

## **Statewide Trauma and Health Systems Training**

**Satellite Conference and Live Webcast  
Monday, June 27, 2013  
10:00 – 12:00 p.m. Central Time**

**Produced by the Alabama Department of Public Health  
Video Communications and Distance Learning Division**

## **A System Saving Lives: Survivor or Statistic?**

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## **Incidence of Trauma**

- **In 2015, Alabama ranked 13th in the U.S. in deaths resulting from traumatic injury (U.S. Injury Death Rate, Full Ranking, [www.livescience.com](http://www.livescience.com))**

## **Incidence of Trauma**

- **Trauma injuries account for 41 million ED visits and 2.3 million hospitalizations across the U.S.**
    - **Trauma injuries account for 30% of all life years lost in the U.S.**
    - **Cancer accounts for 16%, and heart disease accounts for 12%**
- (CDC, National Center for Injury Prevention and Control, 2013)**

## **Alabama Trauma**

- **In Alabama, 900 people were killed in motor vehicle crashes in 2013 (National Center for Injury Prevention and Control, 2013)**

### **Alabama Trauma**

- In 2013, motor vehicle crash deaths resulted in 44 billion dollars in medical costs and work loss in the U.S.
  - In Alabama, motor vehicle deaths resulted in 8 million dollars in medical costs and 1.19 billion in work loss, resulting in 1.2 billion total cost of crash related deaths in 2013  
(National Center for Injury Prevention and Control, 2013)

### **What are the Qualities of a Good Trauma System?**

- A network of hospitals with the commitment and the resources to care for trauma system patients
- An organized plan to route critical patients to the right hospital that is ready to care for them

### **What are the Qualities of a Good Trauma System?**

- Constant monitoring of the system to correct problems, improve the system, and validate the quality of care provided
- The Alabama system is one of only two in the United States that can do all three of these

### **Why Do We Need a Trauma System?**

- **THEY SAVE LIVES!**
  - A voluntary trauma system was started in seven counties around Birmingham in 1996
  - Between 1996 and 2005 there were over 23,000 patients treated for major trauma

### **Why Do We Need a Trauma System?**

- There was a 12% decrease in the death rate from trauma in this area during this time
  - There was no change for the rest of the state

### **Alabama Trauma Plan**

- Voluntary participation by hospitals
  - Hospitals are inspected and designated for the level of services they request and can provide
  - Out-of-State hospitals go through same process
  - No hospital has ever dropped out of the system once designated

### **Alabama Trauma Plan**

- Trauma system patient routing is by a single high-tech communication center that coordinates patient transport to the appropriate facility initially and facilitates transfer of patients that must be stabilized locally before transfer to definitive care

### **Alabama Trauma Plan**

- Done with computer intranet system and 24/7 staff that maintain up-to-the-minute status of all hospitals and resources
- This allows hospitals to always be in control of when they are available to accept a new patient

### **Alabama Trauma Plan**

- Everything is monitored by a Quality Assurance / Quality Improvement (QA/QI) process

### **Trauma System – Total Patients 1/1/2015 - 12/31/2015**

- Total System Volume - 13,022
  - Region One / AERO: 2,671
  - Region Two / East: 719
  - Region Three / BREMSS: 4,334
  - Region Four / West: 754
  - Region Five / Southeast: 2,432
  - Region Six / Gulf: 2,112

### **Who Needs a “Trauma System”**

- A “trauma” patient is any patient who is injured
- A “Trauma System” patient has life-threatening injuries that require rapid, specialized care
- Only 10-12% of patients with injuries need to go to a trauma center
- Most injuries are minor and should be treated at a local community hospital

### **The Method Behind the Madness**

- In the field, all injured patients go through two triage processes
  - First, to determine if they should be entered into the trauma system (have injuries that are life-threatening or potentially life-threatening)

### **The Method Behind the Madness**

- About 10-12% qualify
- Second, to determine what level of trauma hospital to which they should be taken

### **Protocol for Which Patient is Entered into the Trauma System**

- A patient can be entered for any of four reasons:
  - Physiologic
  - Anatomic
  - Mechanism of Injury
  - EMSP Discretion

### **Physiologic Criteria**

Generally Go to a Level I Center if Within an Hour Transport Time

- A systolic BP < 90 mm/Hg in an adult or < 80 mm/Hg in a child five or younger
- Respiratory distress - rate < 10 or > 29 in adults, or < 20 or > 40 in a child one year or younger

### **Physiologic Criteria**

Generally Go to a Level I Center if Within an Hour Transport Time

- Altered mental status as evidenced by Glasgow Coma Score of 13 or less (15 is normal, 3 is totally unresponsive)
  - GCS of 9 or less go to Level I
  - GCS of 10 to 13 go to Level II or possibly to a Level III

### **Anatomic Criteria**

Generally Go to a Level I Center if Within an Hour Transport Time

- Flail chest
- Two or more obvious proximal long bone fractures (humerus, femur)
- Penetrating injury of the head, neck, torso, or groin, associated with an energy transfer
- Has in the same body area a combination of trauma and burns (partial and full thickness) of fifteen percent or greater

### **Anatomic Criteria**

Generally Go to a Level I Center if Within an Hour Transport Time

- Amputation proximal to the wrist or ankle
- One or more limbs which are paralyzed
- Unstable pelvic fracture, as evidenced by a positive “pelvic movement” exam
- A crushed, degloved, mangled, or pulseless extremity
- An open or depressed skull fracture

**Mechanism of Injury Criteria**

May Go to Level II or III if  
Closer than Level I

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

**Mechanism of Injury Criteria**

May Go to Level II or III if  
Closer than Level I

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

**EMSP Discretion Criteria**

May Go to Level II or III if  
Closer than a Level I

- If the EMSP is convinced the patient could have a severe injury that is not yet obvious, the patient should be entered into the trauma system.
- The EMSP suspicion of severity of trauma/injury may be raised by the following factors:

**EMSP Discretion Criteria**

May Go to Level II or III if  
Closer than a Level I

- Age > 55
- Age < five
- Environment (hot / cold)
- Patient's previous medical history
  - Insulin dependent diabetes
  - Cardiac condition

**EMSP Discretion Criteria**

May Go to Level II or III if  
Closer than a Level I

- Immunodeficiency disorder
- Bleeding disorder
- COPD / Emphysema
- Pregnancy
- Extrication time > 20 minutes with heavy tools utilized

**EMSP Discretion Criteria**

May Go to Level II or III if  
Closer than a Level I

- History of more than momentary loss of consciousness

### Process to Enter Patient from the Field

- EMSP evaluates patient and determines they meet criteria to be entered into system
- EMSP calls ATCC and gives patient report. EMSP and ATCC agree on level of care the patient needs. ATCC gives available hospitals and the appropriate ready hospital is selected. EMSP transports the patient.

### Process to Enter Patient from the Field

- ATCC fills out patient report and sends to the hospital (prints out in ED) and also calls the ED
- Within 48 hours the emergency department staff fill out the patient care feedback section of the patient report and faxes back to the ATCC

### Special Cases

- No airway - Closest ED
- Hemodynamically unstable - No IV Closest ED
- Unable to stop severe hemorrhage - Closest ED



### Special Cases

- Age 15 years or younger
  - Pediatric level I trauma center if transport < 60 minutes
  - Closest level I or II trauma center if > 60 minutes to Pediatric Center



### Special Cases

- Age 15 years or younger
  - Closest level III trauma center if transport > 60 minutes to I or II



## Special Cases

- **Pregnancy**

- Level I trauma center if < 60 minutes transport time

- Level II or III trauma center if > 60 minutes to level I



## Patients That Do Not Come by EMSP or Have Come by EMSP But Were Under-Triaged

- These patients can be entered into the system by the hospital staff (even if the hospital is not planning to transfer them)
- For patients that need to be transferred:

## Patients That Do Not Come by EMSP or Have Come by EMSP But Were Under-Triaged

- Patients with physiologic criteria can be routed by simply calling the ATCC
- If the patient has stable vital signs (anatomic or burns) the ATCC will connect the physician with the receiving physician (surgeon or EM physician) to discuss the case

## Anatomic Criteria for a Hospital to Enter a Patient into Trauma System

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

## Anatomic Criteria for a Hospital to Enter a Patient into Trauma System

4. The patient has in the same body area a combination of trauma and burns (partial and full thickness) of 15% 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

## Anatomic Criteria for a Hospital to Enter a Patient into Trauma System

7. The patient has a pelvic fracture demonstrated by x-ray or other imaging technique
8. Significant internal injuries are found during hospital evaluation and the referring hospital does not have the surgical resources to manage them

### **Anatomic Criteria for a Hospital to Enter a Patient into Trauma System**

9. The patient has a crushed, degloved, mangled, or pulseless extremity
10. The patient has an open or depressed skull fracture

### **Physiologic Criteria for a Hospital to Enter a Patient into Trauma System**

- A systolic BP < 90 mm/Hg in an adult or child 6 years or older; < 80 mm/Hg in a child less than 6 years old
- Respiratory distress - rate < 10 or > 29 in adults, or
  - < 20 or > 60 in a newborn
  - < 20 or > 40 in a child three years or younger

### **Physiologic Criteria for a Hospital to Enter a Patient into Trauma System**

- < 12 or > 29 in a child four years or older
- Head trauma with Glasgow Coma Scale score of 13 or less or head trauma with any neurologic changes in a child five or younger

### **Physiologic Criteria for a Hospital to Enter a Patient into Trauma System**

- The level of trauma center to which this patient would be transferred would depend on regional secondary triage criteria
  - Generally only GCS scores of 9 or less are triaged to a Level I Trauma Hospital unless the CT scan reveals intracranial bleeding

### **Burn Criteria for a Hospital to Enter a Patient into Trauma System**

1. Partial thickness burn of greater than 10 percent of the total body surface area
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
3. Third-degree burns in any age group

### **Burn Criteria for a Hospital to Enter a Patient into Trauma System**

4. Electrical burns, including lightning injury
5. Chemical burns
6. Inhalation injury
7. Burn injuries in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality



**Burn Criteria for a Hospital to Enter a Patient into Trauma System**

- 8. Any patient with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient's condition may be stabilized initially in a trauma center before transfer to a burn center.

**Burn Criteria for a Hospital to Enter a Patient into Trauma System**

- 9. Burned children in hospitals without qualified personnel or equipment for the care of children
- 10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention

**Criteria for a Hospital to Enter a Patient into Trauma System**

- As a general rule, mechanism of injury and "hospital discretion" are not reasons to enter a patient into the trauma system

**Trauma System Patient Routing**

- Each participating hospital will be connected to the Alabama trauma communications center (ATCC) so that there is a constant monitoring of the status of all hospitals
- When a patient needs the trauma system the EMSP will call the ATCC who will route the patient to the correct ready hospital depending on the patient's injuries

**Trauma System Patient Routing**

- Transportation (air or ground) can be arranged by the ATCC if needed
- Transfer of patients from local hospitals to the correct trauma center can also be coordinated by the ATCC

**Region One / AERO**

	System - Trauma, Stroke and Cardiac System Services																			
	T	S	C	EDT	ED	AMB	OR	LAB	TCU	TS	SS	CS	US	CT	SCU	Neuro	CCU	Cor	Out	
Adkins Laboratory	2																			
Croushore Blood Center	3																			
Calhoun Regional	2																			
Decatur Regional	3																			
DeKalb Regional	3																			
Etowah Valley	3																			
Etowah Medical Center	1																			
Helen Keller Hospital	3																			
Highland Medical Center	3																			
Howards Hospital	1																			
Marshall North	3																			
Marshall South	3																			
Northville Hospital	3																			



### Participating Hospitals

- Participation in the trauma system is completely voluntarily
- Administration and surgical staff must agree to participate
- Participating hospitals will be surveyed to certify the level of trauma care they can provide
- Each participating hospital will determine when they are available to take a trauma patient

### Participating Hospitals

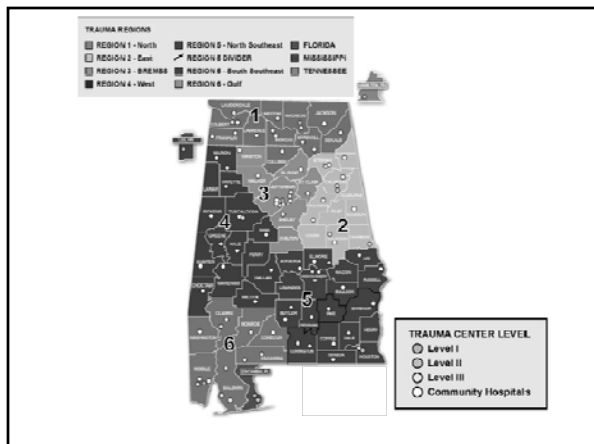
- Each decides when RED or GREEN
- ATCC cannot override this
- The patient can override the system
- Hospital must keep status up to date or will get patients when resources are not available to care for them

### Why the Trauma System is Unique

- It correctly identifies the patients who need trauma care
- Anticipates the resources needed to treat the patients
- Locates the available needed resources
- Routes the patient “right” the first time to reduce time to appropriate care

### Why the Trauma System is Unique

- Arranges inter-facility transfers, if needed, to reduce time to appropriate care
- Improves care by the QA/QI process
- Keeps the hospital and doctors in control of the process



### Questions?

