

*Trauma Funding Workgroup  
Marriot Legends, Prattville, AL  
April 21-22, 2008*

*Day 1*

*In Attendance:*

<i>Dr. Donald Williamson</i>	<i>State Health Officer</i>	<i>Alabama Department of Public Health</i>
<i>Dr. John Campbell</i>	<i>EMS Medical Dir.</i>	<i>Alabama Department of Public Health</i>
<i>Beth Anderson</i>	<i>Administrator</i>	<i>USA Medical Center</i>
<i>Allen Foster</i>	<i>Administrator</i>	<i>Mizell Memorial Hospital</i>
<i>Bryan E. Kindred</i>	<i>CEO</i>	<i>DCH Regional Medical Center</i>
<i>Gary Gore</i>	<i>CEO</i>	<i>Marshall Health System</i>
<i>Rony Najjar, M.D.</i>		<i>Huntsville Hospital</i>
<i>John Mark Vermillion, M.D.</i>		<i>Baptist Medical Center South</i>
<i>Loring Rue, III, M.D.</i>		<i>University of Alabama Birmingham</i>
<i>Alzo Preyear, O.D.</i>		<i>Various Hospitals in Southeast Region</i>
<i>Chief Billy Pappas</i>		<i>Mobile Fire-Rescue Department</i>
<i>David Garmon</i>	<i>Region 6 Director</i>	<i>USA</i>
<i>E. Alan Pace</i>	<i>Region 2 Director</i>	<i>EAEMS</i>
<i>Kathy Gillison-Parker</i>	<i>Region 2</i>	<i>EAEMS</i>
<i>Spencer Howard</i>	<i>Region 1 Director</i>	<i>ALEMS</i>
<i>Alex Franklin</i>	<i>Region 1 Director</i>	<i>ALEMS</i>
<i>Denise Louthain</i>	<i>Region 5 Director</i>	<i>SEAEMS</i>
<i>Joe Acker</i>	<i>Region 3 Director</i>	<i>BREMSS</i>
<i>Dennis Blair</i>	<i>Director OEMST</i>	<i>Alabama Department of Public Health</i>
<i>Robin Moore</i>	<i>OEMST</i>	<i>Alabama Department of Public Health</i>
<i>Elwin Crawford, M.D.</i>	<i>OEMST</i>	<i>Alabama Department of Public Health</i>
<i>Danne Howard</i>		<i>ALAHA</i>
<i>Mike Daughtry</i>	<i>OEMST</i>	<i>Alabama Department of Public Health</i>
<i>Verla Thomas</i>	<i>OEMST</i>	<i>Alabama Department of Public Health</i>
<i>Choona Lang</i>	<i>OEMST</i>	<i>Alabama Department of Public Health</i>
<i>Thomas Francavilla, M.D.</i>		<i>Neurosurgical Soc of Al</i>
<i>Brian Hale</i>	<i>Legal</i>	<i>Alabama Department of Public Health</i>
<i>Dr. Andy Rucks</i>	<i>Facilitator</i>	<i>University of Alabama</i>

*Dr. Rucks opened the meeting with a brief review of how other states distribute trauma system funding.*

*Dr. Williamson charged the workgroup to:*

- 1. Focus on where the dollars need to go to maintain the trauma system*
- 2. Try to base hospital funding on level of care provided and number of patients treated.*

*Dr Rucks led a discussion to identify the components of the Trauma System:*

*1. Ancillary activities*

*A. System administration (ADPH)*

- 1. Office of EMS & Trauma*
- 2. Trauma region staff*

*B. Alabama Trauma Communications Center*

- 1. Building and equipment*
- 2. Personnel*

*2. Pre-hospital EMS*

*A. Non-transport first responders (Fire Department, Volunteer Fire or Rescue)*

*B. Transporting EMS*

- 1. Ground*
  - a. Urban*
  - b. Rural*
- 2. Air (Helicopter)*

*3. In-hospital care*

*A. Trauma- designated hospital (level I, II, III)*

*B. Facilities, staff, and equipment*

*C. Physicians (on-call, recruiting additional staff)*

*4. Post-hospital care (rehabilitation)*

*Definitions of a Trauma Patient:*

- ◆ A pre-hospital patient meeting trauma system patient criteria (see Patient Care Protocol 8.5) routed by the trauma system to a trauma-designated ready hospital*
- ◆ An in-hospital patient meeting trauma system criteria (see Criteria for Entering a Hospital Patient into Trauma System) transferred by the trauma system from a non-trauma-designated hospital to a trauma-designated ready hospital*
- ◆ An in-hospital patient meeting trauma system criteria (see Criteria for Entering a Hospital Patient into Trauma System) entered into the trauma system by a trauma-designated hospital*

*Dr. Rucks then led a discussion of general concepts of funding allocation.*

*The workgroup agreed that distribution of funds should follow these general guidelines*

- 1. **Ancillary Services:** will have fixed costs of about \$2 million per year that will be allocated at the discretion of the State Health Officer.*
- 2. **Prehospital Trauma Care:** would receive 5% of funds remaining after ancillary services costs. These funds would be used by the EMS & Trauma regions to provide scholarships for primary EMT training, continuing education, and trauma-related equipment*
- 3. **In-hospital Care:** would receive 95% of funds remaining after ancillary services costs. This would be divided equally between hospital needs (facilities, staff, and equipment) and physician needs. A formula for distribution of hospital funds would need to be developed based on four factors:
  - A. Level of care provided*
  - B. Volume of patients treated*
  - C. Acuity of the patients treated*
  - D. Availability of the hospital (green vs. red)*A formula for distribution of physician funds will need to be developed based on current physician reimbursement data for care of trauma patients.*
- 4. **Post-hospital Care:** there would be no funding allocated for this initially but it would be revisited in the future.*

*Discussion ensued about getting good data about trauma patients. It was agreed that the trauma registry (to be expanded from the current head & spinal registry) would be a critical part of this.*

*It was suggested that the hospital distribution formulas should be reviewed every 90 days and that distribution of hospital funds should occur 90 days in arrears. There was discussion about considering some compensation for non-trauma hospitals when trauma patients are directed to them by the trauma system (patients with airway problems or unstable patients requiring local stabilization before transfer). It was suggested that hospital availability and diversion patterns be monitored and a standard established in order for a hospital to remain in the trauma system. It was also suggested that data be collected about the number of out-of-state trauma patient treated by Alabama hospitals. The question of whether out-of-state trauma centers that treat Alabama trauma patients should receive Alabama trauma funds was discussed but no suggestions made. This question will be revisited in the future.*

*In attendance:*

<i>Dr. Donald Williamson</i>	<i>State Health Office</i>	<i>ADPH</i>
<i>Dr. John Campbell</i>	<i>EMS Medical Dir.</i>	<i>ADPH</i>
<i>Beth Anderson</i>	<i>Administrator</i>	<i>USA Medical Center</i>
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<i>Alex Franklin</i>		<i>Region 1 ALEMS</i>
<i>Denise Louthain</i>	<i>Director</i>	<i>Region 5 SEAEMS</i>
<i>Joe Acker</i>	<i>Director</i>	<i>Region 3 BREMSS</i>
<i>Dennis Blair</i>	<i>Director-OEMST</i>	<i>ADPH</i>
<i>Robin Moore</i>	<i>OEMST</i>	<i>ADPH</i>
<i>Edwin Crawford, M.D.</i>	<i>OEMST</i>	<i>ADPH</i>
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<i>Verla Thomas</i>	<i>OEMST</i>	<i>ADPH</i>
<i>Choona Lang</i>	<i>OEMST</i>	<i>ADPH</i>
<i>Brian Hale</i>	<i>Legal</i>	<i>ADPH</i>
<i>Dr. Andy Rucks</i>	<i>Facilitator</i>	<i>University of AL</i>
<i>Glenn Davis</i>	<i>Director</i>	<i>Region 4 UACCHS</i>

*Not in attendance:*

*John Mark Vermillion, M.D. Baptist Medical Center South*

*Day 2 continued with Dr. Rucks reviewing discussion from the day one funding workgroup discussion. (presented power point)*

*See attached report from Dr. Andy Rucks.*

*Trauma Funding Workgroup Adjourned 9:30a.m.*

*The Statewide Trauma Advisory Council meeting convened at 10:00a.m.*

*Minutes from January 9 and February 25, 2008 TAC meetings were read and approved.*

*Dr. Campbell began the meeting with a brief update on the workgroup updates. He discussed the helicopter operations guidelines (See attached Guidelines for Early Activation of Helicopter Emergency Medical Services 7.9, Guidelines for Helicopter Transport of Trauma System Patient 7.10)*

*Members of the council stated some concerns of helicopters and ground communication.*

- 1. Helicopters appear to frequently be used inappropriately and seem to operate outside of the medical control system*
- 2. Helicopters sometime increase transport time from scene to hospital rather than decreasing the time to care*
- 3. There is frequently poor or no communication between air & ground units and between the helicopter and the receiving hospital*
- 4. Services operating in Alabama, but owned by out-of-state interests, may not be using Alabama licensed personnel and following Alabama protocols*

*The helicopter protocols will require that the helicopters operate as part of the trauma system. If they consistently ignore the system, the paramedics may have their licenses suspended and the helicopter services may lose their fluid & drug licenses.*

*Motion to approve helicopter protocol: Dr. Rue*

*Second: Chief Pappas*

*All was in favor.*

*Dr. Campbell discussed the criteria for the hospitals (both trauma-designated hospitals and non-trauma hospitals) to enter patients into the trauma system. This will include:*

- 1. Patients meeting system criteria but arrived by private vehicles*
- 2. Patients meeting system criteria but under-triaged by EMS*
- 3. Patients meeting system criteria but EMS forgot to enter into the system*

*(See attached draft of Criteria for Hospitals to Enter Patients into the Trauma System)*

*Dr. Williamson gave a brief review of the Trauma Funding Expenditures (See attached).*

*Dr. Campbell pointed out that we have been unable to move forward in the East and Southeast regions because no rules have been established for Regional Trauma Advisory Councils. The law states that the first ten members have to be appointed in the same manner as the Statewide Advisory Council. Since the Regional Advisory Councils need to have representation from all hospitals in the regions, rules will have to be made to allow this. Dr. Campbell suggested that an emergency rule be presented to the State Committee of Public Health so we can move forward with the system.*

- A. *State Appointment Criteria:*  
4 Physicians by MASA  
4 Hospital administrators by ALHA  
1 pre hospital provider by Dr. Williamson  
1 State EMS Medical Director  
Dr. Williamson

- B. *Suggested Regional Criteria for 20 members*  
First ten appointed as above members  
Second ten appointed by TAC

*Suggestions:*

- 8 doctors  
3 Surgeons or trauma surgeons  
2 emergency physicians  
1 neurosurgeon  
1 orthopedic surgeon  
1 plastic surgeon

8 Administrators

- Breakdown of region (metro, rural, levels of trauma centers, nonparticipating)  
Could have two nonparticipating hospitals (one rural, one urban)  
6 trauma hospitals (3 rural, 3 urban)  
2 or 3 pre hospital providers (2 grounds & 1 air)  
1 Regional Medical director  
Dr. Williamson or his designee

*Any member of the Statewide Trauma Advisory Council that lives in a developing region should serve on the Regional Trauma Council as a liaison.*

*Danne Howard of the Hospital Association suggested asking for volunteers for the second ten (or more) and choosing from those. Also, in choosing the additional members, she noted that while we should seek people that are advocates of the trauma system, it is important to have some representation from those who are not system advocates, in order to understand their point of view and also to prevent misinformation.*

*Dr. Najjar suggested delaying selection process a month so we could better identify potential members, so that we did not leave out anyone that may be interested. Dr. Williamson suggested having 10 members appointed as specified by the law and TAC members add as many others as necessary.*

*He tasked Ms. Lang and Dr. Campbell with drafting an emergency rule to accomplish these things.*

*Pediatric Workgroup*

*Only two doctors have been identified to be a part of this workgroup:*

*Dr. Steven Baldwin*

*Dr. Ann Klasner*

*Danne Howard of the Hospital Association suggested asking MASA & ALHA to make suggestions for other members of the Pediatric workgroup.*

*Trauma Funding Workgroup*

*Since there is still work to do on the hospital funding formula and physician reimbursement, Dr. Williamson tasked Dr. Campbell with forming another funding workgroup to address these tasks and report back to the TAC.*

*The next Trauma Advisory Council meeting is scheduled for June 17, 2008 (teleconference)*

*Meeting Adjourned*

<b>GUIDELINES FOR EARLY ACTIVATION OF HELICOPTER EMERGENCY MEDICAL SERVICES</b>	<b>7.9</b>
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**PURPOSE:** Helicopter EMS services (HEMS) offer speed of transport and ALS personnel experienced in managing critical patients. These guidelines are to assist EMS responders in determining when early activation of HEMS would likely be in the critical patient's best interest. Early Activation means initiation of a helicopter response prior to arrival of the EMS responders to the scene. Early Activation may be based on pre-arrival information regarding the incident or a suspicion by EMS that specialty care may be needed. Early Activation is initiated at the request of the first responding EMS providers or in conjunction with Dispatch and the EMS service. It is recognized that pre-arrival information may be misleading and the activated HEMS may be cancelled. The HEMS service that can respond to the scene in the shortest time should be called. If a HEMS service cannot answer a call and a second service is requested, the requesting agency must notify the second service that the call has already been refused and why.

Situations in which Early Activation of HEMS may be needed includes, but are not limited to:

1. Report of severe collision involving one or more vehicles
2. Multiple victim incidents with severe illness or injuries
3. Report of person being ejected from a vehicle
4. Pedestrian vs. vehicle with reported injuries
5. MVC with reported death and other injured persons
6. Report of severe burns
7. An unbroken fall of twenty feet or more onto a hard surface
8. Penetrating injury to head, neck, torso, or groin
9. Report of injury with paralysis
10. Sickness with new onset focal weakness or paralysis (suspected stroke)
11. Severe chest pain thought to be of cardiac etiology
12. Near drowning
13. Report of amputation proximal to wrist or ankle
14. Report of serious injury in a patient whose location would be difficult to access by ground ambulance but is more accessible by helicopter
15. Severe shortness of breath or airway problems
16. There is no available ground ambulance to respond
17. Report of patient with symptoms of shock
18. Report of patient with history of trauma and altered mental status
19. Discretion of Medical Direction or responding EMS personnel

HEMS are most appropriately used when their use would **SIGNIFICANTLY** reduce the time required to get the patient to the appropriate hospital or when potentially lifesaving prehospital interventions may be needed that that cannot be provided by the responding EMS service. The Regional Aero medical Plan must be followed when approved. Quality Improvement monitoring is important and is best done in partnership with the responding helicopter service.



**GUIDELINES FOR HELICOPTER TRANSPORT  
OF TRAUMA SYSTEM PATIENTS****7.10****Purpose**

Helicopter EMS services (HEMS) offer speed of transport and ALS personnel experienced in managing critical patients. The purpose of this Air Evacuation Protocol is to provide EMS personnel who are on scene, with guidelines for utilizing HEMS for transporting trauma system patients.

**Process**

Several factors must be considered before summoning HEMS for a trauma scene response. Stable patients who are accessible by ground vehicles and are within a reasonable distance from the designated trauma center are best transported by ground vehicles. Often, patients can be transported by ground ambulance and delivered to the appropriate trauma center before a helicopter can reach the scene. You must follow your Regional Aero medical Plan when approved. If a question exists as to whether HEMS transport would be appropriate, Medical Direction should be consulted before summoning a helicopter for a scene response.

HEMS are best used to transport critical trauma patients such as those entered into the trauma system because of physiologic or anatomic criteria. Those patients entered into the trauma system because of mechanism of injury or EMT discretion criteria are often more appropriately transported by ground ambulance.

**The primary determinant should be to get the patient to the most appropriate facility in the shortest amount of time.**

Emergency Medical Services personnel should request HEMS when transportation by air will SIGNIFICANTLY reduce actual transport time to the receiving facility and/or the patient needs potentially lifesaving prehospital interventions that cannot be provided by the responding EMS service. The following are some criteria when HEMS transport should be considered.

1. Transport time to the designated trauma center by ground ambulance is significantly greater than the response time and transport to the designated Trauma Center by air.
2. Ambulance access to the scene or away from the scene is significantly impeded by road conditions and/or traffic.
3. Prolonged patient extrication when a Level I facility is needed. Understand that some extricated patients are not injured and/or have sustained minor injuries and may not need HEMS.
4. Multi-system blunt or penetrating trauma with unstable vital signs.
5. Severe burns that require transport to a burn center (See Protocol 4.7).
6. Patients with severe respiratory distress or airway problems.
7. Multiple patient incidents that exceed ground ambulance service resources.
8. No ambulance available to transport the patient and/or no ALS service (if needed) within 30 minutes.
9. Discretion of Medical Direction or the on-scene EMS personnel.

When use of HEMS is not specifically defined by the protocol, the on-scene EMS personnel can establish communication with Medical Direction for advice.

Once the decision is made to use HEMS for a trauma patient, the service that can respond to the scene in the shortest time should be called. Because helicopters must go through a preflight protocol before lift-off, the shortest response time should be obtained by calling the HEMS first and then calling the TCC to decide on the proper destination hospital. When a decision is made on a destination hospital, the helicopter service should be immediately notified so they may develop their flight plan. If Early Activation was utilized, the responding HEMS service should be notified of the patient destination as soon as possible. If a HEMS service is unable to answer a call and a second service is requested, the requesting agency must notify the second service that the call has already been refused and why.

An EMS service should not wait on the scene or unduly delay transport waiting for HEMS to arrive. If the patient is packaged and ready for transport, the EMS service should reassign the landing zone to a mutually agreeable site that is closer to the hospital, and should initiate transport. The helicopter may intercept an ambulance at an agreed upon alternate landing site.

### **Cancellation**

When EMS personnel arrive on scene, they should assess the situation. If HEMS has already been called and it is the professional judgment of the HIGHEST LEVEL LICENSED EMS PERSONNEL ON THE SCENE that the helicopter will not provide a significant benefit, it should be cancelled as soon as possible. A HEMS request by a BLS agency may be cancelled by the responding ALS agency only after an appropriate patient assessment has been conducted. A HEMS request by an ALS agency may be cancelled only by the agency making the initial request. If HEMS cancels a flight, they must inform the requesting agency ASAP.

If HEMS arrives on scene and determines that the patient does not meet criteria for helicopter transport or that patient, weather, or aircraft issues preclude use of the helicopter for transport, they may request ground transport of that patient. The request for ground transport does not preclude the HEMS crew from boarding the ground ambulance and continuing to provide advanced care as would be provided in flight. In situations where the HEMS crew determines that the patient does not have a medical need for HEMS transport, the transfer of this patient to a ground ambulance shall not constitute abandonment as defined by EMS regulations.

### **Quality Assurance/Improvement**

As with all EMS responses in which HEMS is utilized, there should be QA/QI done in partnership with the responding helicopter service. Follow the Regional Aero medical Plan when approved.

**THIS IS A GUIDELINE AND IS NOT ALL INCLUSIVE. EMS PERSONNEL SHOULD USE GOOD CLINICAL JUDGEMENT AT ALL TIMES. IF THERE ARE ANY QUESTIONS, OLMD SHOULD BE CONSULTED.**

**SPECIFIC INFORMATION NEEDED:**

- A. Environmental Hazards - Smoke, toxic chemicals or fumes, potential for explosion, electrical sources, etc.
- B. Type of exposure - Any information concerning products involved should be collected at the scene if possible. Note if patient was in a closed space and if inhalation of smoke or fumes occurred.
- C. Duration of exposure. Associated trauma or blast injury.
- D. History of loss of consciousness.
- E. Past medical history - especially cardiac or pulmonary disorders.

**PHYSICAL ASSESSMENT:**

- A. Airway - inhalation exposure can cause airway compromise. Note presence of stridor, facial swelling, carbonaceous sputum, singed nasal hair or drooling.
- B. Breathing - smoke or chemical exposure can cause bronchospasm. Note presence of wheezing. Carbon monoxide and cyanide poisonings usually cause dyspnea. Pulse oximeter gives false high reading in presence of carbon monoxide poisoning or cyanide poisoning.
- C. Circulation - large burns will cause severe fluid loss. Note tachycardia, signs of volume depletion and hypotension.
- D. Neurological - carbon monoxide and cyanide poisoning will cause cerebral anoxia. Check for headache, confusion or decreased level of consciousness.
- E. Skin- Identify severity of burns (superficial- erythema only; partial thickness- blistered areas; full thickness - scarred or leathery areas) and extent of burns (refer to the rule of nines).
- F. Associated trauma - Burns associated with explosion have great potential for other injuries. All unconscious patients have potential for cervical spine injury. Perform rapid trauma survey.

**TREATMENT:**

- A. Take scene safety precautions
- B. Airway - maintain patency, consider intubation
- C. Breathing - Oxygen 12-15 L/M with non-rebreather mask – do not rely on pulse oximeter, as it is unreliable in the setting of carbon monoxide exposure or cyanide exposure.
- D. If known cyanide exposure or smoke inhalation victim who shows clinical evidence of closed-space smoke exposure (soot in mouth or nose, sooty sputum) and is either comatose, in shock, or in cardiac arrest, consider Cyanokit (hydroxycobalamin 5 grams) I.V. over 15 minutes (Cat. A). **Not for Peds.**
- E. If patient is wheezing, consider Albuterol (CAT B)  
Adults (CAT B): 2.5mg (nebulized, rothaler, MDI w/spacer)  
**Pediatrics (CAT B): 2.5mg (nebulized, rothaler, MDI w/spacer)**

## TREATMENT (continued)

## F. Circulation-

- IV, large bore, normal saline, in unaffected area at 250 cc/hr for burns over 20%, with at least partial thickness involvement, and the hospital arrival time will be in excess of 20 minutes

**Pediatric patients: give NS 20cc/kg over 30 minutes, then reassess.**

- IV, large bore, normal saline, in unaffected area at KVO rate for:
  - a. All electrical burns.
  - b. Significant chemical exposures.
  - c. All inhalation exposures.
  - d. Any patient with loss of consciousness.
  - e. Any patient with potential for other associated trauma.

G. Cardiac monitor (essential if electrical exposure) -12 lead if available.

H. Brush off dry chemicals if present on skin before flushing with large amounts of water.

I. Liquid chemicals should be flushed with copious amounts of normal saline.

J. Eyes may be irrigated with normal saline.

K. Cover affected areas with a dry burn sheet..

L. If patient has severe pain, consider Morphine Sulfate:

Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.

Adult (CAT B): If pain is not relieved after 10 mg you must call OLMD for further doses.

**Pediatrics (CAT B): 0.1 mg/kg not to exceed 5 mg.**

**INDICATIONS TO ENTER PATIENT INTO THE TRAUMA SYSTEM AND TRANSPORT DIRECTLY TO A READY BURN CENTER IF WITHIN REGIONAL TRANSPORT TIME CRITERIA**

A. Partial or full thickness burns >10% of the total body surface area

B. Partial or full thickness burns of the face, hands, feet, genitalia, perineum, or major joints

C. High voltage (1,000 volts or greater) electrical burns, including lightning injury

D. Chemical burns with obvious partial or full thickness skin damage. Also any patient requiring decontamination in an industrial, agricultural, or law enforcement setting (Decontamination should be performed prior to transport)

E. Inhalation injury from a thermal or chemical exposure in an enclosed area

F. If in doubt, consult Medical Direction or the Trauma Communications Center

**SPECIFIC PRECAUTIONS:**

- A. Scene hazards - electrical wires, chemical fumes, carbon monoxide or fire. Do not attempt rescue in hazardous environment unless trained in this area.
- B. Airway involvement - Always consider the possibility of airway compromise. Airway swelling can occur rapidly. Be prepared to support patient or secure the airway via endotracheal intubation if necessary.
- C. Unconsciousness - always consider the possibility of occult head or cervical spine injury. Suspect the possibility of carbon monoxide or cyanide exposure. Pulse oximeter is unreliable if carbon monoxide or cyanide is present. If unconscious from smoke inhalation give 100% oxygen and consider use of Cyanokit.
- D. Do not induce hypothermia by applying cold or moist dressing to burned areas as the body may lose excessive heat through burned skin. Maintaining a good core body temperature is essential
- E. Consider the possibility of abuse when certain burns are encountered. These include cigarette burns, iron burns, grill burns, and any burns in the elderly or children where the described mechanism of injury appears to be unlikely.
- F. Cardiac involvement - consider the potential for myocardial injury, ischemia and arrhythmia in any patient with electrical or inhalation injury.
- G. Avoid initiating IVs in burned areas except in extreme circumstances.
- H. Transport - Do not delay the transport of the seriously burned patient to administer volume boluses of fluid. Fluid loss occurs over the course of hours. Initiate fluids en route if burns are extensive, or the potential for airway compromise exists.

**RULE OF NINES**

When it is necessary to estimate the percentage of Total Body Surface (TBS) burns, such as making the decision to transport directly to a burn center, the rule of nines is useful. In children, relatively more area is taken up by the head and less by the lower extremities. Accordingly, the rule of nines is modified.

<b>ADULT Body Part</b>	<b>Percentage of Total Body Surface (TBS)</b>
Arm (shoulder to fingertips)	9 %
Head and neck	9 %
Leg (groin to toes)	18 %
Anterior trunk	18 %
Posterior trunk	18 %
Perineum	1 %

**RULE OF NINES** (continued)

**In children, relatively more area is taken up by the head and less by the lower extremities. Accordingly, the rule of nines is modified.**

<b>Child Body Part</b>	<b>Percentage of Total Body Surface (TBS)</b>
<b>Arm (shoulder to fingertips)</b>	<b>9 %</b>
<b>Head and neck</b>	<b>18 %</b>
<b>Leg (groin to toes)</b>	<b>14 %</b>
<b>Anterior trunk</b>	<b>18 %</b>
<b>Posterior trunk &amp; Buttocks</b>	<b>18 %</b>

<b>Infant Body Part</b>	<b>Percentage of Total Body Surface (TBS)</b>
<b>Arm (shoulder to fingertips)</b>	<b>9 %</b>
<b>Head and neck</b>	<b>14 %</b>
<b>Leg (groin to toes)</b>	<b>16 %</b>
<b>Anterior trunk</b>	<b>18 %</b>
<b>Posterior trunk</b>	<b>18 %</b>

**SPECIAL NOTE:**

An accurate description of the burn, including location and severity, should be provided to the receiving facility. The rule of nines is not intended to replace such a description.

## CRITERIA FOR HOSPITALS TO ENTER PATIENTS INTO THE TRAUMA SYSTEM.

One of the problems with the current trauma system is that there is no way for hospitals to add patients to the system. Obviously there are patients who arrive at hospitals by private vehicle and they should be added if they meet the criteria for a trauma system patient. There are other patients who are transported by EMS but who have been "under triaged" or the service simply forgot to enter them into the system. If the subsequent evaluation by the physicians in the emergency department or during observation, find that the patient is injured enough to qualify as a trauma system patient, the patient should be entered into the system. ADPH legal staff advises that there is no reason rules cannot be made to accomplish these tasks. It would be to everyone's advantage to do this. Probably all patients who are entered into the system by this route should be reviewed by QA/QI to try to correct any system errors that contributed.

The following are possible criteria for in-hospital medical personnel to enter a patient who has been involved in a trauma incident into the Alabama Trauma System.

### **Physiological criteria present on arrival or develop during evaluation and observation:**

1. A systolic BP < 90 mm/Hg in an adult **or < 80 mm/Hg in a child five or younger.**
2. Respiratory distress - rate < 10 or >29 in adults, **or < 20 or > 40 in a child one year or younger.**
3. Head trauma with Glasgow Coma Scale score of 13 or less.

### **Anatomical Criteria:**

1. The patient has a flail chest.
2. The patient has two or more obvious proximal long bone fractures (humerus, femur).
3. The patient has a penetrating injury of the head, neck, torso, or groin, associated with an energy transfer.
4. The patient has in the same body area a combination of trauma and burns (partial and full thickness) of fifteen percent or greater.
5. The patient has an amputation proximal to the wrist or ankle.
6. The patient has one or more limbs which are paralyzed.
7. The patient has a pelvic fracture, as evidenced by a positive "pelvic movement" exam.
8. Significant internal injuries found during hospital evaluation.

**Mechanism of the patient injury:** While this could be used as criteria for entering the patient into the trauma system, it probably should not be used as criteria for transferring a patient to a level I trauma center. It could be argued that in the hospital setting, a stable patient with no anatomic criteria should not be transferred until an evaluation has been done and an actual injury found. However, it could also be argued that some small hospitals lack the resources and expertise to properly evaluate a patient for internal injuries and so the patient should be transferred to at least a Level III hospital for evaluation.

1. A patient with the same method of restraint and in the same seating area as a dead victim.
2. Ejection of the patient from an enclosed vehicle.
3. Motorcycle/bicycle/ATV crash with the patient being thrown at least ten feet from the motorcycle/bicycle.

4. Auto versus pedestrian with significant impact with the patient thrown, or run over by a vehicle.
5. An unbroken fall of twenty feet or more onto a hard surface.



**PURPOSE:**

The following are criteria for entering a patient who has been involved in a trauma incident into the Alabama Trauma System.

**Physiological criteria:**

4. A systolic BP < 90 mm/Hg in an adult **or < 80 mm/Hg in a child five or younger.**
5. Respiratory distress - rate < 10 or >29 in adults, **or < 20 or > 40 in a child one year or younger.**
6. Head trauma with Glasgow Coma Scale score of 13 or less.

**Anatomical Criteria:**

9. The patient has a flail chest.
10. The patient has two or more obvious proximal long bone fractures (humerus, femur).
11. The patient has a penetrating injury of the head, neck, torso, or groin, associated with an energy transfer.
12. The patient has in the same body area a combination of trauma and burns (partial and full thickness) of fifteen percent or greater.
13. The patient has an amputation proximal to the wrist or ankle.
14. The patient has one or more limbs which are paralyzed.
15. The patient has a pelvic fracture, as evidenced by a positive “pelvic movement” exam.

**Mechanism of the patient injury:**

6. A patient with the same method of restraint and in the same seating area as a dead victim.
7. Ejection of the patient from an enclosed vehicle.
8. Motorcycle/bicycle/ATV crash with the patient being thrown at least ten feet from the motorcycle/bicycle.
9. Auto versus pedestrian with significant impact with the patient thrown, or run over by a vehicle.
10. An unbroken fall of twenty feet or more onto a hard surface.

**EMT Discretion:**

1. If, the EMT is convinced the patient could have a severe injury which is not yet obvious, the patient should be entered into the trauma system.
2. The EMTs suspicion of severity of trauma/injury may be raised by the following factors:
  - a. Age > 55
  - b. **Age < five**
  - c. Environment (hot/cold)
  - d. Patient's previous medical history
    - i. Insulin dependent diabetes
    - ii. Cardiac condition
    - iii. Immunodeficiency disorder
    - iv. Bleeding disorder
    - v. COPD/Emphysema
  - e. Pregnancy

- f. Extrication time > 20 minutes with heavy tools utilized
- g. Motorcycle crash
- h. Head trauma with history of more than momentary loss of consciousness.

**ENTERING A PATIENT INTO THE TRAUMA SYSTEM:****1. Regions that are not yet operating under the Alabama Trauma System**

Patients should be transported to a hospital with a trauma response program if such is available in the region, per the region's Medical Control and Accountability Plan.

**2. Regions that are currently operating under the Alabama Trauma System should call the Trauma Communications Center (TCC) to determine patient destination:**

TCC contact numbers:

Toll-Free Emergency: 1-800-359-0123, or  
Southern LINC EMS Fleet 55: Talk group 10/Private 55\*380, or  
Nextel: 154\*132431\*4

After assessing a trauma situation and making the determination the patient should be entered into the Trauma System, the EMT licensed at the highest level should contact the Trauma Communications Center (TCC) at the earliest time which is practical, and provide the following:

1. Identify yourself and your agency by name, unit number and county. If on-line medical direction is necessary, the receiving trauma center becomes medical direction. TCC will help coordinate on-line medical direction with a physician immediately.
2. Give your geographic location.
3. Give age and sex of patient (patient name is not necessary).
4. Assign patient number if more than one patient.
5. Give criteria for entry into Trauma System.
6. Give vital signs: Blood Pressure, Pulse rate, Respiratory rate, GCS
7. TCC Communicator will offer available trauma centers based on information given above.
8. Give unit number of transporting unit, mode of transport, and time of transport from the scene.
9. You will be given a unique identification number that must be entered into the chart when you generate your e-PCR. The Office of EMS and Trauma will use this to identify the charts for quality improvement studies.

## Administrative

### **TRAUMA SYSTEM PROTOCOL** (continued)

**8.5**

Notify the TCC of any change in the patient's condition. The receiving trauma center (or TCC, who can relay to trauma center) should be updated by the transporting unit 5-10 minutes out. This update need only consist of any patient changes and patient's current condition. A repeat of information used to enter the patient into the Trauma System is not necessary since this information will be relayed by the TCC to the receiving trauma center. After the patient is delivered to the trauma center, the transporting provider should call the TCC with the Patient Care Report times.

NOTE: If you are considering helicopter transport of the trauma patient, you should follow Protocol 7.10: Guidelines for Helicopter Transport of Trauma Patients

## **Proceedings of the Alabama Trauma Funding Workgroup**

**April 21 and 22, 2008**

The purpose of the workgroup was to develop a methodology for the distribution of state funds that will be sought from the State Legislature to support and operate the State-Wide Trauma System. This document reports the consensus opinions of the members of the Trauma Funding Workgroup, Alabama Department of Public Health professionals, and the representative of the Birmingham Regional Emergency Medical Services System (BREMSS).

### Mission Focus

The focus of the workgroup was to allocate funding to support Alabama State-Wide Trauma System. The use of the funding will serve two purposes: (1) support existing trauma centers and (2) encouraging hospitals to join the Trauma System. Funding for and the use of funds for uncompensated care were expressly excluded from the discussions. The mission focus of the workgroup was exclusively the Alabama State-Wide Trauma System.

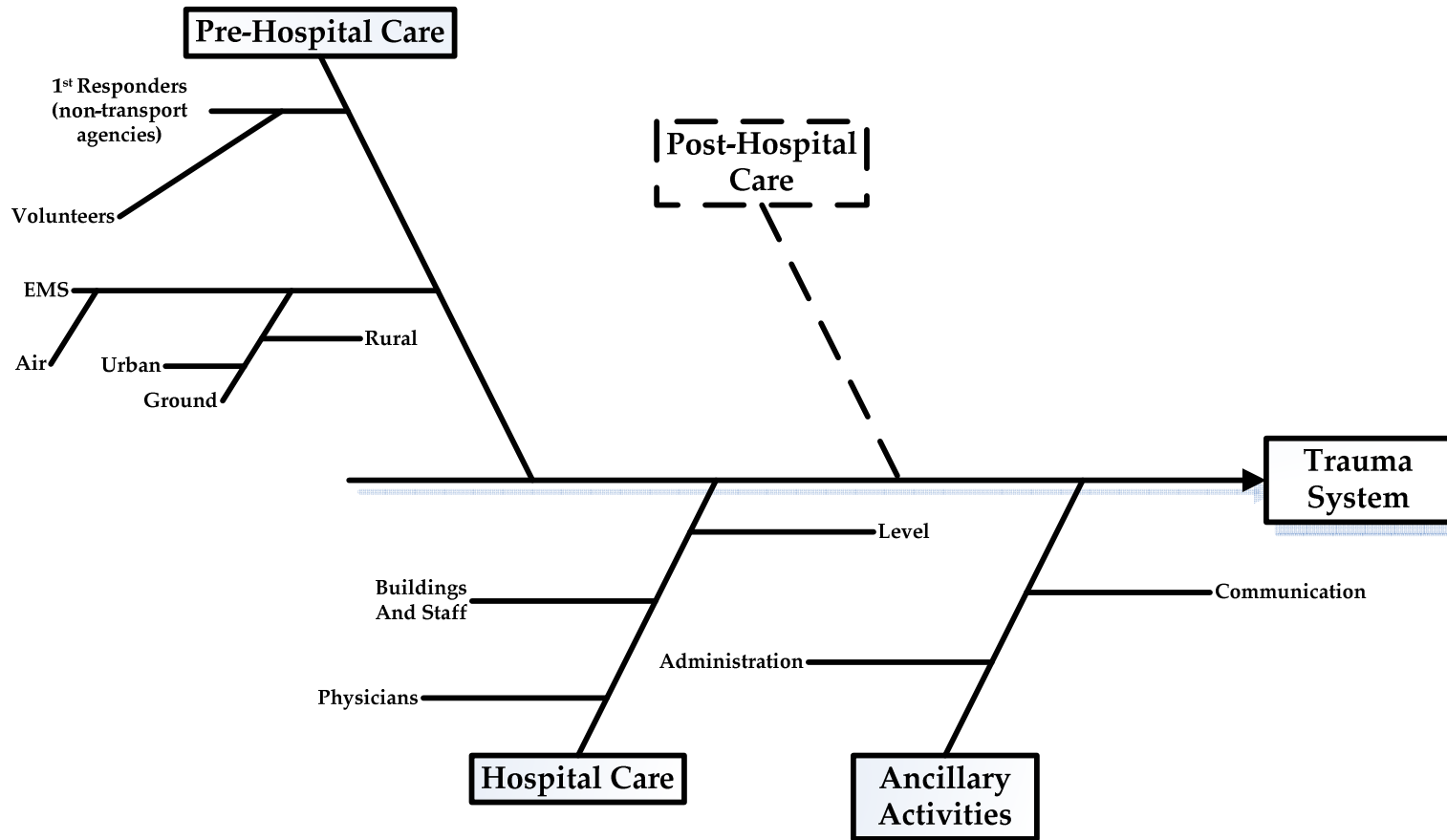
### Structure of the Alabama State-Wide Trauma System

The structure of the Alabama State-Wide Trauma System is shown in the following system diagram. The diagram depicts the component elements of the Trauma System. At its highest level, the Trauma System consists of four major subsystems: (1) Pre-Hospital Care, (2) Hospital Care, (3) Post-Hospital Care, and (4) Ancillary Activities. The workgroup concluded that the Post-Hospital Care subsystem will be considered part for funding and funds distribution at some time in the future (it is included in the diagram for completeness and is attached by a dashed-line to signify its distinction from the other major subsystems).

The Pre-Hospital Care Subsystem consists of two major components: (1) First Responders who are non-transport agencies) including volunteers and (2) Emergency Medical Services (EMS). The EMS component is further subdivided into Air Transport and Ground Transport which is further subdivided into Urban Ground Transport and Rural Ground Transport.

The Hospital Care subsystem consists of three components: (1) trauma-ready designated hospital Level (I, II, or III), (2) Buildings and Staff, and 3) Physicians.

The Ancillary Activities subsystem consists of two components: (1) Communication (equipment and trained personnel) and (2) Administration.



System Diagram of the Alabama State-Wide Trauma System

Trauma Patient Defined

The workgroup defined a Trauma Patient as:

1. A Trauma System patient routed by the Trauma System to a trauma designated-ready hospital, or
2. a Trauma System patient transferred by the Trauma System from a non-trauma designated hospital to a trauma designated-ready hospital, or
3. A patient entered into the Trauma System by a “hospital”\*.

Fund Allocation and Distribution

The following table defines the concepts of fund allocation and distribution the State-Wide Trauma System.

Allocation and Distribution Concept	Trauma System Subsystem		
	Ancillary Activities	Pre-Hospital Care	Hospital Care
Funding Level*	\$2M	5%	95%
Uses of Funds	<ul style="list-style-type: none"> <li>• Communication System</li> <li>• Administration</li> </ul>	<ul style="list-style-type: none"> <li>• Primary Training</li> <li>• Continuing Education</li> <li>• Trauma Related Equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Physician Coverage for Providing Trauma Services at Level I, II, and III</li> <li>• Hospital Services</li> </ul>
Method of Distribution	Discretion of State Health Officer	To be determined by the <i>EMS Distribution Formula</i> and the at the discretion of the State Health Officer and the Office of EMS and Trauma	Physician Coverage—a subcommittee of the Alabama Trauma Advisory Council will define a distribution (reimbursement) formula based on Medicare physician and hospital reimbursement data  Hospital Services— <i>Hospital Distribution Formula</i>

\*100% is defined as total funds available minus the amount directed to Ancillary Activities.

\* Hospital placed within quotation marks to indicate that the precise definition of the term for the purpose of defining a trauma patient is pending action of the Trauma System Advisory Council.

### Hospital Distribution Formula

The Hospital Distribution Formula consists of two parts: (1) Level and Availability and (2) Volume and Acuity. It is anticipated that each of the parts will represent a pool of funds to be distributed.

#### Level and Availability Formula

$$D_L = (f(\text{Level})) \times AM$$

Where:  $D_L$  is the distribution based on Level and Availability,  $Level$  is the trauma-ready hospital designation I, II, or III, and  $AM$  is the availability multiplier defined as hours available divided by total hours per period  
 $0 < AM \leq 1.0$

#### Volume and Acuity Formula

$$D_v = f(\text{volume}, \text{acuity})$$

Where:  $D_v$  is the distribution based on volume and acuity,  $volume$  is the number of Trauma Patients treated during a period, and  $acuity$  is the severity of the trauma injury

#### Special Considerations for the Hospital Distribution Formula

1. The hospital distribution formulas will be reviewed every 90 days.
2. Hospital distributions will be made 90 days in arrears.
3. For Trauma System Patients directed by the Trauma System to a non-Trauma System hospital, consideration should be given to compensate the receiving hospital. During the period of time in which hospitals in Alabama are being educated about trauma funding, this consideration should be discussed.
4. Three issues concerning the Availability Modifier: (1) during the initial period of operating under the Hospital Distribution Formula, all availability exceptions will be reviewed, (2) during the period prior to the establishment of a “trauma fund”, availability patterns should be studied, and (3) a threshold minimum availability fraction should be established for hospitals to continue in the State-Wide Trauma System.

Out-of-State Trauma Patients

The Workgroup concluded that data should be collected and analyzed concerning out-of-state Trauma Patients being treated in Alabama. This issue is not only of interest to trauma centers near the state boundaries, but also the Level I centers that receive out-of-state trauma patients seeking rare and specialized treatments.

Compiled By

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