέρονται διακρίνονται σε κάποιες βασικές ενότητες.

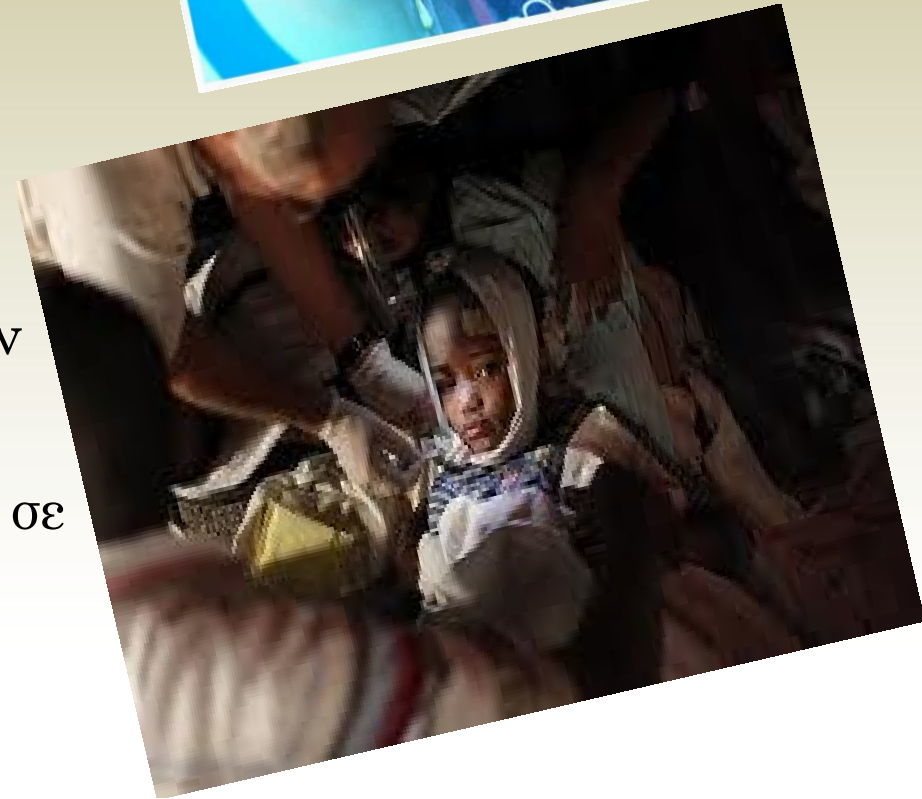
Αυτές περιλαμβάνουν:

- Οδηγίες αναφορικά με την προνοσοκομειακή φροντίδα
- Οδηγίες για την διαλογή των παιδιατρικών ασθενών σε περίπτωση μαζικής καταστροφής
- Γενικές οδηγίες για την οργάνωση των χώρων υποδοχής, διαλογής και φροντίδας
- Οδηγίες αναφορικά με τη δημιουργία λιστών για τον απαραίτητο εξοπλισμό και αναλώσιμο υλικό
- Οδηγίες αναφορικά με την αντιμετώπιση των παιδιών και την ικανοποίηση των ψυχοσωματικών τους αναγκών
- Οδηγίες αναφορικά με την προετοιμασία των εξειδικευμένων ή μη νοσοκομείων για την υποδοχή των ασθενών
- Οδηγίες για την φροντίδα παιδιών με ειδικές ανάγκες

Κατηγοριοποίηση Διεθνών οδηγιών

Καθώς και οδηγίες αναφορικά με:

- Την προετοιμασία των κέντρων για την αντιμετώπιση μαζικών καταστροφών με θύματα παιδιά
- Την δημιουργία ειδικών λιστών «ετοιμότητας» του νοσοκομείου
- Την εκπαίδευση του ιατρονοσηλευτικού προσωπικού
- Την ομαλή συνεργασία κυβερνητικών και μη οργανώσεων
- Την εκτίμηση έκθεσης (hazard), κινδύνου (risk) και τρωτότητας (vulnerability) του παιδιατρικού πληθυσμού σε συγκεκριμένες κατηγορίες αιτιών μαζικής καταστροφής.





Προνοσοκομειακή φροντίδα

• Οι οδηγίες για την προνοσοκομειακή φροντίδα περιλαμβάνουν:

- Συστάσεις αναφορικά με το **πώς** θα γίνεται η αξιολόγηση, η διαλογή και η μεταφορά των παιδιατρικών ασθενών.
- Οδηγίες για το **ποιος** θα πραγματοποιεί τη διαλογή και σε πιο σημείο θα γίνεται αυτή.
- Οδηγίες για την παροχή **οικογενειοκεντρικής φροντίδας** και την **προστασία των δικαιωμάτων του παιδιού** και της οικογένειας.
- Οδηγίες για την **οργάνωση κέντρων διαλογής** και 1^{ης} φροντίδας τα οποία να είναι **φιλικά** προς το παιδί.
- Οδηγίες για την **προστασία των παιδιών από κακοποίηση** κατά την παραμονή τους σε κέντρα διαλογής ή καταφύγια.

EMERGENCY CARE SYSTEM FRAMEWORK

All around the world, acutely ill and injured people seek care every day. Frontline providers manage children and adults with injuries and infections, heart attacks and strokes, asthma and acute complications of pregnancy. An integrated approach to early recognition and management saves lives. This visual summary illustrates the essential functions of a responsive emergency care system, and the key human resources, equipment, and information technologies needed to execute them.



■ HUMAN RESOURCES ■ FUNCTIONS ■ EQUIPMENT, SUPPLIES, INFORMATION TECHNOLOGIES



• Positioning
• Intervention
• Monitoring

PROVIDER

DRIVER

AMBULANCE

Field to Facility Communications



System Activation
via Access Number
Instructions

DISPATCHER

PROVIDER



SCENE

- BYSTANDER RESPONSE
- DISPATCH
- PROVIDER RESPONSE

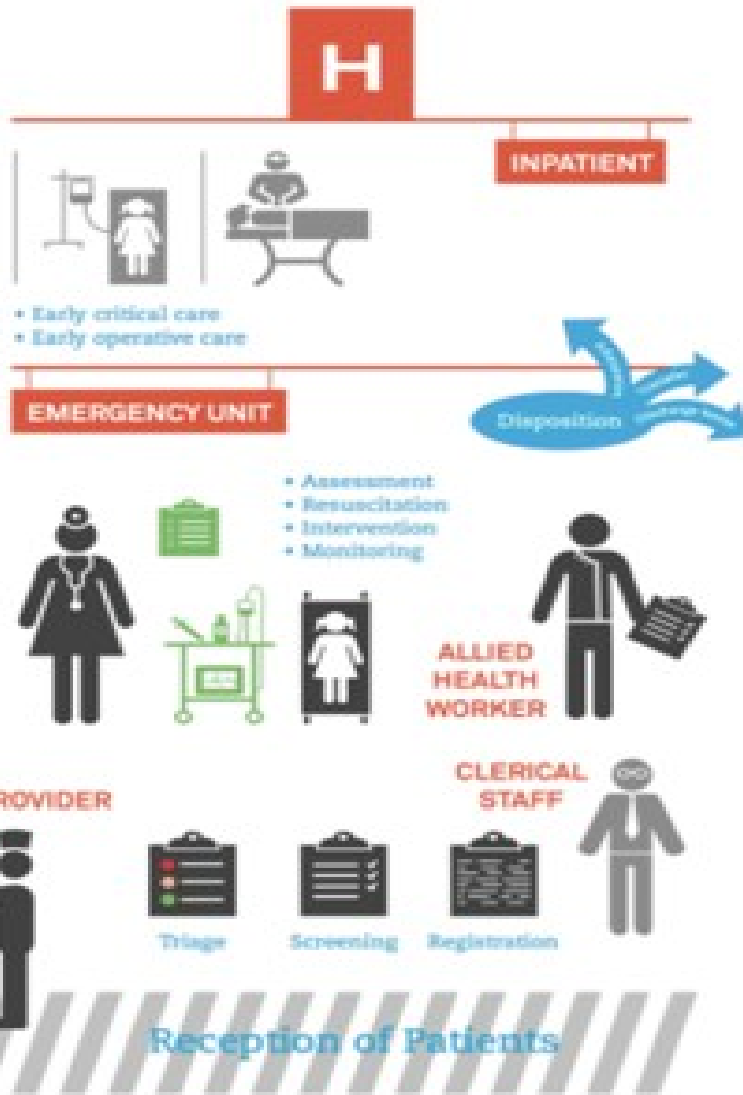


Handover

PROVIDER

TRANSPORT

- PATIENT TRANSPORT
- TRANSPORT CARE



H

INPATIENT

- Early critical care
- Early operative care

EMERGENCY UNIT

Disposition

- Assessment
- Resuscitation
- Intervention
- Monitoring

ALLIED HEALTH WORKER

CLERICAL STAFF

- Triage
- Screening
- Registration

Reception of Patients

FACILITY

- RECEPTION
- EMERGENCY UNIT CARE
- DISPOSITION
- EARLY INPATIENT CARE

- Triage Officer
 - 1 intensivist or other experienced clinician
- Triage team
 - Nurse, respiratory therapist, and/or pharmacist
 - Hospital administration



Supply/Demand
(Situational Awareness)



Research/Analysis



Outcome Monitoring
(Check & balance)

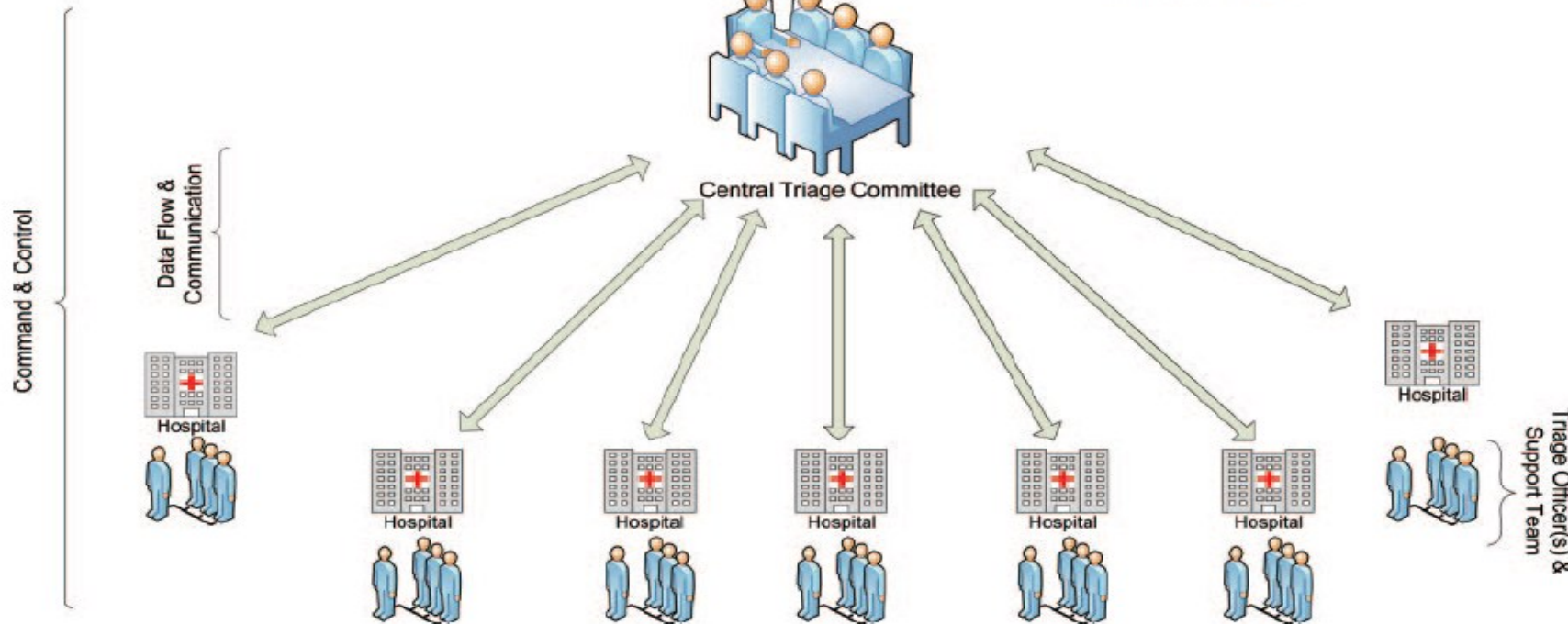


FIGURE 1. Triage infrastructure: the optimal relationship between the state/regional central triage committee and the triage officer(s) at individual hospitals. The central triage committee must have situational awareness (knowledge of supply resources and demands on them), capacity to conduct research in order to develop then modify research protocols, and monitor triage outcomes. A bidirectional communication network between the central committee and hospitals in order to achieve situational awareness, monitor outcomes and communicate modifications to the triage protocols. At the individual hospitals, the triage officers(s) are supported by a staff/team.

PEDIATRIC DISASTER TRIAGE:

DOING THE MOST GOOD FOR THE MOST PATIENTS IN THE LEAST TIME

Mark X. Cicero, MD

The PRIDE Pediatric Disaster Triage Project
Emergency Medical Services for Children



Triage Assessment

Initial Stabilization

Resuscitation

Transport Decisions

Instructions for Use of the SMART Tape™

6. REMEMBER:

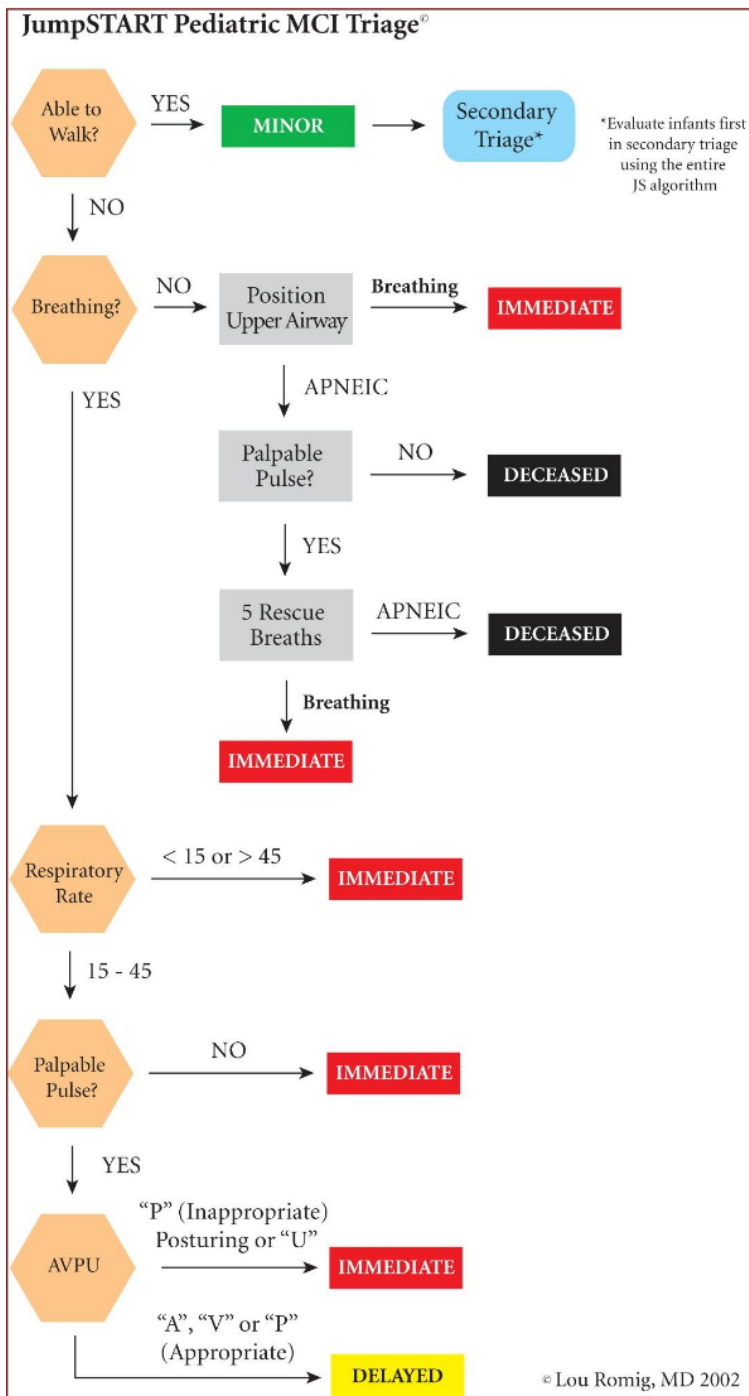
The first colored box you come to determines the treatment / evacuation priority for that child – *prioritize and move to the next child immediately.*



GUIDING PRINCIPLE IN DISASTER:

To do the best for the most using the least.

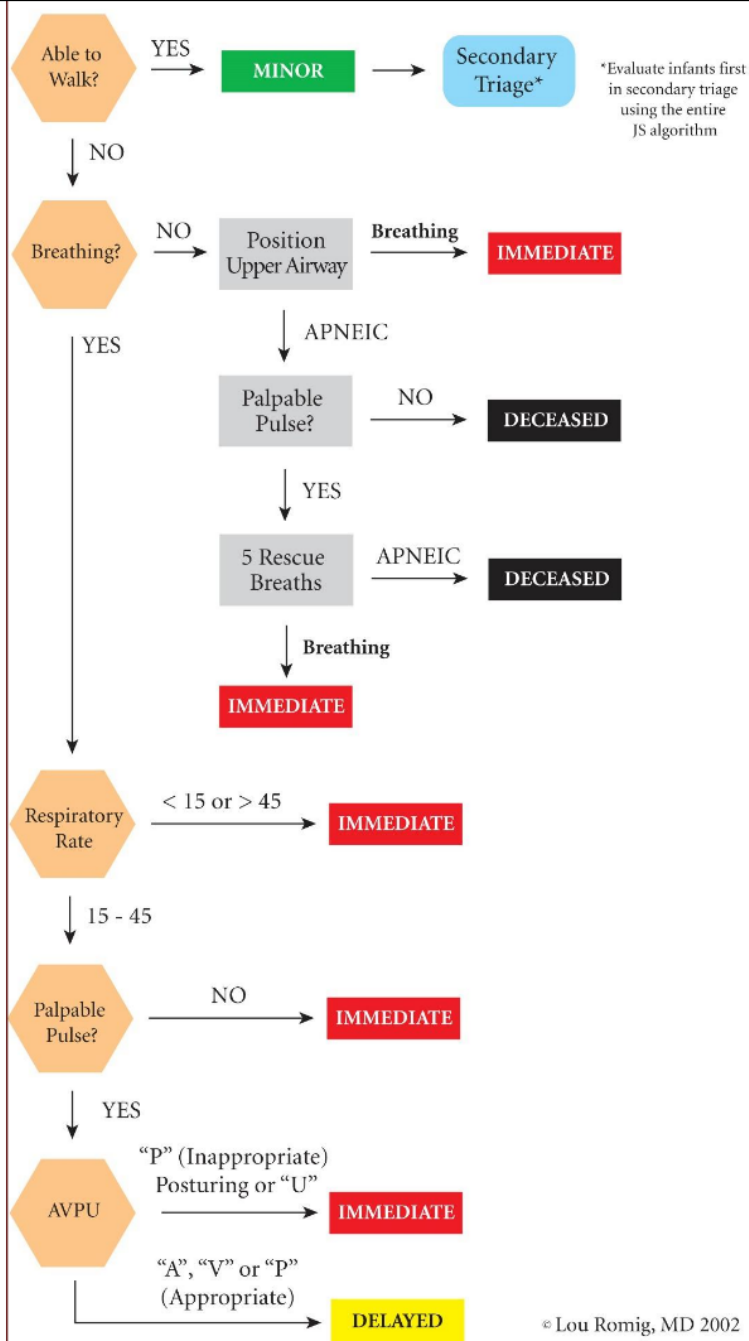




JumpSTART

- Είναι μια τροποποιημένη έκδοση του συστήματος START (Simple Triage and Rapid Treatment)
 - Ειδικά σχεδιασμένη για παιδιά 1–8 ετών ή <40 κιλά σε περιπτώσεις μαζικών απωλειών (Mass Casualty Incident – MCI).
- Στόχος:**
- Ταχεία ταξινόμηση παιδιών ανάλογα με τη σοβαρότητα των τραυμάτων και την ανάγκη για άμεση ιατρική παρέμβαση.
- Βήμα 1**
 - Μπορεί να περπατήσει;
 - Ναι** → **Πράσινο** (Ελαφρύ / Καθυστερημένο περιστατικό)
 - Ζήτησε να μετακινηθεί σε ασφαλή περιοχή.
 - Όχι** → **Προχώρα στο Βήμα 2.**

JumpSTART Pediatric MCI Triage®



JumpSTART

• Βήμα 2: Αναπνέει;

- **Δεν αναπνέει** → Έλεγχξε σφυγμό.
 - Χωρίς σφυγμό → Μαύρο (Νεκρό / Αναπόφευκτο)
 - Με σφυγμό → Δώσε 5 αναπνοές διάσωσης.
 - Αρχίζει να αναπνέει → **Κόκκινο (Άμεσο)**
 - Δεν αναπνέει μετά από 5 αναπνοές → Μαύρο (Νεκρό).
- **Αναπνέει** → Προχώρα στο Βήμα 3.

• Βήμα 3: Ρυθμός αναπνοής

- <15 ή >45 αναπνοές/λεπτό → **Κόκκινο (Άμεσο)**
- 15–45 αναπνοές/λεπτό → Προχώρα στο Βήμα 4.

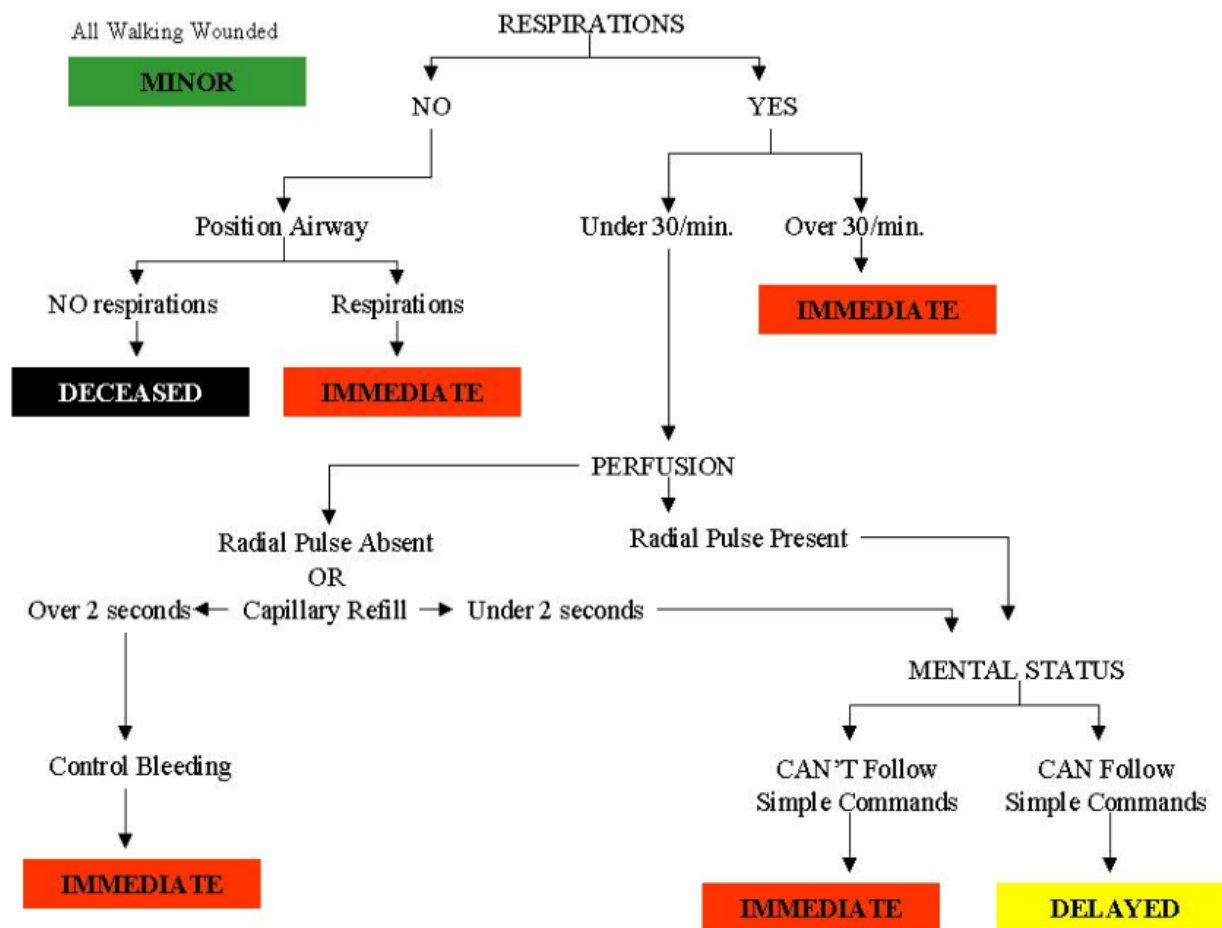
• Βήμα 4: Κυκλοφορία / Αιμάτωση

- Απουσία περιφερικού σφυγμού ή τριχοειδική επαναπλήρωση >2 δευτ. → **Κόκκινο (Άμεσο)**.
- Φυσιολογική αιμάτωση → Προχώρα στο Βήμα 5

• Βήμα 5: Νευρολογική κατάσταση (Κλίμακα AVPU)

- Ακατάλληλη αντίδραση στον πόνο ή χωρίς ανταπόκριση → **Κόκκινο (Άμεσο)**.
- Κατάλληλη αντίδραση ή καλύτερη → **Κίτρινο (Καθυστερημένο)**.

START TRIAGE ALGORITHM



START: Simple Triage and Rapid Treatment

Disaster triage is a method of quickly identifying victims who have life-threatening injuries and who also have the best chance of survival. Identification of such victims serves to direct other rescuers and health care providers to these patients first when they arrive on the scene.

One of the most widely recognized mass casualty incident (MCI) triage systems in the United States is the **START** Triage System (Simple Triage and Rapid Treatment). This system uses the assessment of respiration, perfusion and mental status (RPM) to make a primary triage decision in less than 30 seconds. The **START** Triage System is one method of triage which can be used in a MCI, and it was developed by Hoag Hospital and the Newport Beach Fire Department of Newport Beach, Calif. It was designed to allow first responders to triage or assess multiple victims rapidly, usually taking less than a minute, to determine which category each should be assigned. The assessment and triage is based on three primary observations: **R**espiratory, **P**erfusion, and **M**ental Status (RPM). The four triage categories are: **IMMEDIATE**, **DELAYED**, **MINOR**, and **EXPECTANT/DECEASED**.

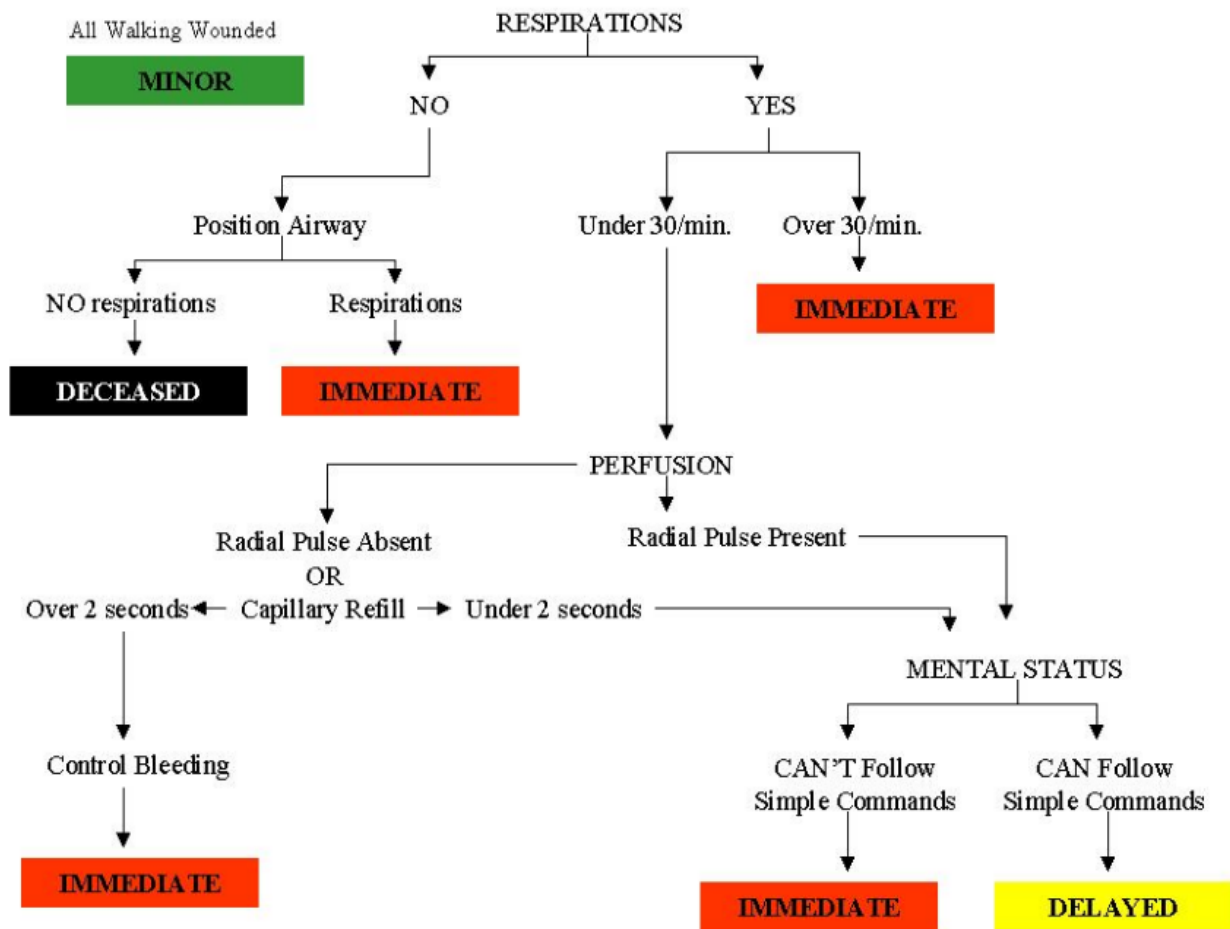
The **START** Triage System is intended for adults, but may also be used for older children. Determining the appropriate system to use in the pre-adolescent and young teen population can be sometimes challenging, so the current recommendation is: If a victim appears to be a child, use **JumpSTART**®. If a victim appears to be a young adult, use **START**.

The triage steps of the **START Triage System** are as follows:

- Step 1: All victims who are able to walk are directed to an area designated for minor injuries where they will undergo a secondary and more involved triage and assessment. Any non-ambulatory victim reporting to this area, such as a wheelchair bound victim or infants carried to the area, must undergo a thorough evaluation upon arrival to ascertain the correct triage status.
- Step 2:
 - a) All remaining non-ambulatory victims are now assessed for the presence of spontaneous breathing (respirations). If spontaneous breathing is absent and not restored through conventional positional techniques to open the airway, the victim is tagged **EXPECTANT/DECEASED** and the triage officer moves on to the next victim. If breathing is restored with repositioning, the victim is tagged **IMMEDIATE** and the triage officer moves on.
 - b) If spontaneous breathing is present, the rate is assessed: a rate above 30/minute receives a **IMMEDIATE** and the triage officer moves on; if the rate is less than 30, the triage officer moves on to step 3.
- Step 3: The victim is now assessed for perfusion. This can be done by either capillary refill or radial pulse. If the radial pulse is absent or the capillary refill is >2 seconds the victim is tagged **IMMEDIATE**. If a radial pulse is present or capillary refill is <2 seconds, the triage officer proceeds to the next step.
- Step 4: The triage officer now checks the mental status of the victim. If the victim cannot follow simple commands, is unconscious, or has altered state of consciousness, he/she receives an **IMMEDIATE** tag for immediate treatment. If the victim can follow simple commands, he/she receives a **DELAYED** tag for delayed treatment.

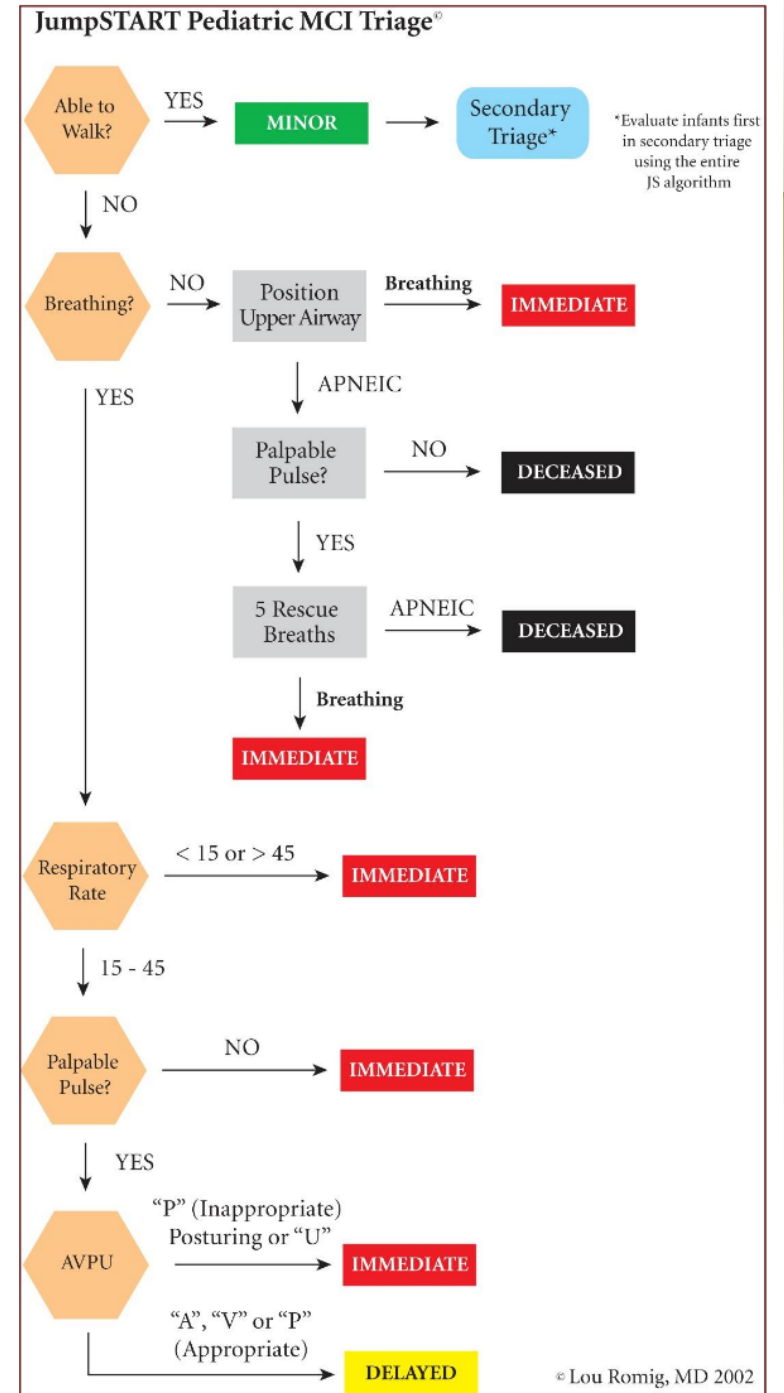
NOTE: For all **IMMEDIATE** victims, the triage officer must also attempt to control bleeding before moving on to the next patient. All victims tagged **EXPECTANT/DECEASED**, unless clearly suffering from injuries incompatible with life, should be reassessed once critical interventions for **IMMEDIATE** and **DELAYED** victims are completed.

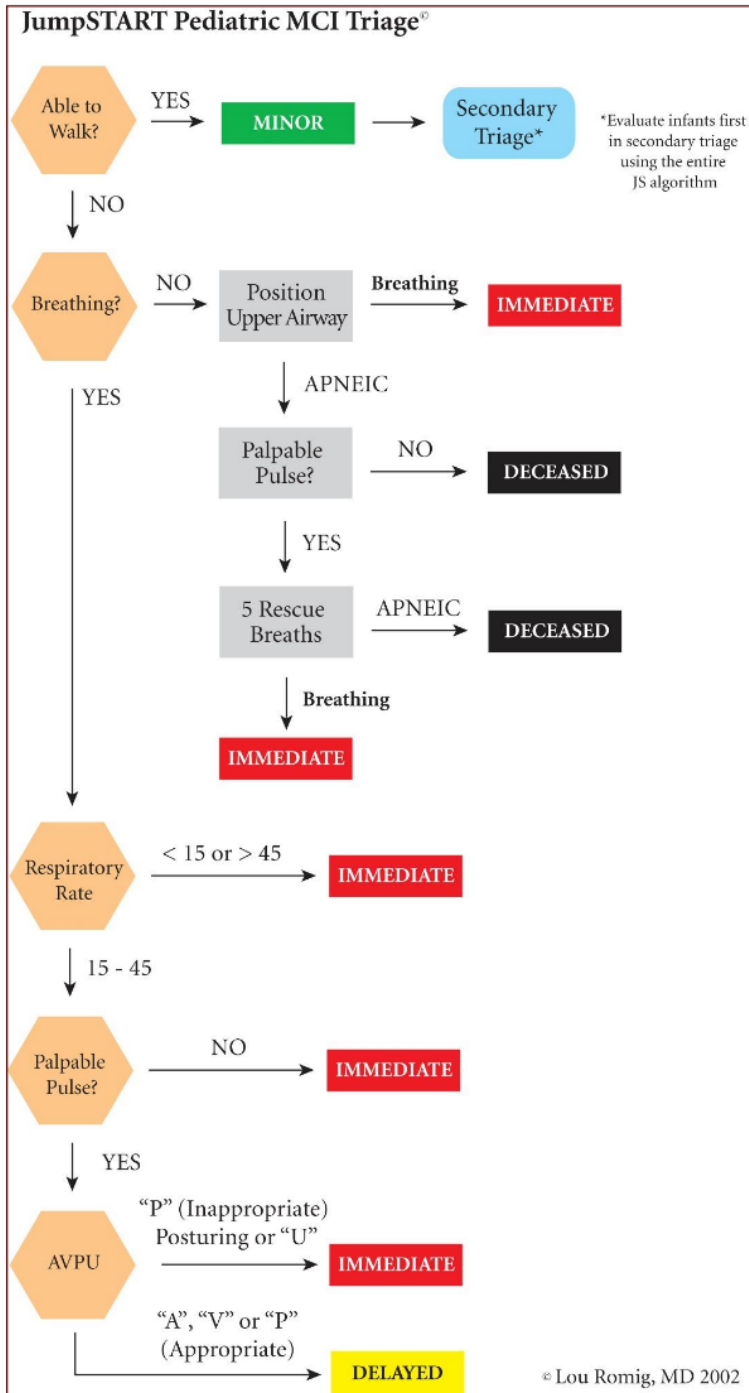
START TRIAGE ALGORITHM



Source:
Hoag Hospital & Newport Beach Fire and Marine Dept.

JumpSTART® TRIAGE ALGORITHM





JumpSTART®: Pediatric Mass Casualty Incident (MCI) Triage Tool

When triaging children, a standardized disaster triage system provides guidance for personnel making life and death decisions that otherwise may be influenced by emotional issues.

JumpSTART® Pediatric Mass Casualty Incident (MCI) Triage Tool is an objective triage system that addresses the needs of children and can be a resource tool when planning a triage process for pediatric patients. Although the JumpSTART® system parallels the START system, it takes into consideration the developmental and physiological differences of children by using breathing as the cornerstone for triage decisions. Adding a respiratory component to the triage system may increase triage time by 15-25 seconds, however, since the number of patients requiring a ventilatory trial would most likely be small, it is not thought to significantly affect overall triage time for an incident.

Additionally, since the physiologic indicators specified for START are not generally applicable to the pediatric victim, different criteria are needed to assess young patients. For example, neurological status under START depends on the patient's ability to obey commands. This index is clearly not applicable to young children who lack the developmental ability to respond appropriately to commands.

The JumpSTART® Pediatric MCI triage system is designed for triaging infants and young children. Determining the appropriate system to use in the pre-adolescent and young teen population can be sometimes challenging, so the current recommendation is: If a victim appears to be a child, use **JumpSTART**; if a victim appears to be a young adult, use **START**.

JumpSTART® uses the same triage categories as **START**: **IMMEDIATE**, **DELAYED**, **MINOR**, and **EXPECTANT/DECEASED**.

In children, because of anatomical/physiological reasons such as weak intercostal muscles or mechanical airway obstruction, apnea may occur rapidly. **Thus circulatory failure usually follows respiratory failure.** There may be a period of time when the child is apneic but continues to maintain a pulse. It is during this time that airway clearance and a ventilatory trial may stimulate spontaneous breathing. If spontaneous breathing begins, the child is categorized as **IMMEDIATE** for further treatment. If spontaneous breathing does not follow the initial ventilatory trial, the child is categorized as **EXPECTANT/DECEASED** or non-salvageable.

The triage steps of the JumpSTART® Pediatric MCI triage system are as follows:

- Step 1: All children who are able to walk are directed to an area designated for minor injuries where they will undergo a secondary and more involved triage. Infants carried to this area or other non-ambulatory children taken to this area must undergo a complete medical and primary evaluation using modifications for non-ambulatory children to ascertain triage status. (Please refer to the Modifications for Non-Ambulatory Children* section on the following page).
- Step 2:
 - a) All remaining non-ambulatory children are assessed for the presence/absence of spontaneous breathing. If spontaneous breathing is present, the rate is assessed and the triage officer moves on to step three.
 - b) If spontaneous breathing is not present and is not triggered by conventional positional techniques to open the airway, palpate for a pulse (peripheral preferred). If no pulse is present, patient is tagged **DECEASED/EXPECTANT** and the triage officer moves on.

- c) If there is a palpable pulse, the rescuer gives five breaths (approximately 15 sec.) using mouth to mask barrier technique. If the ventilatory trial fails to trigger spontaneous respirations, the patient is tagged **EXPECTANT/DECEASED** and the triage officer moves on. However, if respirations resume, the patient is tagged **IMMEDIATE** and the triage officer moves on **without** providing any further ventilations.

- Step 3: If the respiratory rate is 15-45/minute, proceed to checking perfusion. If the respiratory rate is less than 15 (less than 1/every 4 seconds) or faster than 45/minute or irregular, tag as **IMMEDIATE** and move on.
- Step 4: Assess perfusion by palpating pulses on a (seemingly) uninjured limb. If pulses are palpable, proceed to Step 5. If there are no palpable pulses, the patient is tagged **IMMEDIATE** and the triage officer moves on.
- Step 5: At this point all patients have "adequate" ABCs. The triage officer performs a rapid AVPU assessment of mental status. If the patient is Alert, responds to Voice, or responds appropriately to Pain (withdraws from stimulus or pushes away), the patient is tagged **DELAYED** and the triage officer moves on. If the patient does not respond to voice and responds inappropriately to pain (moans or moves in a non-localizing fashion) or is Unresponsive, an **IMMEDIATE** tag is applied and the triage officer moves on to the next patient.

NOTE: All patients tagged **EXPECTANT/DECEASED**, unless clearly suffering from injuries incompatible with life, should be reassessed once critical interventions for **IMMEDIATE** and **DELAYED** victims are completed.

*Modifications for Non-Ambulatory Children

Children in which this modification would be used include:

- Infants who normally can't walk yet
- Children with developmental delay
- Children with acute injuries which prevented them from walking **before** the incident occurred
- Children with chronic disabilities

Non-ambulatory children who meet the above criteria are evaluated using the **JumpSTART**® algorithm beginning with Step 2. If the child meets any **IMMEDIATE** criteria, the child is tagged **IMMEDIATE**. A quick survey is then conducted to determine whether there are any significant external signs of injury (i.e. deep penetrating wounds, severe bleeding, severe burns, amputations, distended tender abdomen or multiple bruises). If any significant external signs of injury are present, the child is tagged **DELAYED**. Non-ambulatory children without any significant external injury, with all other aspects of the **JumpSTART**® algorithm normal, are tagged **MINOR**.

NOTE: Final disposition (transport destination) depends on local and regional resources. Drills and table top exercises should include discussion about transport based on the actual resources available to the participants.

This information was obtained from the JumpSTART® Pediatric MCI Triage Tool website. The **JumpSTART**® pediatric MCI field triage tool was developed by Lou Romig, M.D. Pediatric Emergency Medicine at Miami Children's Hospital in Miami, FL in 1995 and modified in 2002. For additional information visit www.jumpstarttriage.com.

Scenarios... let's play...

Triage Categories

EXPECTANT

Black Triage Tag Color

- Victim unlikely to survive given severity of injuries, level of available care, or both
- Palliative care and pain relief should be provided

IMMEDIATE

Red Triage Tag Color

- Victim can be helped by immediate intervention and transport
- Requires medical attention within minutes for survival (up to 60)
- Includes compromises to patient's Airway, Breathing, Circulation

DELAYED

Yellow Triage Tag Color

- Victim's transport can be delayed
- Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

MINOR

Green Triage Tag Color

- Victim with relatively minor injuries
- Status unlikely to deteriorate over days
- May be able to assist in own care: "Walking Wounded"

Κατηγορία

Χρώμα

Κριτήρια



Άμεσο (Immediate)

● Κόκκινο

Αναπνοή μετά από διάσωση, RR <15 ή >45, κακή αιμάτωση, μειωμένο επίπεδο συνείδησης

Καθυστερημένο (Delayed)

● Κίτρινο

Σταθερή αναπνοή & κυκλοφορία, επαρκής ανταπόκριση

Ελαφρύ (Minor)

● Πράσινο

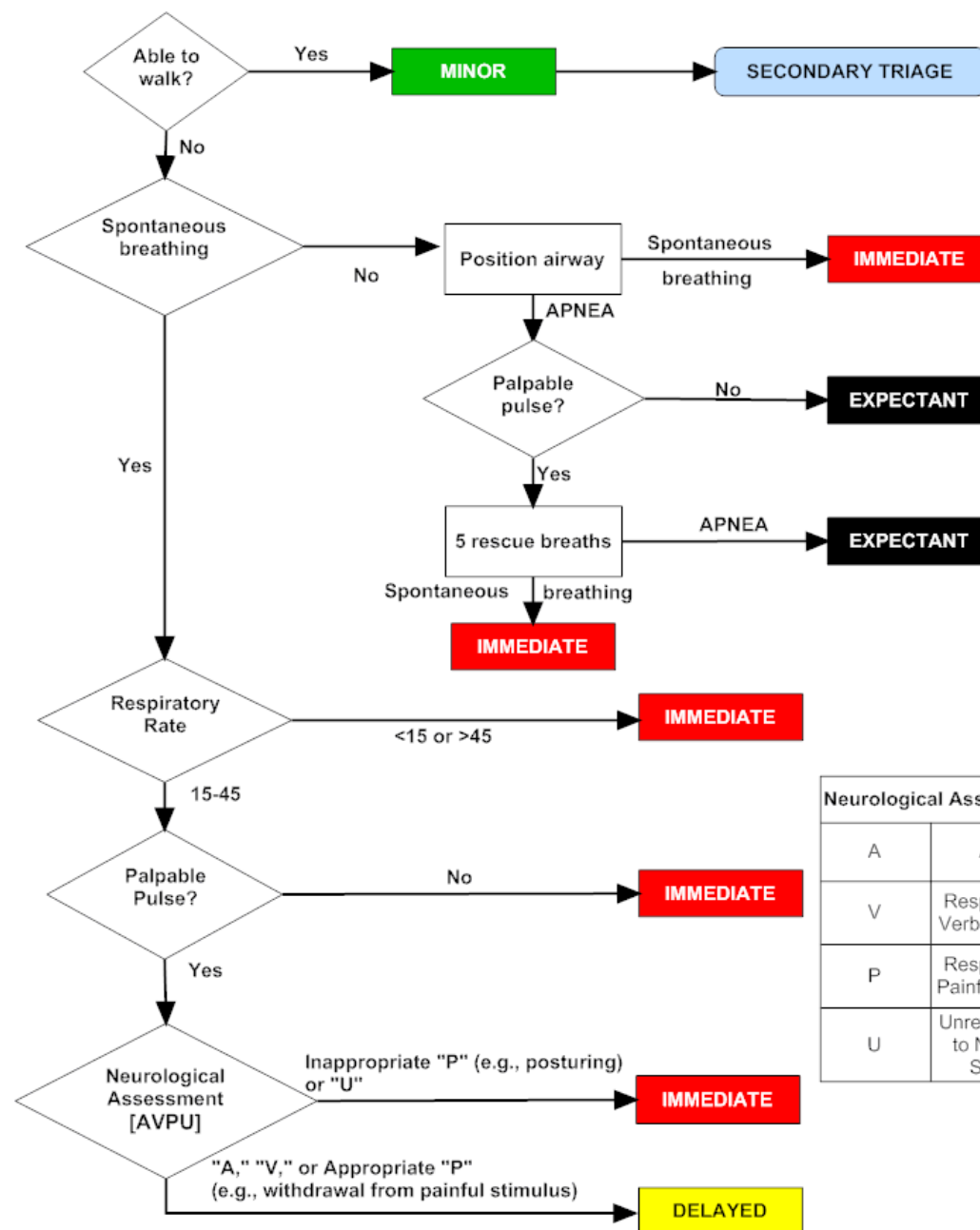
Μπορεί να περπατήσει

Νεκρό / Αναπόμευκτο (Deceased / Expectant)

● Μαύρο

Δεν αναπνέει μετά από 5 αναπνοές και απουσία σφυγμού

JumpSTART Pediatric Multiple Casualty Incident Triage



Use JumpSTART if the Patient appears to be a child.

SCENARIO 1

8:15 a.m. A call to 911 is received. As 5th grade students were arriving by bus this morning to XYZ Middle School for a science lab field trip, several children noted an unusually large pipe on the lawn outside a classroom window near the back parking lot. The assistant principal, who phoned in the concern, offered to meet police outside the front of the school near the main office in about five minutes. There were two sick calls with office staff today, including the principal. Until substitute teachers arrive, the assistant principal is busy with morning announcements.

As the first police unit arrives, an explosion occurs near the back of the school, taking down the outside wall and windows of at least one classroom. The responding officer calls dispatch to report the event and requests additional personnel and EMS at the scene.

This middle school houses more than 500 individuals including students and staff. As the smoke outside clears, it is evident that at least one affected room is the science lab where the visiting 5th graders, a teacher and student teacher were present. The adjacent rooms are another science lab and the lab supplies storage room. Across the hallway in this wing of the school are the nurse's office and the furnace/utility room.

The first few victims are able to move/stumble out of the wreckage. They are coughing with eyes tearing, complaining of chest tightness, stomach cramping, and runny noses. On exam they all have constricted pupils.

The assistant principal, visibly shaken, mumbles something about the science teacher being recently separated from her husband, and that she had recently been able to secure an order of protection from him. Apparently he had retired from his post as an explosives expert in a branch of the military reserves. He also had been employed by the school district but was on leave pending a psychiatric assessment after threats he had made to his wife.

STOP: At this point, please identify and list important considerations for this component of the scenario, including the possible exposure to a nerve agent or choking agent. In addition, this scenario can be adapted at this point depending on the training participants' disciplines. For example, if the training participants are pre-hospital providers, the scenario can be tailored to their role in responding to the scene or if the training participants are hospital based providers, the scenario can be followed as written.

Additional rescue units arrive on the scene. Neighbors and parents who have heard the sirens start to gather outside the school and are becoming panicked and hysterical. The first television news crews arrive and several morning traffic helicopters are heard overhead.

A fire erupts in the science storage lab where liquid chemicals had spilled and poured onto the floor. The fire quickly spreads across to the nurse's room where the parent information forms are stored. The nurse is found unconscious with head injuries. More victims are located in the science labs and hallway. Smoke is filling the school hallways.

8:45 am. You are the charge nurse of a local ED located a couple of blocks from the school affected by this incident and have been notified to expect victims. Your waiting room is already filled with patients waiting to be seen. You and the ED physician begin to discuss how to respond.

9 a.m. While you're trying to put in place all the pieces to handle the expectant arrival of victims from the school, several parents of children who attend XYZ School show up in your ED inquiring about their children. At the same time several children from the affected school and several teachers walk into your emergency department.

STOP: At this point, what would you do next? Please identify and list important considerations for this component of the scenario

Using the appropriate triage algorithm, categorize each of the following victims and provide justification for selecting that category.

SCENARIO 1 VICTIM LIST				
VICTIM	RESPIRATORY RATE	PERFUSION	MENTAL STATUS	OTHER
Teen M	RR 38	Radial pulse present	Knows name and can recall incident	Facial burns, coughing, pupils constricted
Child F	RR 32	Palpable pulse	Alert, crying hysterically	Multiple small lacerations with embedded wood and glass entire dorsal area of body, head to foot
Child M	RR 12	Weak, thready pulse	Disoriented to place and time	Hematoma forehead, facial lacerations
Adult M	RR 48	Capillary refill > 2	Moaning, unable to follow commands	Large glass shard protruding from abdomen, wheezing
Teen F	RR 8	Pulse absent	Unresponsive	Impaled onto shelving brackets on wall
Child M	RR 36	Pulse present	Won't speak but makes eye contact with touch	Bleeding from ears, bruise on neck
Child F	RR 0	Weak radial pulse	Unresponsive	Trapped under rubble; apneic after 5 rescue breaths
Child F	RR 52	Thready pulse	Confused	Coughing, brisk bleeding from facial and hand lacerations
Teen M	RR 40	Pulse present	Disoriented to place and time	Scalp lacerations, burns to upper extremities
Child M	RR 10	Weak rapid pulse	Unresponsive	Bunsen burner imbedded in upper arm - heavy bleeding
Child M	RR 40	Pulse present	Responds appropriately to painful stimuli	Open femur fracture, lacerations to hands and face
Teen F	RR 48	Pulse rapid and weak	Responds only to touch	Deformity right upper extremity, glass shrapnel in scalp
Child F	RR 32	Pulse present	Crying but oriented x 3	Open fracture lower leg; contusions to arms and chest
Child M	RR 36	Bounding pulse	Alert but won't speak	Burns to neck and torso, lacerations to arms
Teen F	RR 44	Pulse weak	Hysterical	Partial amputation right forearm
Adult F	RR 28	Capillary refill <2	Crying for help, able to recall events	Leg caught under lab desk and chairs - open fracture
Teen M	RR 10	Pulse present - slow	Unresponsive	No obvious injuries
Teen F	RR Unable to count	Rapid pulse	Crying hysterically, will not answer questions	Grabbing rescuers
Child M	RR 24	Pulse present	Alert	Vomiting, drooling, incontinent
Child F	RR 0	Absent pulse	Unresponsive	Trapped under rubble
Child M	RR 32	Rapid pulse	Alert and anxious	Coughing, vomiting, incontinent, tearing, runny nose
Child F	RR 28	Rapid pulse	Alert	Crying, no obvious injuries
Child M	RR 34	Rapid pulse	Keeps asking same questions	Tearing, runny nose, incontinent
Child F	RR 30	Rapid thready pulse	Sleepy - difficult to arouse	Diaphoretic
Child F	RR 28	Pulse present	Alert	Can currently speak, facial, neck and upper extremity burns
Child M	RR 50	Pulse present	Confused	Wheezing, facial and torso burns
Child F	RR 44	Radial pulse weak	Responds to verbal stimuli, disoriented	Large bruise forming on abdomen, burns on legs

Scenario 1 Instructor Resource

On the following page, the correct triage category designation is listed for each of the sample victims based on the information provided. START is used for teen and adult victims. JumpSTART® is used for infants and children. Your disaster drill may incorporate additional information on each victim which may result in a different triage assignment. In addition, the availability of resources, such as an antidote to the nerve agent simulated in this scenario, may also result in a different triage assignment.

Scenario #1: Victim List with Triage Category Designation

VICTIM	RESPIRATORY RATE	PERFUSION	MENTAL STATUS	OTHER	TRIAGE CATEGORY
Teen M	RR 38	Radial pulse present	Knows name and can recall incident	Facial burns, coughing, pupils constricted	IMMEDIATE
Child F	RR 32	Palpable pulse	Alert, crying	Multiple small lacerations with embedded wood and glass entire dorsal area of body, head to foot	DELAYED
Child M	RR 12	Weak, thready pulse	Disoriented to place and time	Hematoma forehead, facial lacerations	IMMEDIATE
Adult M	RR 48	Capillary refill > 2	Moaning, unable to follow commands	Large glass shard protruding from abdomen, wheezing	IMMEDIATE
Teen F	RR 8	Pulse absent	Unresponsive	Impaled onto shelving brackets on wall	IMMEDIATE
Child M	RR 36	Pulse present	Won't speak but makes eye contact with touch	Bleeding from ears, bruise on neck	DELAYED
Child F	RR 0	Weak radial pulse	Unresponsive	Trapped under rubble; apneic after 5 rescue breaths	EXPECTANT/DECEASED
Child F	RR 52	Thready pulse	Confused	Coughing, brisk bleeding from facial and hand lacerations	IMMEDIATE
Teen M	RR 40	Pulse present	Disoriented to place and time	Scalp lacerations, burns to upper extremities	IMMEDIATE
Child M	RR 10	Weak rapid pulse	Unresponsive	Burns burner imbedded in upper arm - heavy bleeding	IMMEDIATE
Child M	RR 40	Pulse present	Responds appropriately to painful stimuli	Open femur fracture, lacerations to hands and face	DELAYED
Teen F	RR 48	Pulse rapid and weak	Responds only to touch	Deformity right upper extremity, glass shrapnel in scalp	IMMEDIATE
Child F	RR 32	Pulse present	Crying but oriented x 3	Open fracture lower leg, contusions to arms and chest	DELAYED
Child M	RR 36	Bounding pulse	Alert but won't speak	Burns to neck and torso, lacerations to arms	DELAYED
Teen F	RR 44	Pulse weak	Hysterical	Partial amputation right forearm	IMMEDIATE
Adult F	RR 28	Capillary refill <2	Crying for help, able to recall events	Leg caught under lab desk and chairs - open fracture	DELAYED
Teen M	RR 10	Pulse present - slow	Unresponsive	No obvious injuries	IMMEDIATE
Teen F	RR Unable to count	Rapid pulse	Crying hysterically, will not answer questions	Grabbing rescuers	IMMEDIATE
Child M	RR 24	Pulse present	Alert	Vomiting, drooling, incontinent	MINOR
Child F	RR 0	Absent pulse	Unresponsive	Trapped under rubble	EXPECTANT/DECEASED
Child M	RR 32	Rapid pulse	Alert and anxious	Coughing, vomiting, incontinent, tearing, runny nose	DELAYED
Child F	RR 28	Pulse present	Alert	Walking around and crying, no obvious injuries	MINOR
Child M	RR 34	Rapid pulse	Alert but keeps asking same questions	Tearing, runny nose, incontinent	MINOR
Child F	RR 30	Rapid thready pulse	Sleepy - difficult to arouse	Diaphoretic	IMMEDIATE
Child F	RR 28	Pulse present	Alert	Can currently speak and walk, minor burn on left arm	MINOR
Child M	RR 50	Pulse present	Confused	Wheezing, facial and torso burns	IMMEDIATE
Child F	RR 44	Radial pulse weak	Responds to verbal stimuli	Large bruise forming on abdomen, burns on legs	DELAYED

Triage Categories

EXPECTANT

Black Triage Tag Color

- Victim unlikely to survive given severity of injuries, level of available care, or both
- Palliative care and pain relief should be provided

IMMEDIATE

Red Triage Tag Color

- Victim can be helped by immediate intervention and transport
- Requires medical attention within minutes for survival (up to 60)
- Includes compromises to patient's Airway, Breathing, Circulation

DELAYED

Yellow Triage Tag Color

- Victim's transport can be delayed
- Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

MINOR

Green Triage Tag Color

- Victim with relatively minor injuries
- Status unlikely to deteriorate over days
- May be able to assist in own care: "Walking Wounded"



Pediatric Emergency Medicine Didactics and Simulation: JumpSTART Secondary Triage for Mass Casualty Incidents

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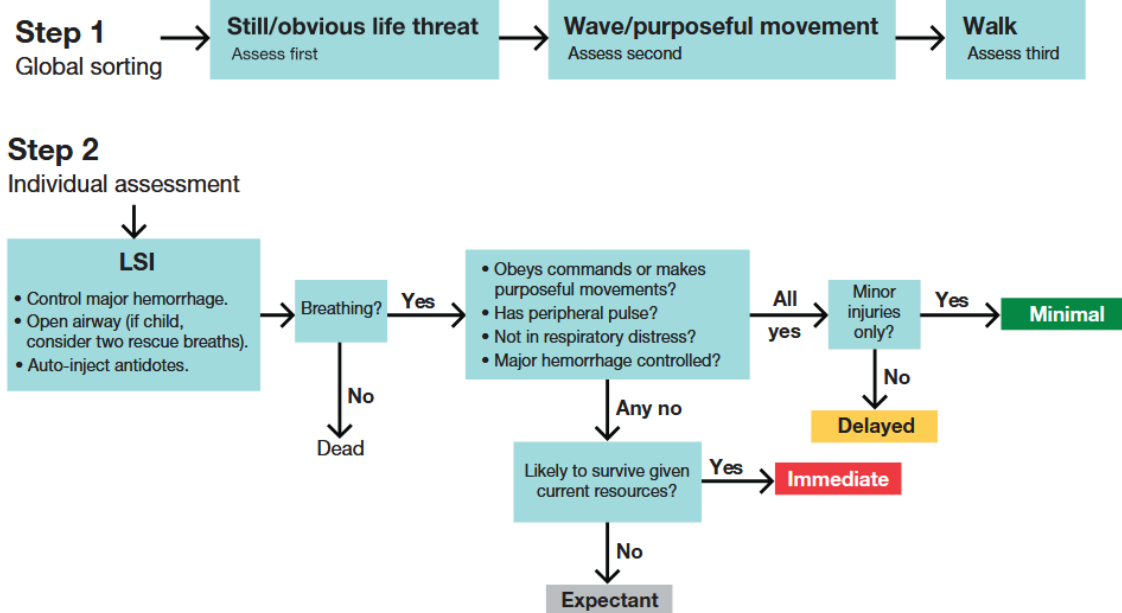
Abstract

Mass casualty incidents (MCI), particularly involving pediatric patients, are high-risk, low-frequency occurrences that require exceptional emergency arrangements and advanced preparation. In the aftermath of an MCI, it is essential for medical personnel to accurately and promptly triage patients according to their acuity and urgency for care. As first responders bring patients from the field to the hospital, medical personnel are responsible for prompt secondary triage of these patients to appropriately delegate hospital resources. The JumpSTART triage algorithm (a variation of the Simple Triage and Rapid Treatment, or START, triage system) was originally designed for prehospital triage by prehospital providers but can also be used for secondary triage in the emergency department setting. This technical report describes a novel simulation-based curriculum for pediatric emergency medicine residents, fellows, and attendings involving the secondary triage of patients in the aftermath of an MCI in the emergency department. This curriculum highlights the importance of the JumpSTART triage algorithm and how to effectively implement it in the MCI setting.

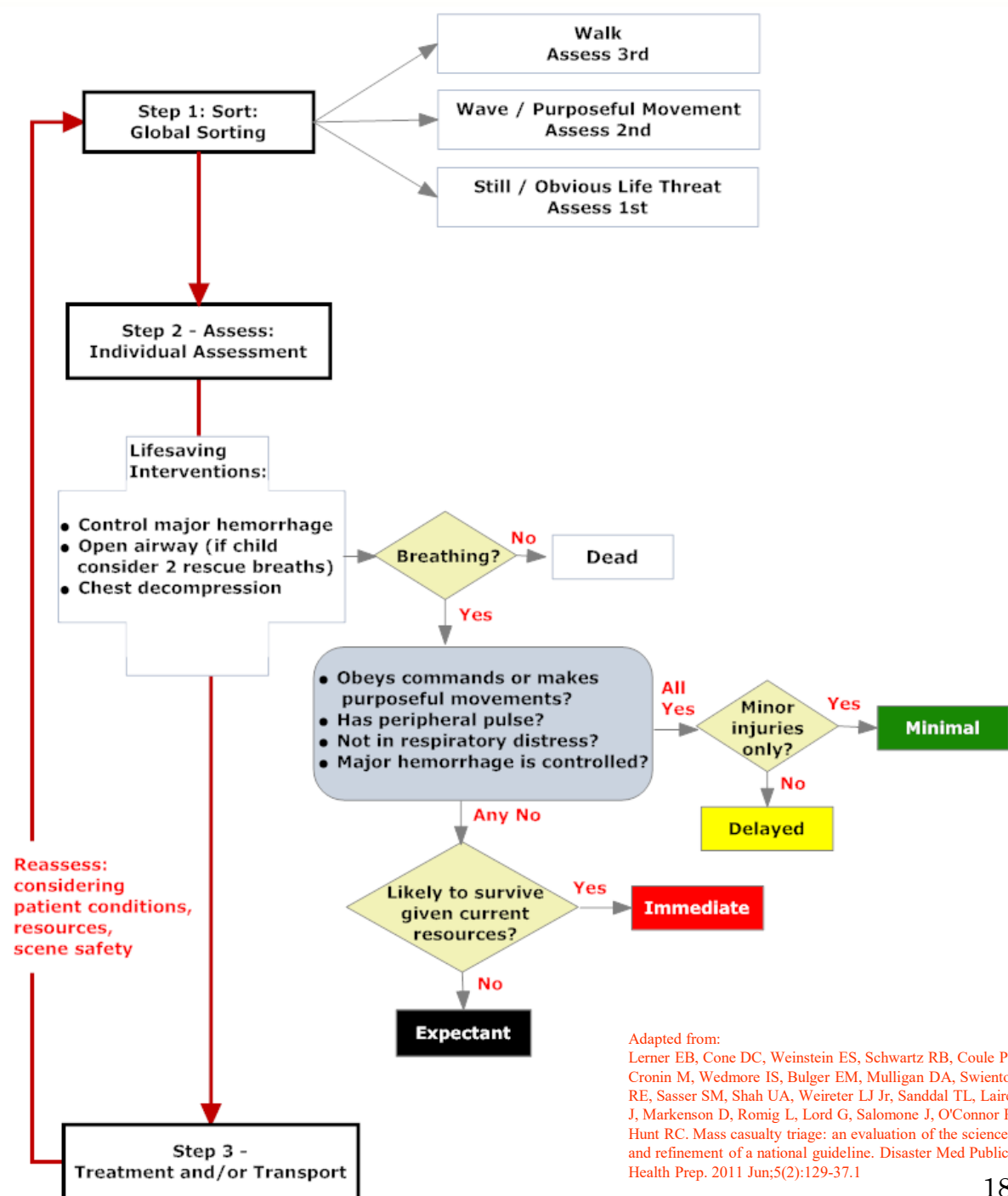
Keywords: disaster response and preparedness; emergency medicine; mass casualty incident; medical education and simulation; pediatric emergency department; secondary triage; triage; triage protocols.

SALT Mass Casualty Triage Algorithm (Sort, Assess, Lifesaving Interventions, Treatment/Transport)

SALT Mass Casualty Triage



Sort, Assess, Lifesaving Interventions, Treatment/Transport (SALT) triage system replaces Simple Triage and Rapid Treatment (START).



Paediatric triage tape

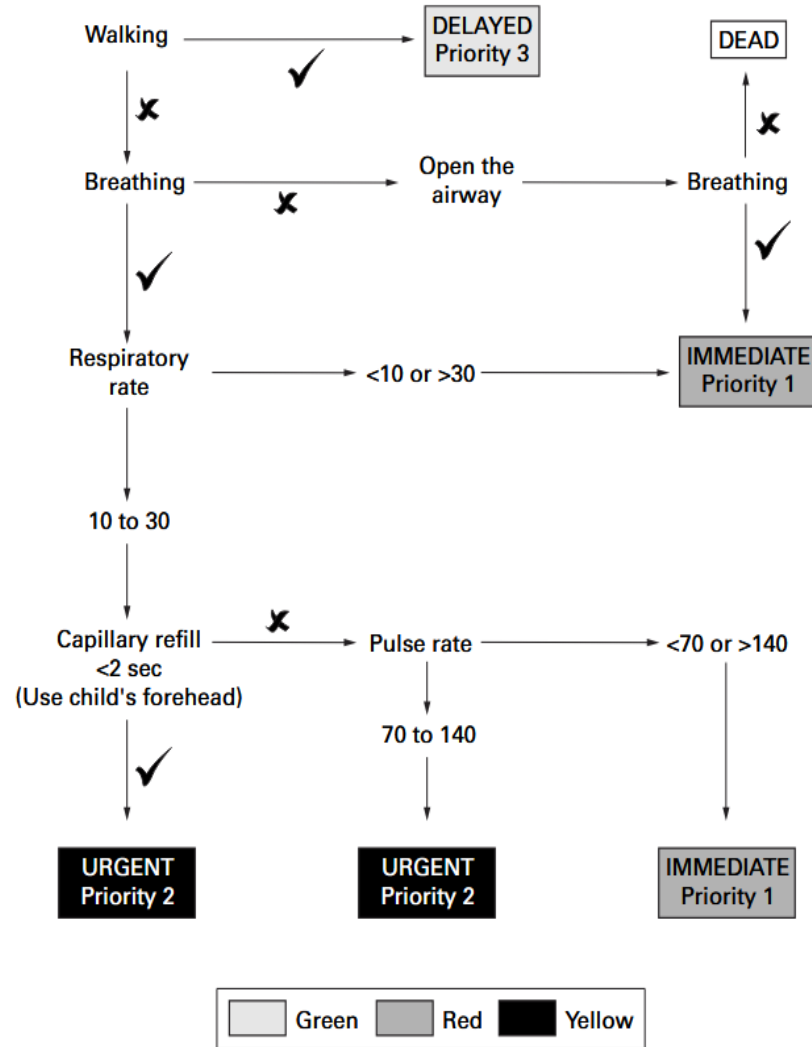


Figure 3C Paediatric triage tape: 100–140 cm (19–32 kg).

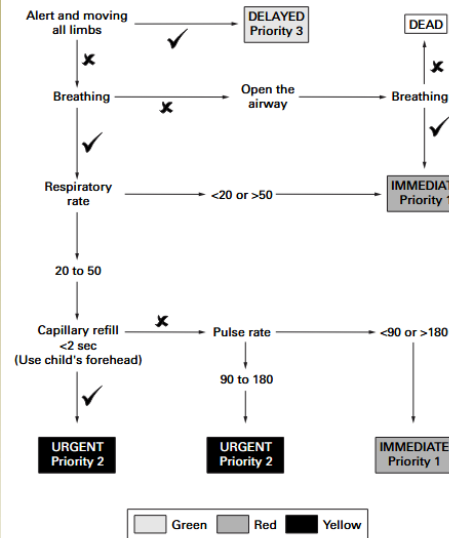
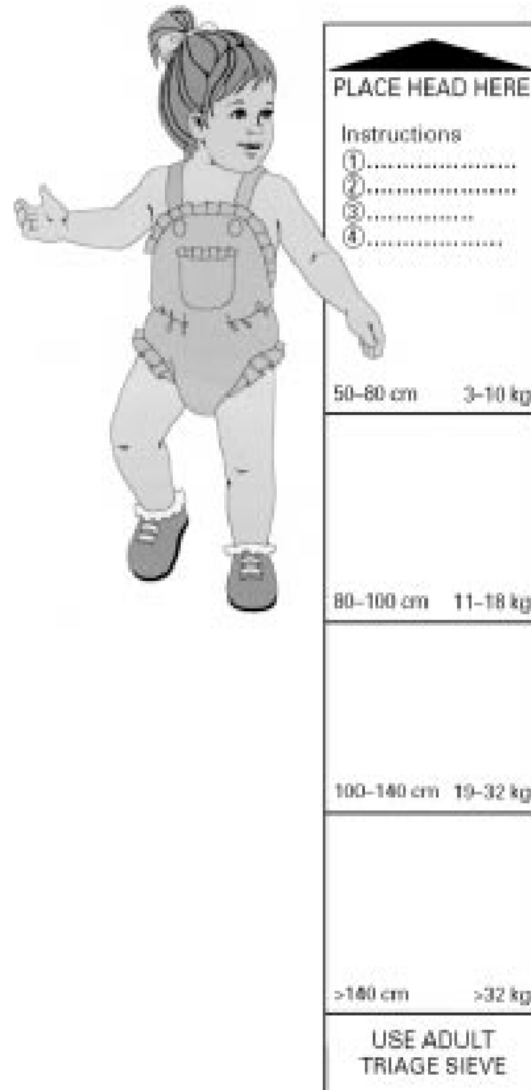


Figure 3A Paediatric triage tape: 50–80 cm (3–10 kg).

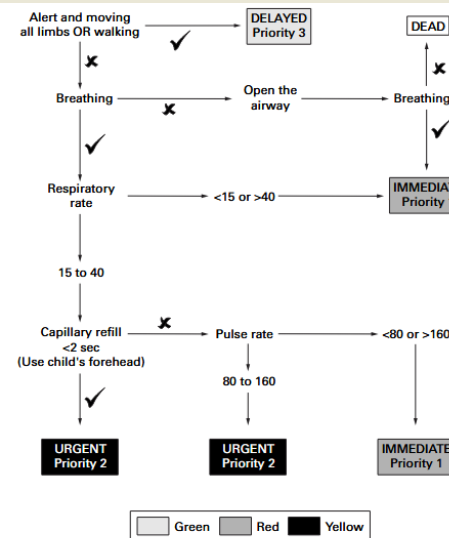


Figure 3B Paediatric triage tape: 80–100 cm (11–18 kg).





Research paper

Paediatric major incident triage: UK military tool offers best performance in predicting the need for time-critical major surgical and resuscitative intervention

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MIMMS

Paediatric Triage Tape

ABSTRACT

Background: Children are frequently injured during major incidents (MI), including terrorist attacks, conflict and natural disasters. Triage facilitates healthcare resource allocation in order to maximise overall survival. A critical function of MI triage tools is to identify patients needing time-critical major resuscitative and surgical intervention (Priority 1 (P1) status). This study compares the performance of 11 MI triage tools in predicting P1 status in children from the UK Trauma Audit and Research Network (TARN) registry.

Methods: Patients aged <16 years within TARN (January 2008–December 2017) were included. 11 triage tools were applied to patients' first recorded pre-hospital physiology. Patients were retrospectively assigned triage categories (P1, P2, P3, Expectant or Dead) using predefined intervention-based criteria. Tools' performance in <16s were evaluated within four-yearly age subgroups, comparing tool-predicted and intervention-based priority status.

Findings: Amongst 4962 patients, mortality was 1.1% (n = 53); median Injury Severity Score (ISS) was 9 (IQR 9–16). Blunt injuries predominated (94.4%). 1343 (27.1%) met intervention-based criteria for P1, exhibiting greater intensive care requirement (60.2% vs. 8.5%, $p < 0.01$) and ISS (median 17 vs 9, $p < 0.01$) compared with P2 patients. The Battlefield Casualty Drills (BCD) Triage Sieve had greatest sensitivity (75.7%) in predicting P1 status in children <16 years, demonstrating a 38.4–49.8% improvement across all subgroups of children <12 years compared with the UK's current Paediatric Triage Tape (PTT). JumpSTART demonstrated low sensitivity in predicting P1 status in 4 to 8 year olds (35.5%) and 0 to 4 year olds (28.5%), and was outperformed by its adult counterpart START (60.6% and 59.6%).

Interpretation: The BCD Triage Sieve had greatest sensitivity in predicting P1 status in this paediatric trauma registry population: we recommend it replaces the PTT in UK practice. Users of JumpSTART may consider alternative tools. We recommend Lerner's triage category definitions when conducting MI evaluations.

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MULTIPLE CASUALTIES

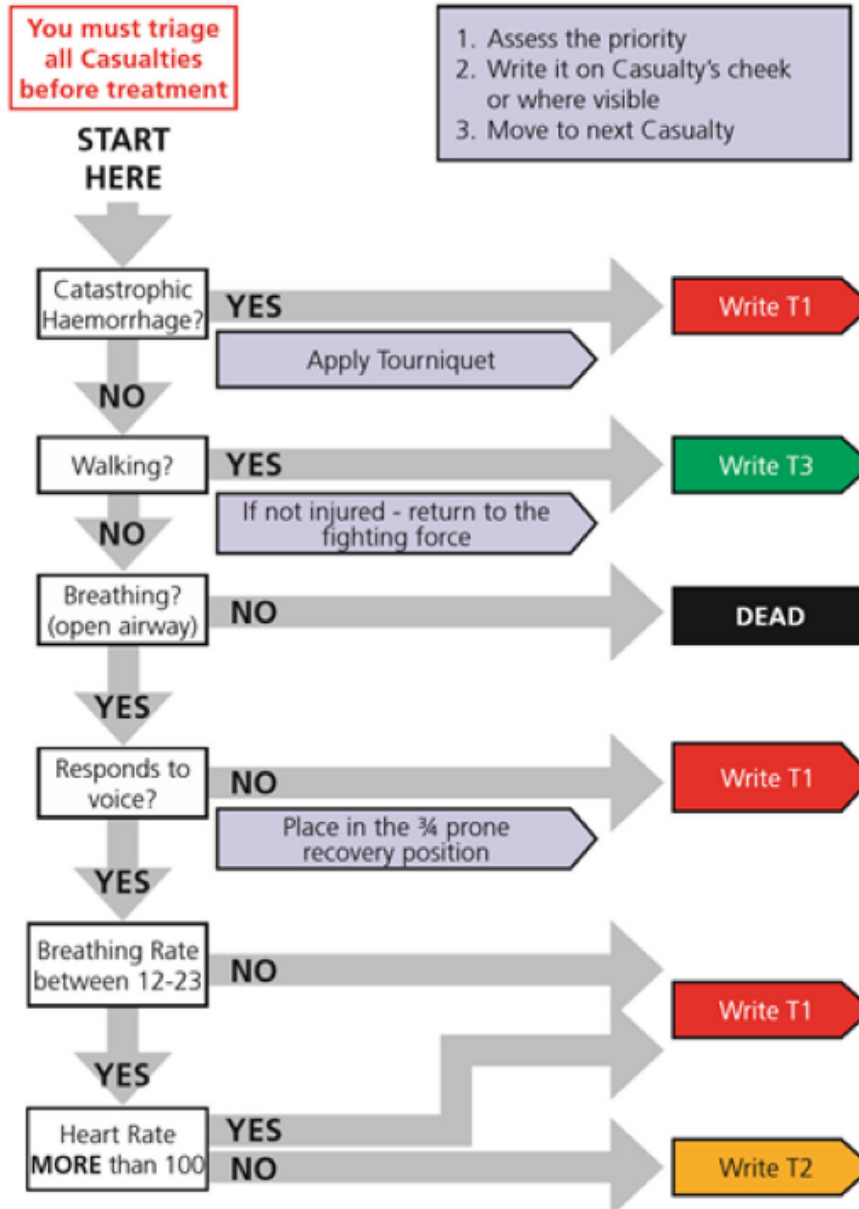


Fig. 1. Battlefield Casualty Drills Triage Sieve (UK Military Primary Triage Tool).

Table 1
Summary of triage tool characteristics.

Tool	Description and geographical use	Tool components							
		1st step	2nd step	3rd step	4th step	5th step	6th step	7th step	Interventions permitted
Battlefield Casualty Drills (BCD) Triage Sieve	Current UK military tool for use in adults (introduced in 1998, revised 2018).	Catastrophic haemorrhage?	Walking?	Breathing?	Responds to voice?	Breathing rate between 12 and 23	Heart Rate more than 100	–	Apply tourniquet, open airway, place casualty in the $\frac{3}{4}$ prone recovery position
CareFlight	Australian tool used in adults and children (introduced in 2001).	Walks?	Obeys command?	Palpable radial pulse? OR Breathes with open airway?	–	–	–	–	Open airway
Jump Simple Triage and Rapid Treatment (JumpSTART)	United States, used in several states in children (introduced in 2001).	Able to walk?	Spontaneous breathing (check radial pulse if apnoeic)	Respiratory rate <15 or >45	Palpable pulse?	Neurological Assessment (AVPU)	–	–	Airway positioning, 5 rescue breaths if apnoeic
Major Incident Medical Management and Support (MIMMS) Triage Sieve	Former UK military adult triage tool (introduced in 1995).	Walking	Breathing	Respiratory rate <10 or ≥ 30	Capillary refill >2 s	–	–	–	Open airway
Modified Physiological Triage Tool (MPTT)	UK-based tool* modelled in a military cohort (described in 2017).	Walking?	Breathing?	Respiratory rate <12 or ≥ 22	Heart rate ≥ 100	GCS <14	–	–	–
Modified Physiological Triage Tool 24 (MPTT-24)	UK-based tool*, modification of MPTT (described in 2017).	Catastrophic Haemorrhage?	Walking?	Breathing?	Responds to voice	Respiratory rate <12 or ≥ 24	Heart rate ≥ 100	–	Apply tourniquet or haemostatic dressing
Modified Simple Triage and Rapid Treatment (MSTART)	United States, modification of START (described in 2006).	Able to walk?	Spontaneous breathing	Respiratory rate >30	Radial pulse absent	Obeys commands	–	–	Position airway
National Ambulance and Resilience Unit (NARU) Triage Sieve	Current UK civilian adult tool, adapted from the MIMMS Triage Sieve (this version was introduced in 2013)	Catastrophic haemorrhage	Are they injured	Walking	Breathing	Unconscious	Respiratory rate <10 or ≥ 30	Pulse >120 or capillary refill >2 s	Apply tourniquet/haemostatic dressing, open airway, place in recovery position
Paediatric Triage Tape (PTT)	Current UK paediatric tool (<12 years) (adapted from MIMMS Triage Sieve in 1998).	Alert and moving all limbs (children <100 cm height) or Walking	Use tape to gauge child's length in order to determine which set of physiological values to compare the child against	Breathing?	Respiratory rate (height-specific threshold)	Capillary refill <2 s (use child's forehead)	Pulse rate (height-specific threshold)	–	Position airway
Rapid Assessment of Mentation and Pulse (RAMP)	United States, used by the Rocky Mountain Fire Department, Colorado (introduced in 2018).	Casualty without signs of obvious death	Casualty follows commands	Radial pulse present?	–	–	–	–	Control massive haemorrhage, open airway, chest decompression
Simple Triage and Rapid Treatment (START)	United States (introduced in 1983).	Able to walk?	Spontaneous breathing	Respiratory rate >30	Capillary refill >2 s	Obeys commands	–	–	Position airway

Ledger: AVPU refers to the Alert, Voice, Pain, Unresponsive scale; GCS=Glasgow Coma Score. All tools described are applicable at the scene of a major incident (primary triage tools). *Has yet to undergo practical use or implementation studies. SALT and ASAV were not evaluated in this study as there were major limitations in applying these retrospectively. **SALT involves sorting according to the following: walk, wave/purposeful movement, still/obvious life threat; as well as the subjective judgements: "Minor injuries only?" and "Likely to survive given current resources?" ***ASAV includes the subjective judgement "Deadly injured?" and assessment of breathing status as follows: "airway obstructed, bradypnoea, apnoea, dyspnoea, tachypnoea (not obviously psychogenic) and cyanosis."



Ερωτήσεις

