BREMSS

Birmingham Regional EMS System

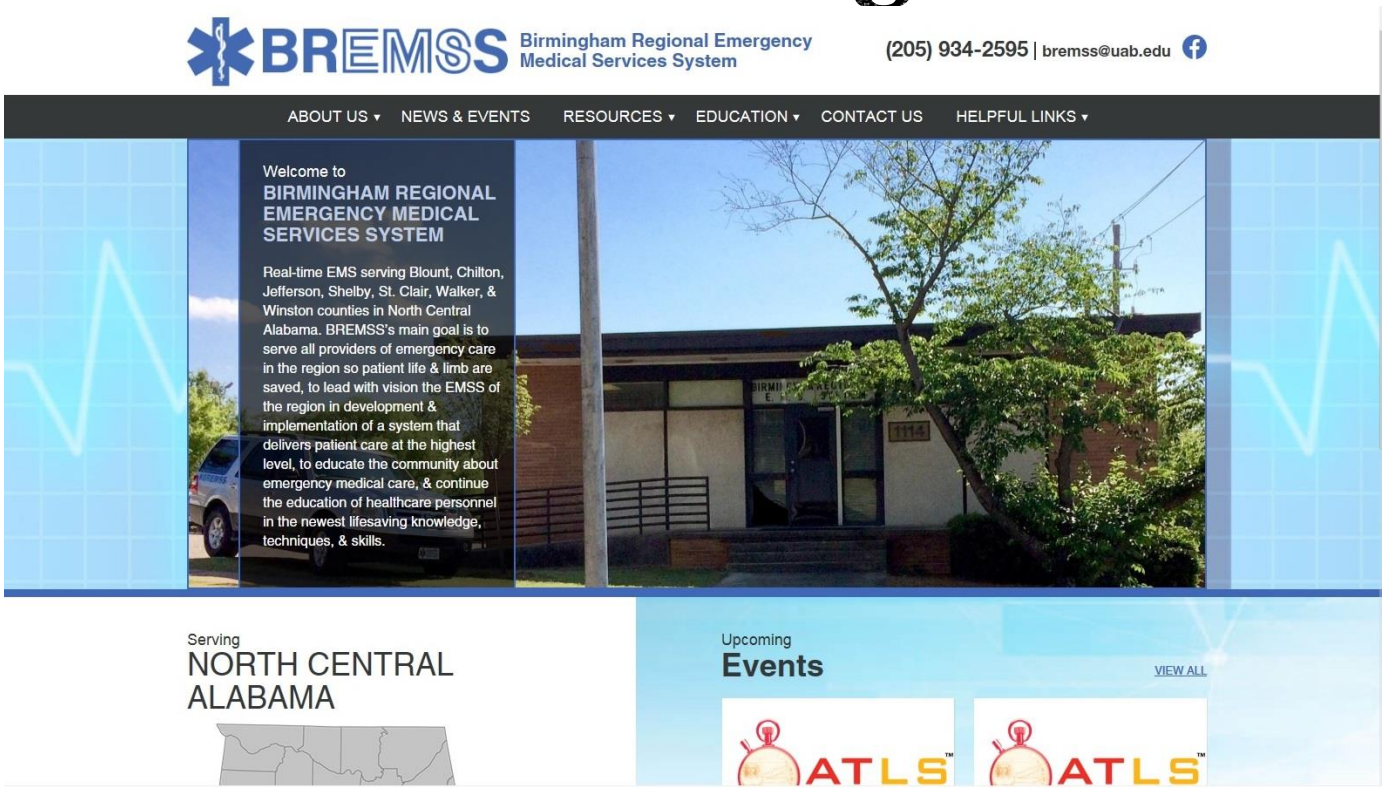
A REGIONALIZED TRAUMA SYSTEM –WHAT REALLY WORKS

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



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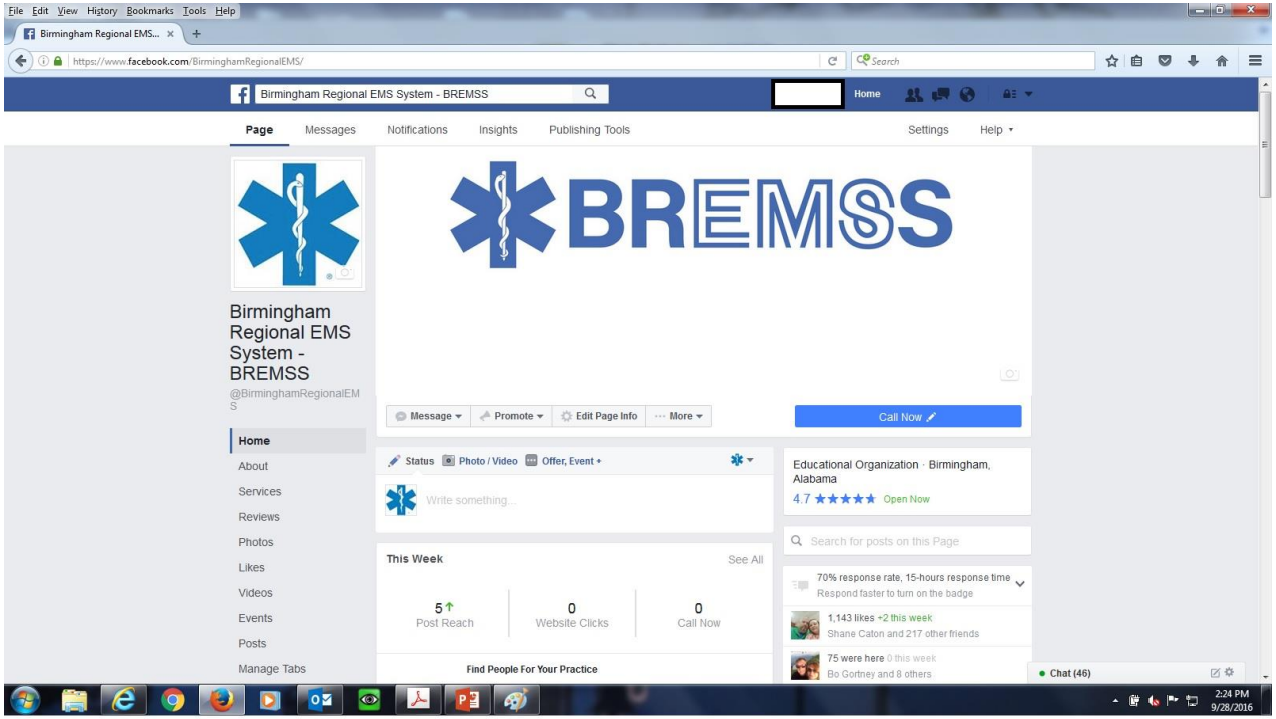


BREMSS Hospitals

- 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

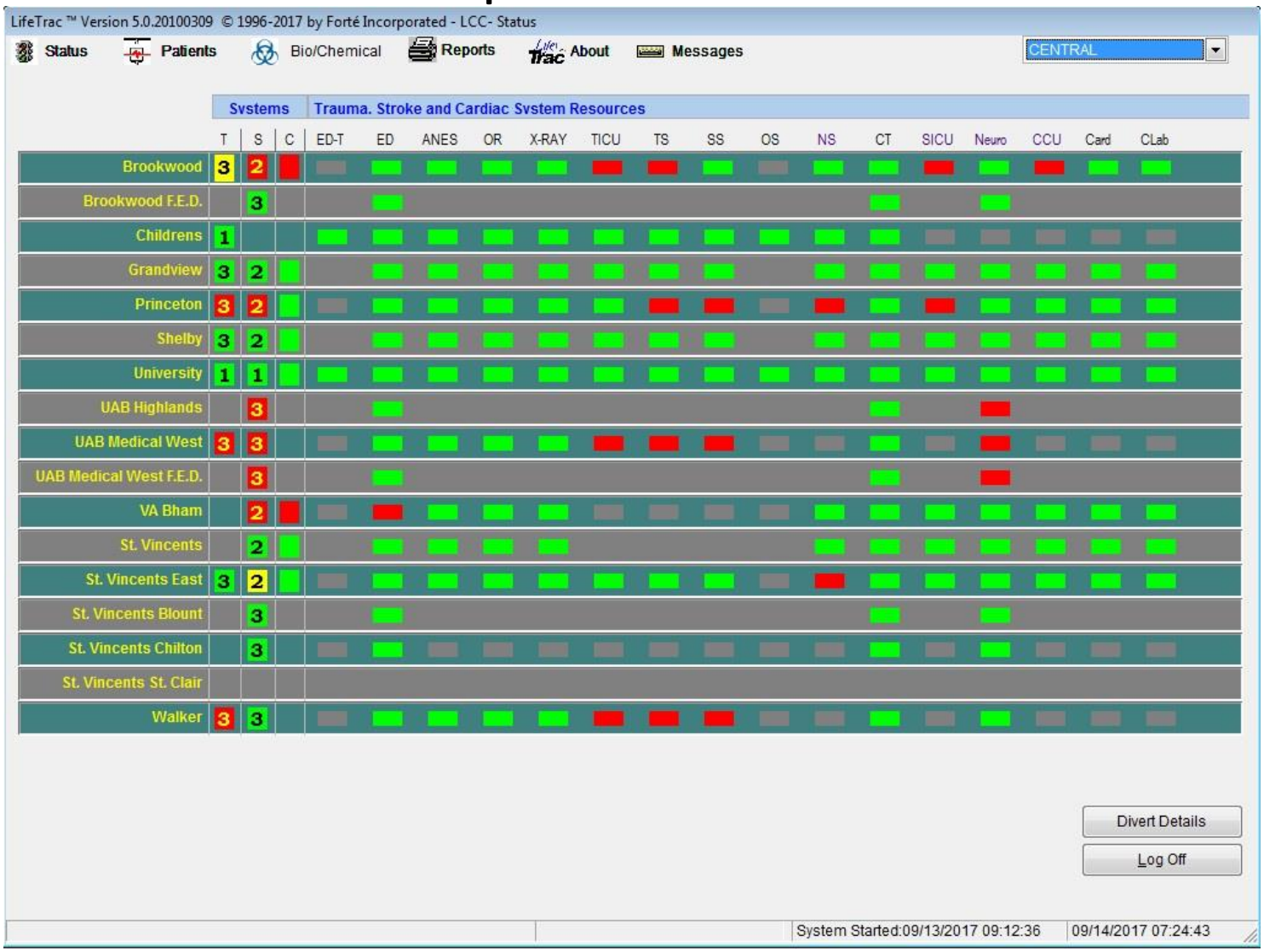
TCC

- 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



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

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