Birmingham Regional EMS System

A REGIONALIZED TRAUMA SYSTEM - WHAT REALLY WORKS

17-R3-0135
Objectives:

• To present the BREMSS trauma system operations.
• Allow each participant to determine the BREMSS trauma system operations which may be applicable to improve or value their trauma system operations.
• Review each Triage Entry Criteria and it’s reliability as a predictor of trauma care needs.
• Understand TBO, TSO, RED trauma status and determine if this concept may be useful in their trauma system.
• To be aware of the BREMSS trauma system use in a MCI and potential applications in their system.
Website: www.bremss.org

Welcome to BIRMINGHAM REGIONAL EMERGENCY MEDICAL SERVICES SYSTEM

Real-time EMS serving Blount, Chilton, Jefferson, Shelby, St. Clair, Walker, & Winston counties in North Central Alabama. BREMSS’s main goal is to serve all providers of emergency care in the region so patient lives & limbs are saved, to lead with vision the EMS of the region in development & implementation of a system that delivers patient care at the highest level, to educate the community about emergency medical care, & continue the education of healthcare personnel in the newest Rescuing Knowledge, techniques, & skills.

Serving NORTH CENTRAL ALABAMA

Upcoming Events
https://www.facebook.com/BirminghamRegionalEMS/
BREMSS Hospitals

- Brookwood Baptist
- Brookwood Baptist FED
- Princeton Baptist
- Shelby Baptist
- Walker Baptist
- Children’s of Alabama
- Callahan Eye Hospital
- Grandview
- Lakeland Community
- UAB-Medical West
- UAB-Medical West FED
- St. Vincent’s Blount
- St. Vincent’s Chilton
- St. Vincent’s East
- St. Vincent's St. Clair
- St. Vincent’s Birmingham
- UAB
- UAB Highlands
- VA
FED’s in the EMSS

- All services with the same staffing requirements as a hospital ED
- Off-load patient volume for non-admit patients
- No trauma system patients to an FED unless patient choice
EMS SPECIAL PROGRAMS

EMS responses/TRANSPORTS in which time critical intervention and matching REAL-TIME hospital treatment availability are critical to patient morbidity as well as mortality !!!!!!!!
WHY TRAUMA?

• Trauma is the leading cause of death between one year of age and forty-four years of age!
• Trauma provides many patients with disabilities, which last a lifetime and reduce years of useful/productive life.
• Trauma, while preventable in many situations, continues to increase in numbers, as well as severity.
• Rural trauma is especially a problem due to lack of hospital resources, time to detection, and distance to care.
BREMSS TRAUMA System guiding principles.

• Not all hospitals have needed available service lines to treat trauma patients.

• Service lines in a hospital needed for trauma, compete with other medical conditions --- NS for cancer-stroke-elective back surgery, etc., or acute general surgery needed for medical conditions use the same service line resources as trauma!

• No hospital has an endless supply of service line components and it is the system’s responsibility to assure the right patient to the right hospital the first time.
TRAUMA

• TRAUMA improvements, through actions of a TRAUMA system, save more patient life than any other intervention in EMS Systems.
TRAUMA SYSTEMS

• Match the right patient to the hospital with the current CAPABILITY and CAPACITY to care for the injured patient.

• If the transport time is too long (60+ minutes), then immediate, coordinated-barrier free transfer saves life and limb and reduces morbidity.
BREMSS

“Real-Time EMS”

Trauma / Stroke / STEMI

System Information
Current Status is Available about Hospital Status

COMPUTER LINKAGE OF ALL HOSPITALS
TCC

• Call TCC **before** patient transport has begun
• Staffed 24/7/365 with three paramedics
• All communication lines are recorded.
Patient Information is Used to Assist EMSP with Patient Routing Decision

EMSP IS PRIMARY DECISION MAKER WITH PATIENTS RIGHTS ALWAYS CONSIDERED
# BREMSS Hospitals

![Hospital Resource Management System](LifeTrac.png)

## Trauma, Stroke and Cardiac System Resources

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<th>Systems</th>
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*System Started: 09/13/2017 09:12:36 09/14/2017 07:24:43*
BREMSS Regional Trauma System

- First patient  October 2, 1996
- 1993-94, 60% to hospital with no trauma service, not enough resources, only 50% pediatric to COA
- Focuses on most seriously injured patients (15 % of all trauma victims)
- Entry criteria include physiologic instability, anatomic abnormality, mechanism of injury, EMSP DISCRETION
- As of 12/31/2018 - > 203,757 all patients entered in THE SYSTEM
- Resulted in 12% reduction in death rate from trauma in BREMSS region-no change seen for the rest of the state -- Statewide 2008
This is a Trauma Patient, but not a Trauma System Patient

Goal is:
No more than 14% to 16% of all trauma patients are TRAUMA System patients
Protocol for Which Patient is Entered into the Trauma System

• Can be for any of 4 reasons
  • Physiologic
  • Anatomic
  • Mechanism of injury
  • EMSP discretion
DATA

• All BREMSS Counties
• All BREMSS Hospitals
• ALL of 2018
• TCC Patient Records
PHYSIOLOGIC

• SBP < 90 OR PEDS (< 6 yoa) < 80
• Respiratory Distress < 10 OR > 29 PER MINUTE for adults
  < 20 or > 60 newborn
  < 20 or > 40 less than 3
  < 12 or > 29 greater than four YOA
• GCSS < 13 or Verbal or less on AVPU
ANATOMIC

• Flail Chest
• 2 or more obvious proximal long bones fx’s
• Penetrating –proximal to knee or elbow
• Trauma/burns in the same body area with burns full thickness of >14%
ANATOMIC - BURNS
SYSTEM ENTRY
BURN CENTER IF < 61 MINUTES TX

• Partial thickness >10%
• Face, hands, feet, genitalia, perineum, major joints
• Third degree – full thickness burns
• Electrical & lightning injuries
• Chemical
• Inhalation
• Co-mORBIDS
ANATOMIC

- Amputation proximal to wrist or ankle
- Paralyzed limb(s)
- Pelvic FX
- Extremity – crushed, degloved, mangled, pulseless
- Skull FX - open/depressed
Mechanism of Injury --- MOI

- Death same vehicle / same restraint as death
- Ejection from enclosed vehicle
- Motorcycle/Bicycle/ATV - thrown ten or more feet of separation distance
- Pedestrian - significant impact / thrown / run over
- Fall >20 feet onto hard surface - Peds 3x or greater height
EMSP – DISCRETION

• EMSP Decision total determination
• Consider Co-morbids
COMORBID FACTORS

• Age > 55 or < 5 YOA
• Environmental – Hot/Cold
• Medical History / Complications
• Diabetes – insulin dependent / Metabolic Disorder
• Bleeding disorder
• Anticoagulant / platelet inhibitors
• COPD / Emphysema
Co-morbid Factors

- Renal Failure/Dialysis
- Pregnancy
- Pediatric with congenital disorder
- Extrication time >20 minutes with extrication tools
- Motorcycle crash not meeting MOI entry
- Head trauma with more than momentary Loss of Consciousness
- Ground Level Fall
CONSIDERATIONS:

• Pediatric is fifteen years of age or less!
• EMSP is the patient advocate!
• Age of patient refusal is over 18!
• If in doubt, enter the patient!
• Adequate / timely notice to TCC drives improved hospital response and improves patient outcome!
• Does LOC mean – Loss of OR Level of?
PHYSIOLOGIC

• BP<90    43% ADMITTED

• RESPIRATORY DISTRESS   62% ADMITTED
  6 % TRANSFERRED TO LEVEL 1

• TBI--- GCSS < 13       71% ADMITTED
  5% TRANSFERRED TO LEVEL 1

• CRITICALLY UNSTABLE  56% ADMITTED
  3% TRANSFERRED TO LEVEL 1
ANATOMIC

- AMPUTATION 78% ADMITTED
- TWO OR MORE LONG BONE FX 85% ADMITTED
- BURNS/TRAUMA 67% ADMITTED
- PARALYZED LIMB 70% ADMITTED
  5% TRANSFERED TO LEVEL 1
- PELVIC FX 73% ADMITTED
  18% TRANSFERRED TO LEVEL 1
- FLAIL CHEST 78% ADMITTED
- PENETRATING 57% ADMITTED
  7% TRANSFERRED TO LEVEL 1
MOI

• AUTO VS PEDESTRIAN  55% ADMITTED
  .02% TRANSFERRED TO LEVEL ONE

• MOTORCYCLE,BICYCLE,ATV  67% ADMITTED
  .02% TRANSFERRED TO LEVEL 1

• EJECTION 58% ADMITTED

• SAME RESTRAINT DEATH 73% ADMITTED

• FALL 68% ADMITTED
  4% TRANSFERRED TO LEVEL 1
EMS DISCRETION

• 37% OF TOTAL PATIENTS
• 51.5% ADMITTED
• 3% TRANSFERRED TO LEVEL 1
• 8% FALL < 20 FEET
HOSPITAL ENTRY

• 17% OF TOTAL PATIENTS HOSPITAL ENTRY
• 63% ADMITTED
• 66% TRANSFERRED TO LEVEL 1
• 73% OF TRANSFERRED PATIENTS TO A LEVEL 1 WERE ADMITTED
SECONDARY TRIAGE
( PATIENT ROUTING )

• Based upon patient vitals, entry criteria, hospital availability, transport time
• ATCC and EMSP make the decision
• Best chance the patient has is TX to the right Trauma Center the first time
Secondary Triage ( patient routing )

- No airway
  - Closest ED
- Hemodynamically unstable – no IV/IO
  - Closest ED
- Uncontrollable external bleeding
  - Closest ED

I SAID OPEN THE DOOR NOW!!!!!!
Trauma System - PEARLS

• Use the helicopter needed to save time only OS-DESTINATION time reduction
• Use the closest appropriate level trauma center
• Transporting as well as Non-Transporting EMS personnel have the responsibility to assure the patient is routed to the right hospital
EMS Challenges

• Understand the RIGHT trauma hospital
  • Capability
  • Capacity
  • ALS vs ED care

• Call early --- VS / MOI

• Appreciate the need to re-route – best interest of this patient and future patients
DISCUSSION