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EMSC PEDIATRIC DISASTER PREPAREDNESS GUIDELINES: LEMSAs



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FOREWORD

As in day-to-day medical emergencies, children face unique vulnerabilities during disasters. The events of Hurricane Katrina and the Southern California wildfires reinforced the need to provide pediatric-specific guidance to medical personnel responding to disasters in both the hospital and pre-hospital setting. Child-centric approaches are required for triage, treatment, and decontamination to achieve optimal outcomes for pediatric patients. Accordingly, the California EMS for Children Technical Advisory Committee appointed a Disaster Subcommittee to develop pediatric disaster medical guidelines for California's Local EMS Agencies and hospitals (published as separate documents).

The Disaster Subcommittee considers these guidelines to be minimum standards for large and small hospitals and Local EMS Agencies serving both urban and rural California communities. The guidelines include references that provide supporting evidence for the recommendations and tools for implementation. Additional information is available at the website of the EMS Authority (www.emsa.ca.gov).

Finally, the EMS Authority views these guidelines as living documents to be expanded and modified as resources and new information become available.

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EMSC PEDIATRIC DISASTER PREPAREDNESS GUIDELINES: LEMSAS

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PREHOSPITAL CARE OF CHILDREN IN DISASTERS

Introduction

The care of children in disasters presents unique challenges for prehospital professionals. EMS agencies must have a thorough, well-rehearsed disaster response plan that addresses the needs of children. Planning for the care of children in disasters requires recognition that children are more vulnerable, physically and emotionally than adults. The following table summarizes the physiologic and psychological characteristics of children that place them at high risk during disasters.

| Pediatric Characteristic | Special Risk during Disaster |
|---------------------------------|--|
| Respiratory | Higher minute volume increases exposure to inhaled agents. Nuclear fallout and heavier gases settle lower to the ground and may affect children more severely. |
| Gastrointestinal | May be more at risk for dehydration from vomiting and diarrhea after exposure to contamination. |
| Skin | Higher body surface area increases risk of skin exposure. Skin is thinner and more susceptible to injury from burns, chemicals and absorbable toxins. |
| Endocrine | Increased risk of thyroid cancer from radiation exposure. |
| Thermoregulation | Less able to cope with temperature problems with higher risk of hypothermia. |
| Developmental | Less capability to escape environmental dangers or anticipate hazards. |
| Psychological | Prolonged stress from critical incidents. Susceptible to separation anxiety. |

Other considerations include:

- An incident involving multiple pediatric casualties can rapidly overwhelm existing resources and capabilities for children in the local area.
- The presence of children in a disaster adds to the chaos and may rapidly deplete rescuers and resources physically and emotionally.
- Post-event Critical Incident Stress Management (CISM) should be included in disaster planning.
- Care of children in disasters must include plans for reuniting children with their families and keeping families together during triage, treatment, and transport.

- Field EMS providers in California have education consistent with the Department of Transportation Curriculum, but they may not have completed additional initial or on-going training specific to pediatric patients, including the care of pediatric patients in disasters.
- Responders rarely have experience in assessing the emotional states of a child and the child's family. The mental health needs of children must be recognized in planning for disasters.
- Pediatric patients are not often included in disaster drills and exercises, so prehospital personnel may not have experience in triaging and treating pediatric patients in disaster scenarios.

Because of the need to address these issues, this annex has been designed to assist EMS agencies in planning for the care of children in disasters, and includes checklists and resources for this purpose.

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American Academy of Pediatrics. The Youngest Victims: Disaster Preparedness to Meet Children's Needs. www.aap.org/advocacy/releases/disaster_preparedness.htm

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LOCAL EMS AGENCY PEDIATRIC DISASTER PREPAREDNESS

General Local EMS Agency Checklist

| Item | Yes | No | In Process |
|---|-----|----|------------|
| POLICIES | | | |
| 1. Destination policies are in place for response to numerous children in a multi-casualty incident, including transport to higher levels of care for more seriously ill or injured children in a large-scale disaster. | | | |
| 2. Agreements have been made with pediatric tertiary care centers and other facilities outside LEMSA jurisdiction for pediatric patients requiring higher levels of care or specialized care. | | | |
| 3. Plans for disasters include means of obtaining additional pediatric equipment, supplies and medications. | | | |
| 4. Disaster planning includes attention to children with special health care needs and pediatric mental health issues. | | | |
| PROTOCOLS | | | |
| 1. Triage methods of pediatric patients such as the Pediatric Assessment Triangle, JumpSTART or other means of determining severity of injury or illness of pediatric patients is used. | | | |
| 2. Triage plan includes method of identifying pediatric patients and their family members to aid in reuniting them. | | | |
| 3. Rapid method of determining dosages for children, such as the Broselow tape or other length-based tool is available. | | | |
| 4. Methods of decontaminating children in the field, including medically stable or unstable children and children with special needs are included in disaster plans. | | | |

| EDUCATION | | | |
|---|--|--|--|
| 1. Agency regularly provides, supports or recommends special education in pediatrics for personnel, such as Pediatric Education for Prehospital Professionals (PEPP) and/or Pediatric Advanced Life Support (PALS) or pediatric education consistent with these courses. | | | |
| 2. Interventions for biological, chemical, and radiologic disasters, with instructions specific to pediatric patients are included in training of prehospital providers. | | | |
| 3. Children are routinely included in disaster drills and exercises. | | | |
| 4. Pediatric expertise (pediatricians, pediatric intensivists, etc.) is included in planning drills/exercises, and other disaster-related activities. | | | |
| 5. Public health agencies, schools, daycare facilities, health clinics, the American Red Cross, and other local and statewide agencies and organizations interested in pediatric care are included in planning for disasters, and in disaster exercises. | | | |
| 6. Pediatric expertise is routinely included in debriefings/evaluations for disasters or disaster exercises. | | | |

There are many resources to aid in accomplishing these objectives. The following represents a partial list that provides an overview and some additional information:

Resources – General articles/websites

<http://www.aap.org/terrorism/index.html>

<http://pediatrics.aappublications.org/cgi/content/full/aap120/4/e756>

http://www.fireengineering.com/articles/print.html?id=276789&bPool=FE.pennnet.com%2Farticle_tool_bar

<http://www.bt.cdc.gov/children/pdf/working/execsumm03.pdf>

http://www.ncdp.mailman.columbia.edu/program_pediatric.htm

TRIAGE

A standardized triage system should be used by EMS personnel to optimize the emergency care of children in a mass casualty event. There is currently no widely published, utilized nor widely accepted system that addresses the needs of children in multiple casualty incidents (MCI's). Lack of objective triage criteria for pediatric patients may allow rescuers' natural emotional responses to influence their clinical judgment during the triage process. Rescuers with insecurities in dealing with children may over-triage victims, while those with strong sympathy may waste time and resources in attempting to resuscitate a child who is not realistically salvageable.

A frequently recommended first responder triage system specifically for children, named JumpSTART, derived by Romig (2002), is based on an adult triage system called START (Simple Triage and Rapid Treatment)¹. This pediatric triage system emphasizes assessing and opening the airway, along with providing rescue breaths and pulse checks, since respiratory failure, rather than cardiac failure more often causes death in children.

Using aspects of the existing systems and based on best evidence, SALT (Sort – Assess – Life Saving Interventions – Treatment and/or transport) was developed by a CDC expert panel as a national all-hazards mass casualty initial triage standard for all patients (e.g., adults, children, special populations).

A variety of methods are used by Local EMS Agencies (LEMSA) for triaging pediatric patients in California, including JumpSTART, the Pediatric Assessment Triangle (PAT), and others. Regardless of the method chosen for pediatric triage, prehospital providers should be well trained and should participate in drills/exercises that include pediatric patients.

SALT Triage with the Pediatric Assessment Triangle (PAT)

Based upon available best evidence, SALT uses aspects of the existing systems and is designed to allow agencies to easily incorporate it into their current MCI triage protocol through simple modification.

¹ While it is recognized that LEMSAs shall ensure designation of the START Triage System as the method of initial triage for all incidents with multiple casualties, limitations of this system have been recognized when a large number of victims are children. It is therefore a recommendation of the EMSC TAC that LEMSAs consider START as an "initial" triage system and that LEMSAs are familiar with other systems of triage (JumpSTART, SACCO, SORT) that better encompass victims of all ages.

Step 1: Sort

SALT begins with a global sorting of patients, prioritizing them for individual assessment. Patients who are able to walk to a designated area should be assigned last priority for individual assessment. Those who are unable to walk should be asked to wave (i.e., follow a command) or be observed for purposeful movement. Those who do not move (i.e., are still) and those with obvious life or limb-threatening injuries should be assessed first, since they are most likely to need life saving interventions.

Group Sorting

- Priority 1: Still/Obvious life threat
- Priority 2: Wave/Purposeful movement
- Priority 3: Walk

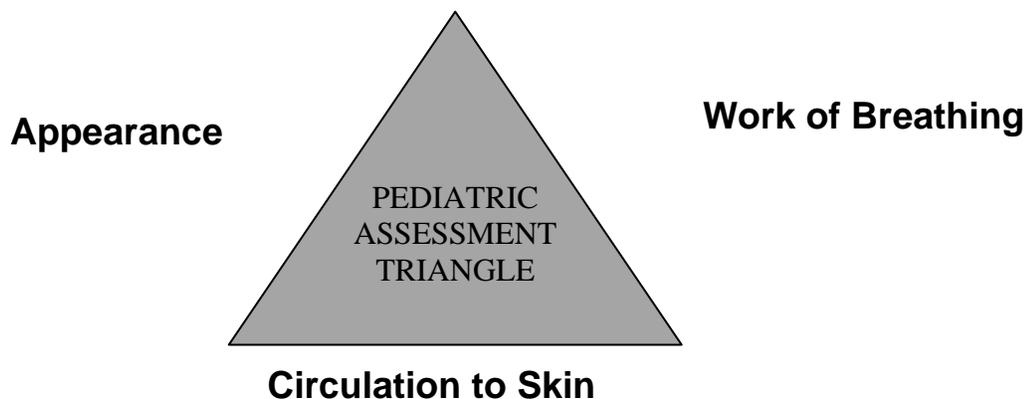
Step 2: Assess

Use the PAT to help assess children in disasters or MCIs. The PAT is an easy tool for the rapid, initial assessment of any child, but is especially important in Priority 1 patients who cannot walk or show purposeful movement. The PAT is the general assessment approach to children, which is taught by the PEPP Course (Pediatric Education for Prehospital Professionals), and by all American pediatric life support courses. It allows the prehospital professional engaged in field triage during a disaster or MCI to develop a general impression of patient's status with only visual and auditory clues. By using the PAT at the point of first contact with the patient, the prehospital professional can immediately establish a level of severity, determine urgency for life support, and identify the general type of physiologic problem. Continued use of the PAT gives the prehospital professional a way to track response to therapy and reassess triage priority and also to determine timing of transport. Furthermore, it allows for communication among medical professionals about the child's physiologic status and for accurate radio reporting.

There are three components of the PAT that together reflect the child's overall physiologic status: (1) appearance; (2) work of breathing; and (3) circulation to skin. The PAT is based on listening and seeing, and does not require a stethoscope, blood pressure cuff, cardiac monitor, or pulse oximeter. The PAT can be completed in less than 30 seconds and is designed to systematize a time-honored process of "across the room assessment"—an intuitive process that experienced pediatric providers do instinctively.

The PAT

The three components of the PAT provide an accurate initial picture of the child's underlying cardiopulmonary status and cerebral function. While the PAT may not lead to a diagnosis, it will help identify the general category of the physiologic problem and establish triage status and urgency for treatment and/or transport. The PAT does not replace vital signs and the ABCDEs, which are part of the hands-on triage assessment.



Appearance

Characteristics of Appearance

The child's general appearance is the most important factor in determining the severity of the illness or injury, the need for treatment, and the response to therapy. Appearance reflects the adequacy of ventilation, oxygenation, brain perfusion, body homeostasis, and central nervous system (CNS) function. There are many characteristics of appearance; the most important are summarized in the "tickles" (TICLS) mnemonic: tone, interactiveness, consolability, look/gaze, and speech/cry

Techniques to Assess Appearance

Assess the child's appearance from a few steps away. This is the first part in the PAT. Techniques for assessment of a conscious child's appearance include observing from a distance, allowing the child to remain in the caregiver's lap or arms, using distractions such as bright lights or toys to measure the child's ability to interact, and kneeling down to be at eye level with the child. An immediate "hands-on" approach may cause agitation and crying, and may complicate the assessment. Unless a child is unconscious or obviously critically ill, get as much information as possible by observing the child before touching or taking vital signs.

Characteristics of Work of Breathing

In children, work of breathing is a more accurate indicator of oxygenation and ventilation than respiratory rate or chest sounds on auscultation: the standard measures of breathing effectiveness in adults. Work of breathing reflects the child's attempt to compensate for abnormalities in oxygenation and ventilation and therefore it is a proxy for the effectiveness of gas exchange. This component of the PAT requires listening carefully for abnormal airway sounds and looking for signs of increased breathing effort. It is another "hands-off" evaluation method that does not require a stethoscope or pulse oximeter.

Techniques to Assess Work of Breathing

The second part of the PAT is assessing work of breathing. Begin by listening carefully from a distance for abnormal airway sounds. Next, look for key physical signs. Note if the child has abnormal positioning, especially the sniffing posture or tripod. Next, have the caregiver uncover the chest of the child for direct inspection or have the child undress on the caregiver's lap. Look for intercostals, supraclavicular, and substernal retractions, and note if there is head bobbing in infants. After examining for retractions,

inspect for nasal flaring. This stepwise process is critical for gathering accurate information. Once an infant or child begins to cry, assessment of work of breathing may be impossible.

Children may have increased work of breathing because of abnormalities anywhere in their airways, alveoli (air sacs), pleura (membrane surrounding the lungs and lining the walls of the pleural cavity), or chest wall. The type of abnormal airway sounds gives an important clue to the anatomic location of the illness or injury process, whereas the number and type of physical signs of increased work of breathing helps in determining the degree of physiologic stress.

Combining assessment of appearance and work of breathing can also help establish the severity of the child's illness or injury. A child with a normal appearance and increased work of breathing is in respiratory distress. An abnormal appearance and increased work of breathing suggests respiratory failure. An abnormal appearance and abnormally decreased work of breathing implies impending respiratory arrest.

Circulation to Skin

Characteristics of Circulation to Skin

The goal of rapid circulatory assessment is to determine the adequacy of cardiac output and core perfusion, or perfusion of vital organs. The child's appearance is one indicator of brain perfusion, but abnormal appearance may be caused by other conditions unrelated to circulation, such as brain injury or intoxication. For this reason, other signs of adequacy of perfusion must be added to the evaluation of appearance to assess the child's true circulatory status.

An important sign of core perfusion is circulation to skin. When cardiac output is inadequate, the body shuts down circulation to nonessential anatomic areas such as skin and mucous membranes in order to preserve blood supply to the most vital organs (brain, heart, and kidneys). Therefore, circulation to skin reflects the overall status of core circulation. Pallor, mottling, and cyanosis are key visual indicators of reduced circulation to skin and mucous membranes.

Techniques to Assess Circulation to Skin

The third part of the PAT is evaluating circulation to skin. Be sure the child is exposed long enough for visual inspection, but not long enough to become cold. A cold child may have normal core perfusion, but abnormal circulation to skin. Cold circulating air temperature is the most common reason for misinterpretation of skin signs, and a young infant if undressed may become hypothermic quickly, even at normal ambient temperatures.

Inspect the skin and mucous membranes for pallor, mottling, and cyanosis. Look at the face, chest, abdomen, and extremities, and then inspect the lips for cyanosis. In dark skinned children, circulation to skin is sometimes more difficult to assess, and the lips, mucous membranes, and nail beds may be the best places to look for pallor or cyanosis.

Using the PAT to Evaluate Severity

The PAT provides a general impression of the pediatric patient. The intent is to provide an instant picture of the child's physiologic status. By combining the three components of the PAT, the prehospital professional can recognize serious illness or injury and select the most important actions: how fast to intervene, what type of general and specific treatment to give, and how to triage and transport.

The PAT has two important advantages. First, it allows the examiner to quickly obtain critical information about the child's physiologic status before touching or agitating the child. This allows a triage prioritization in disaster or MCI situations. Second, the PAT helps set priorities for the rest of the hands-on initial assessment, when possible. The PAT takes only seconds, and it helps to identify the need for life-saving interventions, and blends into the next phases of triage or of hands-on physical assessment. The three components of PAT—appearance, work of breathing, and circulation to skin—can be assessed in any order, unlike the ordered ABCDEs of resuscitation.

Step 3: Perform lifesaving interventions

After quickly using the PAT to form a general impression, do a primary assessment and follow the ABCDEs as they apply to infants and children. Perform limited rapid lifesaving interventions (LSI) with the primary assessment:

- Open the airway through positioning or basic airway adjuncts (no advanced airway devices should be used)
- If the patient is a child, consider giving 2 rescue breaths
- Chest decompression
- Control major hemorrhage through the use of tourniquets or direct pressure
- Use auto injector antidotes

Note: LSI should only be performed within the responder's scope of practice and only if the equipment is immediately available.

Step 4: Prioritize treatment and/or transport by assigning patients to one of five categories:

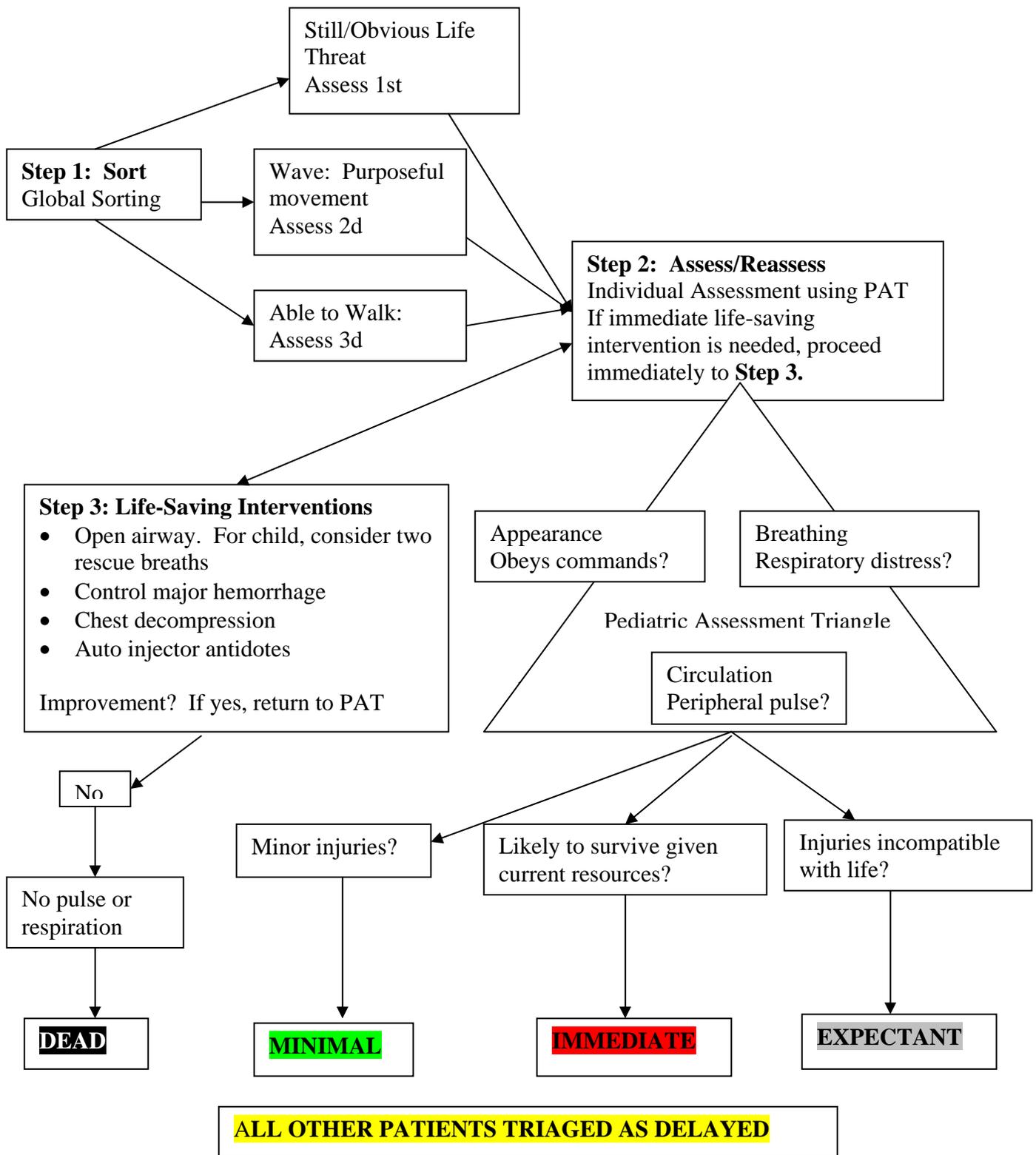
- **Minimal:** Patients with mild injuries that are self-limited and can tolerate a delay in care without increasing mortality risk. Designate as “minimal” with the color **green**.
- **Immediate:** Patients who do not obey commands, **or** do not have a peripheral pulse, **or** are in respiratory distress, **or** have uncontrolled major hemorrhage. Designate as “immediate” with the color **red**.

- **Expectant:** Patients who have injuries incompatible with life given the currently available resources. Designate as “expectant” with the color **gray**.
- **Dead:** Patients who are not breathing after life-saving interventions. Designate as “dead” with the color **black**.
- **Delayed:** Remaining patients who do not fit the above categories. Designate as “delayed” with the color **yellow**.

This prioritization process is dynamic and may be altered by changing patient conditions, resources, and scene safety. Continued reassessment of all patients is critical.

In general, treatment and/or transport should be provided for immediate patients first, then delayed, and then minimal. Expectant patients should be provided with treatment and/or transport when resources permit. Efficient use of transport assets may include mixing categories of patients and using alternate forms of transport. Some patients may only require treatment at the scene and not need transport.

SALT Triage Combined With Pediatric Assessment Triangle



JumpSTART Pediatric Triage System—An alternative to SALT and the PAT

JumpSTART Pediatric Multiple Casualty Incident Triage is an alternative 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 triage may increase triage time by 15-25 seconds. However, since the number of patients requiring a ventilatory trial would most likely be limited, the overall triage time should not be significantly affected.

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 to use **JumpSTART** if a victim appears to be a child; and to use **START** if a victim appears to be a young adult.

In children, because of mechanical reasons such as weak intercostals 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 **RED** for further treatment. If spontaneous breathing does not follow the initial ventilatory trial, the child is categorized as **BLACK** or non-salvageable.

JumpSTART uses the same color-coding as **START**: **RED** (Immediate); **YELLOW** (Delayed); **GREEN** (Minor/Ambulatory); **BLACK** (Deceased/non-salvageable).

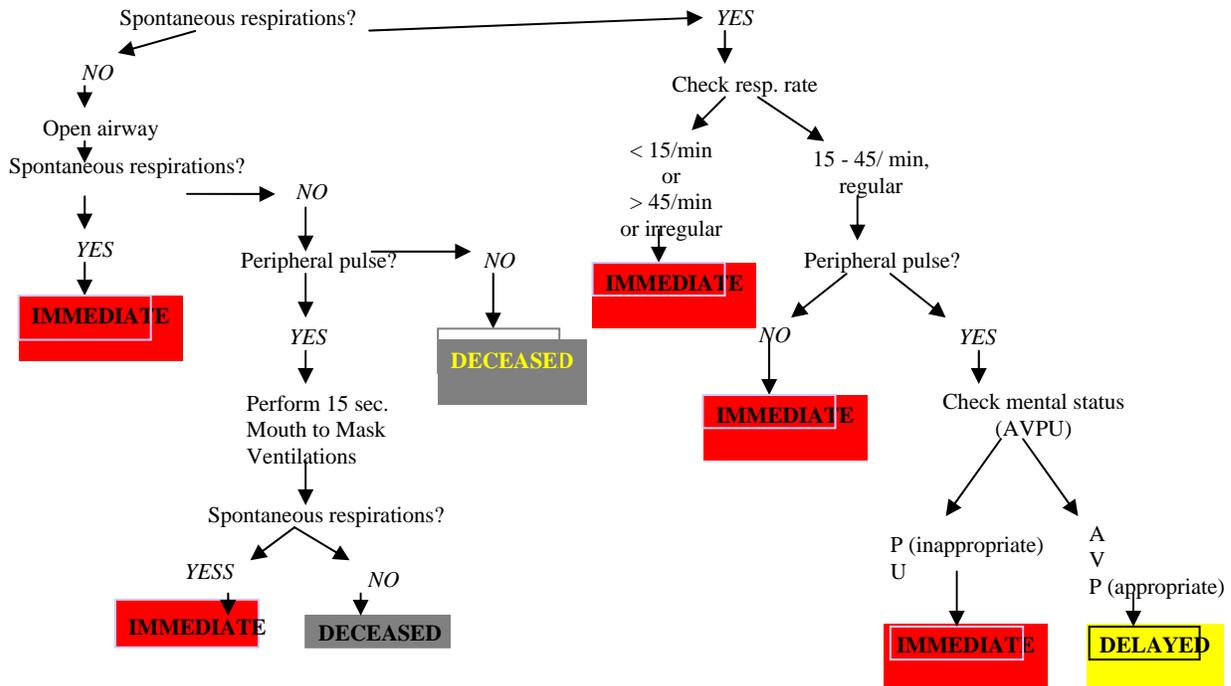
The JumpSTART Field Pediatric Multicasualty Triage System ©

(Patients aged 1- 8 years)

Identify and direct all ambulatory patients to designated Green area for secondary triage and treatment. Begin assessment of nonambulatory patients as you come to them. Proceed as below:

MINOR

| | |
|--------|----------------------|
| Black | = Deceased/expectant |
| Red | = Immediate |
| Yellow | = Delayed |
| Green | = Minor/Ambulatory |



© Lou Romig MD, FAAP, FACEP, 1995

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 (**GREEN**) injuries where they will undergo a secondary and more involved triage. Infants carried to this area or other nonambulatory 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 **BLACK** 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 **BLACK** and the triage officer moves on. If respirations resume, the patient is tagged **RED** and the triage officer moves on **without** providing any further ventilations.

• **Step 3:**

If the respiratory rate is 15-45/minute, proceed to check perfusion. If the respiratory rate is less than 15 (less than 1/every 4 seconds) or faster than 45/minute or irregular, tag as **RED** 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 **RED** and the triage officer moves on.

• **Step 5:**

At this point all patients have “adequate” ABCs. The triage officer performs a rapid APVU assessment of mental status. If the patient is; **A**lert, responds to **V**oice, or responds appropriately to **P**ain (withdraws from stimulus or pushes away), the patient is tagged **YELLOW** 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, a **RED** tag is applied and the triage officer moves on to the next patient.

NOTE: All patients tagged **BLACK**, unless clearly suffering from injuries incompatible with life, should be reassessed once critical interventions for **RED** and **YELLOW** 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 **RED** criteria, the child is tagged **RED**. 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 **YELLOW**. Non-

ambulatory children without any significant external injury, with all other aspects of the **JumpSTART** algorithm normal, are tagged **GREEN**.

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 go to www.jumpstarttriage.com.*

Triage Checklist

| Item | Yes | No | In Process |
|--|-----|----|------------|
| 1. Pediatric triage is incorporated into field triage assessment. | | | |
| 2. Training is provided for prehospital personnel in use of triage tool for pediatric patients. | | | |
| 3. There is a standard method of tagging pediatric patients to assist in reunification with parents during transport. | | | |
| 4. Pediatric triage is included in disaster drills/exercises. Pediatric triage is included in evaluation of disaster drills/exercises. | | | |

MEDICATIONS, EQUIPMENT, AND SUPPLIES

Introduction

Included here are medications that may be useful for field use for pediatric patients in disasters. Most are in the Paramedic Basic Scope of practice. Those included in the Paramedic (*) or EMT-II (**) Local Optional Scope of Practice, or in the Category II Paramedic Local Optional Scope of Practice (***) in individual Local EMS Agencies (LEMSA) are indicated by use of asterisks.

- Due to anatomical and physiological differences, pediatric dosages differ from adult dosages. Dosages may be estimated by use of a length-based tape, such as the Broselow-Luten Emergency Tape.
- Each LEMSA should provide education for prehospital providers in using these medications for pediatric patients in disasters.
- Because access to medications and supplies may be challenging in the aftermath of a disaster, a 72 hour stockpile of emergency medications is recommended.
- LEMSAs have a recommended equipment and supply list for pediatric patients; this is the same list for a disaster, but plans should be made to obtain additional supplies and equipment when needed.
- Disaster drills/exercises should include practice in estimation of dosages for pediatric patients.
- Note that the Poison Control Center number is 1-800-222-1222

List of Medications

| Drug | Common Form | Route of Administration | Comments/Notes |
|----------------------|-------------------------|-------------------------|---|
| Activated Charcoal** | 50 gm per 240 ml bottle | PO | For accidental ingestion or intentional poisoning. Consider limiting use to a child who is alert. |
| Adenosine | 3mg/ml 2ml vial | IV | SVT |

| Drug | Common Form | Route of Administration | Comments/Notes |
|---------------------------------|--|--------------------------------|--|
| Albuterol inhalation solution** | 2.5 mg/3ml 0.083% | nebulized | May be useful if disaster involves fumes, fires, inhalation injury, etc. |
| Amiodarone | 50mg/ml 3 ml vial | IV | Arrhythmia treatment |
| Atropine injection | 0.4 mg/ml 1 ml vial | IV | Code situations and nerve agent antidote |
| Calcium Chloride 10% | 10% 1gm/10 ml | IV | Code situations |
| Dextrose 10% in water | 50ml vial | IV | Hypoglycemia in neonate |
| Dextrose 25% in water | 50ml vial | IV | Hypoglycemia in infant or child |
| Dextrose 50% in water | 50ml vial | IV | Hypoglycemia in older child or adolescent |
| Diphenhydramine injection** | 25 mg/ml 1ml vial | IV | Allergic reaction treatment |
| Diazepam nerve agent antidote | 5mg/ml autoinjector | IM | Seizures |
| Diazepam | 5mg/ml 2ml/ampule/vial or carpject | IV | Seizures |
| Dopamine injection | 40 mg/ml 5ml vial | IV | Treatment for septic and cardiogenic shock |
| Epinephrine injection | 1:10,000 1:1,000 | IV, IM, endotracheal | For code situations |
| Glucagon** | 1mg vial | IV or IM | Use for when unable to obtain iv access in hypoglycemic patients |
| Lidocaine injection | 1% 20ml | Subcutaneous or IV | Local anesthesia |

| Drug | Common Form | Route of Administration | Comments/Notes |
|-----------------------|-----------------------------|-------------------------|--|
| Lorazepam* | 2 mg or 4 mg/ml 1 ml amp | IV or IM | Seizures |
| Magnesium sulfate*** | 1gm 2 ml vial | IV | Treat hypomag and hypokalemia |
| Mannitol injection*** | 50 ml vial | IV | For treating increased intracranial pressure |
| Methylprednisolone | 125 mg/2ml 25 per box | IV | Reactive airway diseases |
| Midazolam | 5mg/ml 1 ml vials | IV or IM | For sedation |
| Morphine | 1 mg/ml 5 ml vials | IV, IM, or PO | For pain |
| Naloxone | 1mg/ml 2 ml vials | IV or endotracheal | Narcotic overdose |
| Sodium bicarbonate | 44.6 meq/50ml 50ml vial | IV | Code situations, hyperkalemia |

* Included in Paramedic Local Optional Scope of Practice in some LEMSAs.

** Included in EMT-II Local Optional Scope of Practice in some LEMSAs.

*** Included in Paramedic Local Optional Scope of Practice, Category II in some LEMSAs.

Additional information regarding pediatric treatment for biological, chemical, and radiologic injuries can be found at:

<http://www.ncdp.mailman.columbia.edu/files/peds2.pdf>

Medications Checklist

| Item | Yes | No | In Process |
|---|-----|----|------------|
| 1. Adequate supplies and medications are readily available for pediatric patients in disasters. | | | |
| 2. Education/review is provided for prehospital providers in medications for use for pediatric patients in disasters. | | | |
| 3. A length-based tape is available for use in estimating weight of pediatric patients. | | | |
| 4. Plans have been made to obtain additional medications, supplies and equipment in a disaster. | | | |
| 5. The ability to access pediatric equipment, supplies, and medications is included in the post disaster/disaster drill evaluation. | | | |

DECONTAMINATION

Introduction

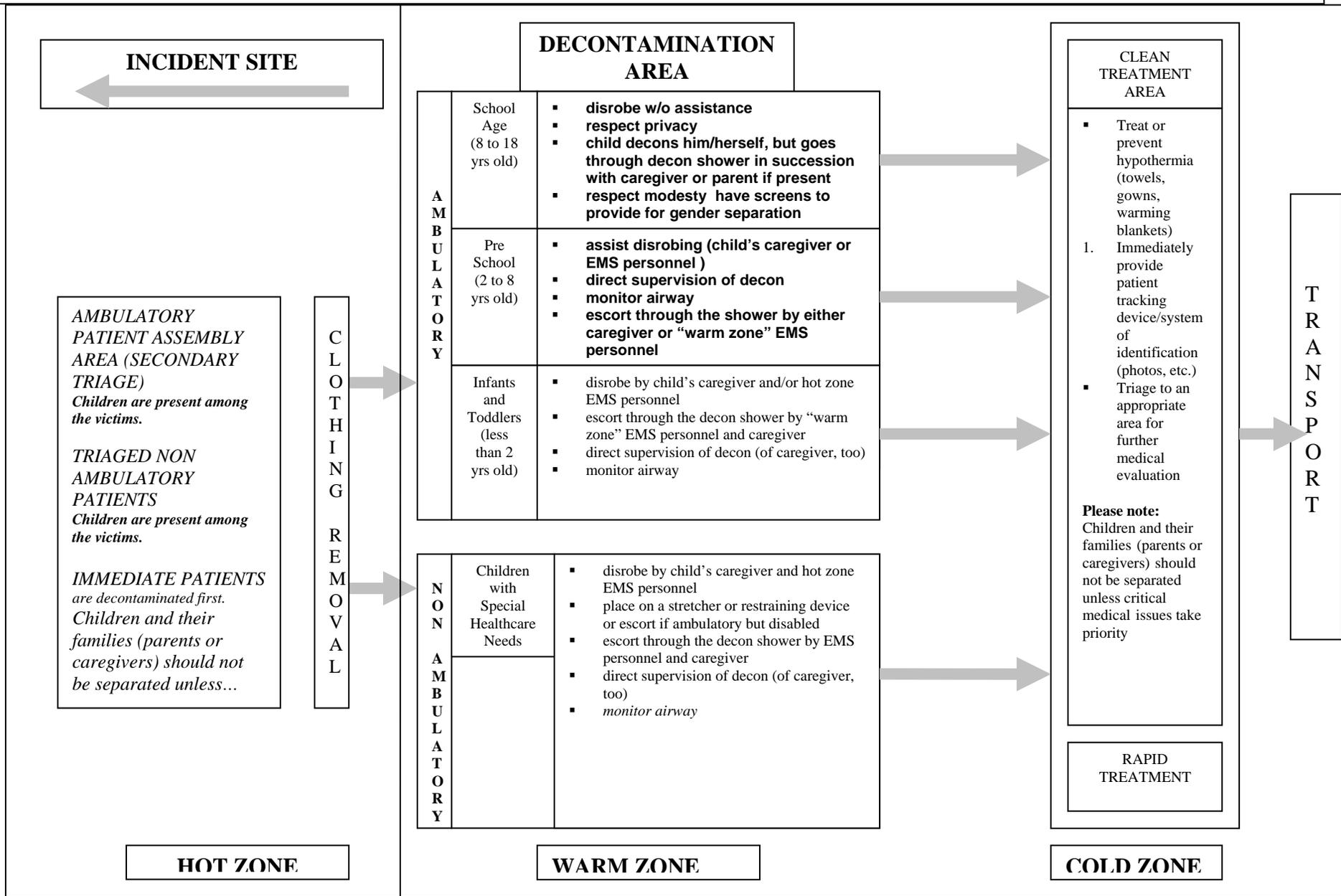
Infants and children have unique needs that require special considerations during the process of pre-hospital decontamination.

- Decontamination of young children must be done with high-volume, low-pressure, heated water systems (e.g. handheld hose sprayers) that are “child friendly” and should be incorporated into pre-hospital decontamination showers.
- Systems must be designed for decontamination of all ages and types of children.
- All protocols and guidance must address:
 - Water temperature and pressure
 - Nonambulatory child
 - Child with special health care needs
 - Clothing for after decontamination

Specific Considerations

- **Removal of clothing alone accounts for removal of most contaminants.**
- Attention to airway management is a priority throughout decontamination.
- Soap and water should be used to decontaminate skin, as bleach and other chemicals may be toxic to the sensitive skin of children.
- Separation of families during decontamination should be avoided, but medical and safety concerns take priority.
- If the water temperature is below 98°F, the risk of hypothermia increases in the smaller, younger child.
- Decontaminating children takes longer, due to the additional time required to assist them. Expect up to as much as fifteen minutes per child.
- Older children may resist decontamination out of fear, peer pressure, and modesty issues (even in front of their parents or caregivers).
- Parents or caregivers may not be able to decontaminate both themselves and their children at the same time (“hot zone” personnel should recognize the need to assist them).
- ***The smaller the child, the bigger the problem*** regarding any of these considerations such as hypothermia, airway management, separation of families, and ability to effectively decontaminate the child.
- Has developed a protocol as to how to decontaminate children with special needs (wheelchair-bound, ventilated, etc.).

**Field Decontamination and the Pediatric Patient
MODEL PROTOCOL ALGORITHM**



Decontamination Checklist

(Note: This table follows decontamination procedures for adults, dividing decontamination into the standard Hot, Warm, and Cold Zones. Shown here are the added considerations for infants and children during the decontamination process.)

| Item | Yes | No | In Process |
|---|-----|----|------------|
| HOT ZONE (Outer area where initial decontamination triage occurs) | | | |
| 1. A system exists for triage of children and families that includes waterproof identification tags or markers. | | | |
| 2. Signage, or means of making signage exists to identify areas and explain the process to parents and children. | | | |
| 3. Plans exist for parents to accompany children under 8 years of age during the decontamination process. | | | |
| WARM ZONE (Area where active decontamination occurs) | | | |
| 1. Supplies exist to aid in decontamination of children (soft brushes, soft cloths, mild soap, etc.). | | | |
| 2. Warmed water for decontamination is available. | | | |
| 3. High volume, low pressure spray is used. | | | |
| 4. Elevated waterproof surface is available for decontamination of infants (e.g., a gurney or other flat surface) | | | |
| 5. Additional attendant(s) are available to assist children. | | | |
| COLD ZONE (Post decontamination) | | | |
| 1. Supplies exist to prevent hypothermia, such as towels and warming blankets. | | | |
| 2. Diapers, gowns and hats for infants and children are available. | | | |
| 3. Designated waiting area exists for children unaccompanied by parents. | | | |
| 4. Staffing to assist children and assure reunification of children with their caregivers exists. | | | |

References

1. Dieckmann RA, Brownstein D, Gausche-Hill M: Prehospital Education for Prehospital Professionals. Second Edition 2006. American Academy of Pediatrics. Jones & Bartlett, Sudbury Mass.
2. Dieckmann RA, Brownstein D, Gausche-Hill M: *The Pediatric Assessment Triangle: A Novel Approach for the Rapid Evaluation of Children*. *Pediatr Emerg Care*, in press
3. U.S. Army Soldier and Biological Chemical Command (SUBCOM), Guidelines for Mass Casualty Decontamination During a Terrorist Chemical Agent Incident
4. Illinois Emergency Medical Services for Children (2005). Pediatric Disaster Preparedness Guidelines
5. CBPP Pediatric Task Force & NYC DOHMH Pediatric Disaster Advisory Group. Hospital Guidelines for Pediatrics in Disasters (2006) 1st Edition.
6. Sternberg, P. The Management of Pediatric Victims During Hazmat Decontamination: Practical Considerations for Communication (2005)
7. The Center for Biopreparedness at Children's Hospital Boston has developed an educational video titled "The decontamination of children." The video addresses best practices in decontaminating children. Information is available on the AHRQ Web site.
8. Kenar L, Karayilanoglu T. Prehospital management and medical intervention after a chemical attack. *Emerg Med J*. 2004 Jan; 21(1):84-8.
9. Okumura T, Kondo H, Nagayama H, Makino T, Yoshioka T, Yamamoto Y. Simple triage and rapid decontamination of mass casualties with colored clothes pegs (STARDOM-CCP) system against chemical releases. *Prehosp Disaster Med*. 2007 May-Jun;22(3):233-6.
10. Tokuda Y, Kikuchi M, Takahashi O, Stein GH. Prehospital management of sarin nerve gas terrorism in urban settings: 10 years of progress after the Tokyo subway sarin attack. *Resuscitation*. 2006 Feb; 68(2):193-202.

MENTAL HEALTH ISSUES

Introduction

Children will respond to trauma and disasters differently than adults, and there will be a large range in responses, depending upon the child's age, socio-cultural background, and personality. Some may have overt reactions in the acute phase, while others may not manifest symptoms for many weeks or months. It is helpful to know age-specific reactions, however, and to know what interventions may be beneficial.

Children 1-12 years of age

- All children may regress to earlier stages of development when fearful or in pain. In younger children, this may manifest as thumb-sucking, fear of strangers, or clinging to blankets or toys. Even older children may also refuse to leave their parents.
- Children of all ages may become disobedient, hyperactive, aggressive, or withdrawn.
- Children may complain of multiple body aches and pains, even when there is no apparent cause. Younger children are often unable to distinguish psychic pain from physical pain and may complain of a stomach ache when they are fearful or anxious. It is therefore important to carefully assess the seriousness of the complaint.

Interventions:

- Attempt at all times to avoid separation of children from other family members. This is by far the most important intervention.
- Allow children to express their fears if they are fearful. Be as honest as you can with them.
- The imagination of children 3-6 years old may run wild, so do not use terms such as "shot," "needle," "stick," etc.
- If a procedure or intervention will be painful, prepare the older child, and allow him/her participate in decisions. Inform younger children what you are going to do immediately beforehand, so there isn't time for their imagination to magnify it.
- Keep the media away from children, and keep children away from the media.
- Set gentle but firm limits on acting-out behavior.

Preadolescents and adolescents (12-17 years)

- Preadolescents and adolescents may develop vague physical complaints although this more often occurs weeks or months after the disaster,
- Adolescents may resist authority in a disaster, or they may become disruptive or exhibit inappropriate behaviors such as excessive helpfulness. It may be possible to channel this helpfulness into useful activities.

Interventions:

- Introduce yourself and call the patient by name.
- Be honest with patients this age about procedures. If a procedure will be painful, let them know, and encourage them to use whatever methods they have developed to cope with discomfort, such as counting, breathing deeply, etc.
- Listen to the patient, allowing some discussion about the patient's experiences, but do not force him/her to talk about feelings. Listen to the patient without judgment.
- Patients may be allowed to assist when appropriate. Tasks such as carrying blankets or water may encourage a feeling of self-worth.
- Respect modesty in this age group. The patient may be embarrassed about revealing his/her body and examination may be difficult. Use blankets or clothes to maintain modesty.

Psychological First Aid

Psychological First Aid (www.samhsa.gov) is an evidence-based approach to help victims cope in the aftermath of a disaster. The primary objective of Psychological First Aid is to create and sustain an environment of 1) safety, 2) calm, 3) connectedness to others, 4) self-efficacy or empowerment, and 5) hope. Depending on the situation, some of these suggestions may be useful. In major disasters, a direct, honest approach is always best.

1. Make contact and engage the patient– *“My name is _____. I am a paramedic (EMT). I want to help you and your family. May I ask your name?”*
2. Safety and comfort – *“Is your family here with you? Do you have any questions about what we’re doing to keep help you here? Is there something we can do right now to make you more comfortable?”*
3. Stabilization (if needed) – *“You may need some help coping with this situation. It’s a difficult time, but if there’s something that we can do to help, we’ll try to do it.”*

4. Information gathering – *“It will help for us to have some information. Do you have pain? Do you have family members here?”*
5. Practical Assistance – *“I can see you’re worried about _____. Maybe we can figure out how to deal with that.”*
6. Connection with Social Support – *“There’s a lot happening here, but keep letting people know how they can help you.”*
7. Information on Coping – *“It’s normal for you to feel scared after bad things happen. We’ll try to find people to help you. When things calm down a little, there will be more people to help”*

There may be mental health practitioners available to help at the scene of a disaster (such as American Red Cross Mental Health workers), and they should be identified when available. Parents can be given referrals to centers for their children as needed.

Additionally, prehospital personnel should have hotline numbers readily available:

- National Suicide Prevention Lifeline 1-800-273-TALK
- Substance Abuse and Mental Health Services Administration (SAMHSA) Helpline 1-800-662-HELP
- Workplace Helpline 1-800-WORKPLACE www.workplace.samhsa.gov/helpline

Finally, prehospital personnel should consider using the SAMHSA Mental Health Services Locator (www.mentalhealth.samhsa.gov/databases) for information related to mental health services and resources and to locate trained mental health providers. This should be done in advance of need.

Mental Health Checklist

| Objective | Yes | No | In Process |
|---|-----|----|------------|
| Identify pediatric local mental health practitioners with pediatric experience and/or training, and establish a relationship with them. | | | |
| Provide training for prehospital personnel in coping with psychological issues of children by developmental level. | | | |
| Identify resources, hotlines, etc. and make them readily available. | | | |
| Provide training to pre-hospital staff in Psychological First Aid. | | | |

SPECIAL NEEDS CHILDREN CONSIDERATIONS

Introduction

Children with special health care needs (CSHCN) are those with chronic physical, developmental, behavioral, or emotional conditions. Such conditions may include those with physical problems, such as those who are immunosuppressed because of an underlying malignancy, diabetes mellitus, or end-stage renal disease on hemodialysis. Other pediatric special needs populations include children with mental retardation – cerebral palsy (MRCP) who may be wheelchair-bound, have indwelling tracheostomy tubes and enteral feeding tubes, ventilator-dependent children, as well as those with autism, learning disabilities, cognitive disabilities, and limitations in vision or hearing.

Formulation of an emergency care plan has been advocated by the Emergency Medical Services for Children (EMSC) program through its Children with Special Needs Task Force. Essential components of a program for providing care plans include the following:^{1,2}

1. A method for identifying at-risk children
2. Education of families and other caregivers
3. Use of a standardized Emergency Information Form for children with special needs (completion of a data set by the child's caregivers and/or physicians) – records of each child's special needs should be maintained in an accessible and usable format. This standard form is easily accessed through the American Academy of Pediatrics and is available in both Spanish and English: <http://www.aap.org/advocacy/emergprep.htm>. Vital information to be gathered on such a form includes:
 - Demographics – name of child, nickname, birth date, home address and phone, parent/guardian, emergency contacts, and primary language.
 - Physician Contact information – primary physician's name and contact information, as well as specialty physicians' names and contact information.
 - Anticipated primary ED, pharmacy, and tertiary care center.
 - A list of diagnoses, past procedures, and physical exam, including baseline physical findings, vital signs, and baseline neurologic status.
 - Medications and allergies, including dose and route of administration.
 - Significant baseline ancillary findings (labs, x-ray, EKG).
 - Medications, foods, and procedures to be avoided.
 - Immunization status, including dates of last immunization.
 - Common presenting problems with management strategies.

Some more common issues with CSHCN are listed below with interventions.

Behavioral, Emotional, Developmental CSHCN

| Special Need | Assessment | Intervention |
|---|---|--|
| Autism | Hard to determine how much child is absorbing from environment. Disaster may be extremely disorienting. | Keep family together. Allow child to have familiar objects to remind him/her of routine. |
| Cognitive Impairment | May not understand events or own reactions to events. | May be helpful to use simple words and draw pictures to aid in understanding. |
| Learning Disabilities | May understand only concrete terms. Interpret words literally. | Simple maps, use of basic concrete terms regarding space and time. |
| Visual, hearing | Visual: Children cannot see what is happening, making it more frightening for them. Hearing: May be frustrated by rapid talking, many people talking at once. | Visual: Describe what is happening in simple terms. Hearing: Speak slowly, looking directly at child, use visual materials. |
| Physical impairments | May not be able to move quickly, may need assistance in activities of daily living. | Keep family together, and encourage family members or friends to assist. |
| Severe emotional disturbance and behavior disorders | High risk for severe stress reactions. May have limited coping skills and be overwhelmed, exhibiting exaggerated symptoms—withdrawal, agitation, aggressiveness, etc. | Keep families together, try to move them to a quieter, more isolated place. Decrease stimulation as much as possible. |

Some physical/medical issues requiring technical assistance are listed below.

| Device | Assessment | Intervention |
|---------------------|--|---|
| Respiratory | | |
| Tracheostomy Tube | Obstruction | <ul style="list-style-type: none"> • Make sure tracheostomy tube is placed correctly • Ventilate through stoma with patient's mouth closed, or through mouth and nose, covering stoma (opening) • Attempt to suction • Use high concentration oxygen • Transport |
| Tracheostomy Tube | Dislodgement | <ul style="list-style-type: none"> • Provide assisted ventilation with high concentration oxygen through stoma • Replace tracheostomy tube |
| Home Ventilator | Respiratory distress Ventilator malfunction | <ul style="list-style-type: none"> • Check with parents regarding function of ventilator • Assess flow through tracheostomy tube • Remove patient from malfunctioning ventilator and provide assisted ventilation |
| Circulatory | | |
| Pacemaker | Failure Incorrect functioning | <ul style="list-style-type: none"> • Assess heart rate and perfusion • Treat as shock if perfusion is inadequate • Transport as urgent |
| Central IV Catheter | Dislodged, damaged Bleeding, Obstructed Fever | <ul style="list-style-type: none"> • Control bleeding with direct pressure • Clamp or tie catheter to prevent further blood loss • Assess for hemothorax • Treat for shock • Transport |
| Central IV catheter | Signs of infection at entry site | <ul style="list-style-type: none"> • This can be life-threatening. • Treat as potentially serious • Transport |

| Gastrointestinal | | |
|--|--|---|
| Gastrostomy , Jejunostomy, Tube Gastrostomy button | Bleeding Leaking Broken Dislodged | <ul style="list-style-type: none"> • Control bleeding with direct pressure • Place clean covering, • Absorbent dressing if there is leakage—can be very irritating • Check for shock if bleeding, treat shock • Transport promptly |
| Oral or nasal feeding catheter | Dislodged | <ul style="list-style-type: none"> • Remove catheter • This is not usually life-threatening, but requires prompt medical attention |

Children with Special Needs Checklist

| Preparedness Item | Yes | No | In process |
|---|-----|----|------------|
| 1. Resource needs for uninjured, unaccompanied special needs children during a disaster should be identified in conjunction with local hospitals and area schools. | | | |
| 2. Has appropriate training in handling the child with special needs (e.g., the importance of maintaining familiarity for autistic children, how to explain events to children with learning disabilities, how to manage children with visual, hearing, or physical limitations, and those with emotional disorders). | | | |
| 3. Has established a point-of-contact (telephone number) with the pediatric tertiary care center in your region. | | | |
| 4. Conducts disaster drills, in which mock victims with special needs are included in the scenario. | | | |
| 5. Has developed a protocol as to how to evacuate children with special needs (wheelchair-bound, ventilated, etc.) from buildings. Recommend that LEMSA develop guidelines for facilities and homes with special needs children to have an evacuation plan. | | | |

References and other Resources:

1. Committee on Pediatric Emergency Medicine. Emergency Preparedness for Children with Special Health Care Needs. Pediatrics 1999;104;53-DOI:10.1542/peds.104.4e53
2. ACEP Policy Statement: Emergency Information Form for Children with Special Health Care Needs

Other resources:

1. American Red Cross at www.redcross.org designed a booklet for anyone who has a disability or who works with, lives with, or assists a person with a disability. The booklet has information on possible disaster effects, assessing personal needs and abilities, and suggestions about forming a personal support group.
2. Children with Special Health Care Needs: An EMS Challenge (CD-ROM) www.ems-c.org. This CD-ROM introduces health care providers to general respiratory, cardiovascular, and neuromuscular challenges of children with special health care needs. It reviews the normal differences between adult and pediatric anatomy and physiology, as well as case scenarios. The appendix contains helpful printable files on 13 different medical conditions that the provider may encounter.

3. Florida Institute for Family Involvement at http://www.fifionline.org/disaster_planning.htm has the following disaster links on their website:
 - Disaster Preparedness for Families with Special Needs
 - Disaster Information Form for Children with Special Needs
4. National Association of School Psychologists (NASP) at http://www.nasponline.org/NEAT/specpop_general.html provides information and resources on helping children with disabilities and special needs cope with a crisis.
5. National Organization on Disability at www.nod.org/emergency provides information, regarding planning, preparedness and specialized emergency equipment for individuals with disabilities.

DISASTER DRILLS AND EXERCISES

Introduction

Education and training of prehospital personnel in coping with pediatric patients in disasters is essential. California has 9,620,511 children under 18 years of age, comprising 26% of the state population. Thus, children will be well represented in any major disaster. The needs of children and their response to disasters may be very different from that of adults.

There are several ways to train personnel, including interactive presentations, lectures, table-top drills, and full-scale drills and exercises. Training should include pediatric patients, and involve pediatric triage, treatment and transport. Field decisions regarding pediatric patients are always somewhat more difficult due to differences in cognitive function and size.

We include one scenario here that can be included in a drill or exercise, and there are more scenarios available at the EMSA website: www.emsa.gov .

Disaster Scenario

This scenario can be used as part of a larger drill, or as a stand-alone drill. Note that:

1. The scenario can be adapted for any size of EMS and hospital configuration, using more or fewer victims.
2. Special consideration should be given to assessing local resources, and considering regional resources when needed.
3. With parental permission, volunteers can serve as simulated patients, and mannequins can also be used when volunteers are not available.
4. Pediatric patients can either be moulaged, or given a label describing their condition.

Scenario #1: School Explosion

At 9:30 a.m., a call to 911 is received. There has been an explosion in a local school. The cause of the explosion is unknown. The school has 200 students, elementary and middle school level. Law enforcement has been dispatched, and is on scene. As you arrive on scene, another explosion occurs. The school is being evacuated by school officials and law enforcement, and it is obvious that there are multiple casualties, including teachers, assistants and children. Both children and adults are exiting from the building coughing, eyes tearing, and collapsing onto the ground.

The school Principal tells Law Enforcement that the school has had problems with seepage of methane gas in the past, and although they thought the problem was eliminated, this is a possible source of the explosion. She tells you, however, that the explosion occurred near the science room, and there were some potentially dangerous chemicals such as formaldehyde in a closet in the room. Neighbors and parents who can hear the sirens are showing up at the school and trying to find their loved ones.

There are three hospitals available within the area. Hospital A is a level III trauma center 20 miles away from the disaster; Hospital B has an Emergency Department with 24 hour service 4 miles away, and Hospital C is a small, rural hospital with a stand-by Emergency Department 2 miles away. Hospital B has a pediatric ward and an adult ICU. Hospital C has no pediatric ward or ICU. All hospitals have been recently surveyed, and all have been confirmed as EDAPs.

Scenario #1: School Explosion EMS Response

EMS Response to this disaster should consider the following (this list is not necessarily complete, or in the appropriate order)

1. *Safety of the scene.*
1. *Control of scene.*
2. *Incident command concerns.*
3. *Identification of possible chemical agents.*
4. *Additional personnel needed for this response.*
5. *Triage of patients*
6. *Identification of patients.*
7. *Decontamination necessary/possible on scene.*
8. *Transport of pediatric patients to local/regional facilities, including destination plan.*
9. *Available resources, locally and regionally.*
10. *Family reunification.*

Scenario #1: School Explosion - Casualty List

| VICTIM | RESPIRATORY RATE | PERFUSION | MENTAL STATUS | OTHER |
|-----------|------------------|---------------------|--|---|
| 8 y.o. F | RR 32 | Palpable pulse | Alert, crying hysterically | Multiple small lacerations with embedded wood and glass entire dorsal area of body, head to toe |
| 9 y.o. 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 |
| 9 y.o. F | RR 8 | Pulse absent | Unresponsive | Impaled onto shelving brackets on wall |
| 6 y.o. M | RR 36 | Pulse present | Won't speak but makes eye contact with touch | Bleeding from ears, bruise on neck |
| 7 y.o. F | RR 0 | Weak radial pulse | Unresponsive | Trapped under rubble; apneic after 5 rescue breaths |
| 12 y.o. M | RR 34 | Rapid pulse | Keeps asking same questions | Tearing, runny nose, complains of headache |
| 10 y.o. F | RR 52 | Thready pulse | Confused | Coughing, brisk bleeding from facial and hand lacerations |
| 11 y.o. M | RR 40 | Pulse present | Disoriented to place and time | Scalp lacerations, bleeding from multiple small wounds on upper |

| | | | | |
|-----------|-------|----------------------|---|---|
| | | | | extremities, coughing. |
| 9 y.o. M | RR 10 | Weak rapid pulse | Unresponsive | Glass cuts to leg, heavy bleeding |
| 12 y.o. M | RR 44 | Pulse weak, left arm | Hysterical, crying | Partial amputation, right forearm |
| 6 y.o. M | RR 40 | Pulse present | Responds to pain | Open femur fracture, lacerations to hands and face |
| 7 y.o. F | RR 32 | Pulse present | Crying but oriented x 3 | Open fracture lower leg; contusions to arms and chest |
| 8 y.o. M | RR 36 | Bounding pulse | Alert but won't speak | Burns to neck and torso, lacerations to arms |
| Adult F | R 28 | Capillary refill <2 | Crying for help, able to recall events | Leg caught under lab desk and chairs - open fracture |
| 9 y.o. M | RR 30 | Rapid, thready pulse | Confused | Large contusion on forehead, diaphoretic |
| 12 y.o. F | RR 0 | Absent pulse | Unresponsive | Trapped under rubble |
| 11 y.o. M | RR 32 | Rapid pulse | Alert and anxious | Coughing, vomiting, blackened hairs in nostrils |
| 6 y.o. F | RR28 | Rapid pulse | Alert | Crying, no obvious injuries |
| 10 y.o. F | RR 44 | Radial pulse weak | Responds to verbal stimuli, disoriented | Large bruise forming on abdomen, contusions on legs |

Drills and Exercises Checklist

| Item | Yes | No | In Process |
|---|-----|----|------------|
| 1. Prehospital personnel have had training in triage of pediatric patients during a disaster. | | | |
| 2. Children have been included in disaster drills or exercises at least once a year. | | | |
| 3. Planning of disaster drills and exercises includes pediatric expertise such as pediatricians, pediatric nurse practitioners, pediatric intensivists, etc. | | | |
| 4. Drills or exercises have included the need to access resources for pediatric patients if local area is overwhelmed. | | | |
| 5. Drills or exercises include children with special health care needs (CSHCN) | | | |
| 6. Planning for drills includes representatives from community organizations concerned with children in disasters such as the American Red Cross and mental health associations, schools, day care facilities, etc. | | | |
| 7. Drills or exercises include a variety of disasters, such as biological, chemical, radiological terrorism as well as natural disasters. | | | |
| 8. Drills or exercises include careful evaluation of activities and actions, including reviewers with pediatric expertise. | | | |

Resources

1. Agency for Healthcare Research and Quality's Bioterrorism and Public Health Emergency Response Tools. <http://www.ahrq.gov/research/hospdrills/hospdrill.htm>
2. (Has forms for evaluation of hospital disaster drills that can be easily adapted for EMS.
3. American Academy of Pediatrics, Children –Children and Disasters. <http://www.aap.org/terrorism/index.html>

4. American College of Preventive Medicine.
<http://www.acpm.org/education/EHCMEOpportunities.htm>
5. American Red Cross (Children and Disasters).
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ACRONYMS

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|----------------|---|
| AAP | American Academy of Pediatrics |
| CDC | Centers for Disease Control and Prevention |
| CDPH | California Department of Public Health |
| CSHCN | children with special health care needs |
| DMAT(s) | Disaster Medical Assistance Team(s) |
| EMS | emergency medical services |
| EMSA | California Emergency Medical Services Authority |
| EMSC | Emergency Medical Services for Children |
| FDA | Food and Drug Administration |
| FEMA | Federal Emergency Management Agency |
| FIC | Family Information Center |
| HICS | Hospital Incident Command System |
| HRSA | Health Resources Services Administration |
| ICS | Incident Command System |
| KI | potassium iodide |
| LEMSA | Local Emergency Medical Services Agency |
| MCHB | Maternal and Child Health Bureau |
| NIMS | National Incident Management System |
| OA | Operational Area |
| NIH | National Institutes of Health |
| NDMS | National Disaster Medical System |
| NPS | National Pharmaceutical Stockpile |
| RFA | Request for Assistance |
| SAMHSA | Substance Abuse and Mental Health Services Administration |
| SEMS | Standardized Emergency Management System |
| SNS | Strategic National Stockpile |
| SORT | |
| START | Simple Treatment and Rapid Triage |
| WMD | Weapons of mass destruction |