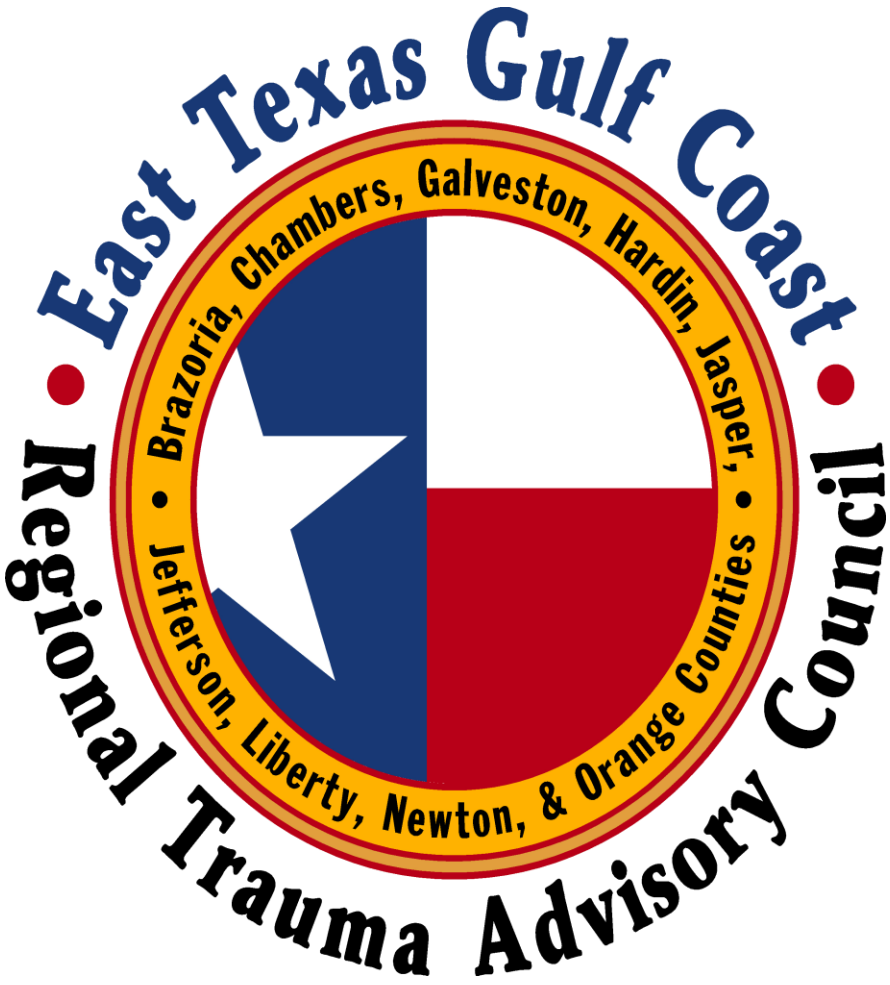
Regional Trauma System Plan



East Texas Gulf Coast Regional Trauma Advisory Council REGIONAL TRAUMA SYSTEM PLAN

Table of Contents

Contents

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MISSION

To promote, develop and maintain a comprehensive EMS, trauma and acute care system that will meet the needs of all patients and that will raise the standards for community healthcare by implementing innovative techniques and systems for the delivery of emergency care for our community.

VISION

A unified, comprehensive and effective EMS, trauma and acute care system for a healthy, and safe community.

PHILOSOPHY

Assure the trauma system will attain its goal of decreasing morbidity and mortality of trauma patients by creating a seamless transition as patient's progress through the trauma systems continuum of care.

Belief Statements:

- We believe that all trauma patients are entitled to optimal trauma care.
- We believe that a planned and coordinated system with a public health model approach (assessment, policy development, and a performance improvement patient safety program) will result in a reduction of morbidity and mortality from injury events.
- We believe that most injuries are preventable and that planned prevention strategies will result in decreased morbidity and mortality related to injuries.
- We believe that a coordinated and organized approach is best accomplished with the full commitment, engagement and collaboration of the essential disciplines involved in trauma care and injury prevention.
- We believe that resources are limited and that coordinated distribution and utilization of resources will result in safe and effective trauma care.
- We believe that trauma care providers, through organized education and training, can be educated to deliver optimal trauma care based on evidence-based standards.

REGIONAL DEMOGRAPHICS

The Texas Department of Health officially recognized the Regional Trauma Advisory Council for Trauma Service Area – R on May 6, 1993. The East Texas Gulf Coast Regional Advisory Council (RAC-R), encompasses Brazoria, Chambers, Galveston, Hardin, Jasper, Jefferson, Liberty, Newton and Orange Counties. The region covers 7,574 square miles and is home to 1,209,563 people. The top three (3) counties in population are Jefferson, Galveston, and Brazoria. Four (4) of the nine (9) counties are classified as rural: Jasper, Chambers, Hardin, and Newton. (Refer to Appendix B for a map of the region.) In 2023, falls accounted for 51% of all

injuries followed by Motor Vehicle crashes which accounted for 13%. (Texas Department of State Health Services EMS & Trauma Registries RAC R 2023 Summary). This data aligns with state and national trends.

The table below delineates the population and square miles of each county within TSA –R:

County	Population Estimates 2024	Square Miles	Number of Trauma Centers
Brazoria	413,224	1,387	2
Chambers	56,179	599	0
Galveston	367,407	399	2
Hardin	58,670	894	0
Jasper	32,907	937	1
Jefferson	253,948	904	3
Liberty	115,042	1,160	0
Newton	11,908	938	0
Orange	86,115	356	0
Total	1,395,400	7,574	8

Reference: U.S. Census Bureau QuickFacts: United States

Texas is home to the world's largest petrochemical complex. Chemical manufacturers in Texas produce a significant portion of the U.S. chemical output, with numerous plants and refineries located along the Gulf Coast. Several international ports are located along the upper Texas Gulf Coast along with multiservice regional airports, multiple small airports and several paper product plants.

Numerous entertainment venues are available to the residents and visitors within TSA - R including many local county fairs, the Texas State Fair in Beaumont, many concert venues and sporting events. The region has hosted the Little League World Series and the softball World Series as well as minor league basketball, indoor football, and hockey teams. Lamar University hosts inter-collegiate football, basketball, and baseball tournaments.

Additional entertainment venues include a NASCAR circuit speedway and several amusement parks. Several large convention centers are scattered throughout the region which host cultural, business and political events. One large entertainment complex located centrally in the region has also served as a staging area during disasters.

Galveston is a barrier island and is considered a major tourist destination and remains the port of entry and destination for cruise ships. The Lone Star Rally boast hundreds of thousands of attendees each year, making it one of the largest biker rallies in the United States. Other events on the island include Mardi Gras and Dickens on the Strand which draw thousands of visitors to

these events annually.

Institutes of higher education are located throughout the region including the University of Texas Medical Branch, Lamar University, Texas A&M Galveston and multiple community colleges.

The Galveston National Laboratory (GNL) is a sophisticated high security National Biocontainment Laboratory and research facility that serves as a critically important resource in the global fight against infectious diseases. The GNL is located on the campus of the University of Texas Medical Branch and operates under the umbrella of UTMB's Institute for Human Infections and Immunity. The GNL is one of the 15 biosecurity level 4 facilities in the United States and the largest one in the world located on an academic campus.

TRAUMA CENTERS

With the vast geographic area of the TSA, one of the leading trauma care concerns is the amount of time it can take to reach the patient and the amount of time it can take to reach a trauma center. Within the rural counties of Newton, Jasper, Hardin, and Chambers, ambulances are generally based in the largest towns within the counties. To reach some areas in the county, it may take an ambulance 30 minutes to a maximum of one hour. By the time the patient reaches a trauma center, the golden hour has expired. Access to air ambulance services within the region is available.

Within TSA-R, there are multiple designated trauma centers to serve approximately 1.4 million people. The highest-Level trauma center, the Level I, is located in the southern area of the TSA and two Level III facilities are located centrally within the TSA. For a list of the current trauma facilities with their designation status refer to the following website: https://www.dshs.state.tx.us/emstraumasystems/. EMS providers are often faced with the decision to transport to the closest facility. This ultimately necessitates hospital to hospital transfer to meet the needs of the patient. At times, hospitals will transfer out of RAC-R to adjacent RAC's which is acceptable. Fixed wing services are available for those patients that require long transport times.

Access to the Level I facility in the region from the eastern area of the TSA is challenging. Transport by an ambulance entails the use of a ferry to cross the ship channel. Depending on the time of year, an ambulance may wait as long as 45 minutes for the ferry to arrive. All these issues must be addressed when formulating a regional trauma plan.

BURNS

Burn care is limited throughout the state of Texas with only six burn centers to provide burn care to over 27 million people. The University of Texas Medical Branch Blocker Burn Center (Adult Burn Center) and the Shriners Hospitals for Children- Galveston (Pediatric Burn Center) are

verified Burn Centers as accredited by the American Burn Association. As a verified Burn Center, they meet the highest current standards of care for the burn-injured patient and have the resources to ensure the provision of optimal care from the time of injury through rehabilitation to re-integration back into the community.
The American Burn Association provides specific guidelines when considering transport or referral to a burn center, further information can be found at www.ameriburn.org.
Criteria to transport or transfer to a burn center include:

- Partial thickness >10% of the body surface area
- Full thickness burns
- Burns to face, hands, feet, genitalia, perineum and over any joints
- All high voltage (≥1000V) electrical injuries
- Lightning injury
- Chemical burns
- Suspected inhalation injury
- Burn injury in patients with preexisting medical disorders that could complicate management, prolong recover, or affect mortality.
- Any patient with burns and concomitant trauma
- All pediatric burns may benefit from burn referral (≤14 years, or <30kg)
- Poorly controlled pain

When treating a victim with burns, it is important to expeditiously stop the burning process, remove clothing, jewelry, and contacts. Avoid hypothermia by keeping the patient warm, do not apply ice to wounds. Do not apply wet dressings or ointments to the wound. Wounds should be covered with clean, dry dressings or sheets which will also minimize exposure to air currents and reduce pain. Management of pain is also key in the treatment of the patient. The following are the fluid replacement guidelines recommended by UTMB Blocker Burn Center:

Pre-Hospital: Initial Fluid Rates

- 5 years old and younger: 125 ml Lactated Ringers (LR) per hour.
- 6-13 years old: 250ml LR per hour.
- 14 years and older: 500 ml LR per hour.

Hospital: Adjusted Fluid Rates

Step 1: Calculate the total body surface area burn (% TBSA) and obtain patient's pre-burn injury weight in kilograms (kg).

Step 2: Calculate fluid resuscitation utilizing the modified Parkland Formula:

- 2ml x weight in kg x %TBSA (adults)
- 3ml x weight in kg x %TBSA (pediatrics)
- 4ml x weight in kg x %TBSA (electrical burns)

REIMPLANTATION

Reimplantation is a highly specialized field, and few facilities are available to provide this time sensitive resource to injured patients. When a patient in the region is in need of reimplantation, emergent transport should be initiated immediately. The following facilities offer reimplantation services in our RAC and surrounding regions to ensure that patients receive timely and specialized care for these complex procedures.

- University of Texas Medical Branch at Galveston (RAC-R)
- Memorial Hermann Texas Medical Center (SETRAC)
- Texas Children's Hospital (SETRAC)
- Ben Taub General Hospital (SETRAC)

PREVENTION AND OUTREACH EDUCATION

Unintentional and intentional injuries are a significant public health concern within the State of Texas. Trauma systems must develop prevention strategies that help limit injury as part of an integrated, coordinated and inclusive trauma system.

Working with stakeholders and community partners, prevention and intervention programs and strategies are defined by reviewing the data collected by trauma centers and pre-hospital partners. Intervention programs seek to create a measurable reduction in injury or increase in prevention strategies (such as use of car seats for pediatrics), that are attainable and have a defined timeline.

The mission of injury prevention within RAC–R is to effect change in decreasing injuries through education and to promote prevention efforts in injuries through committee initiatives. Since 2016, the RAC has embraced the Stop the Bleed program and collaborates with public and private entities to offer training for the staff. Through grant funds, the RAC distributes Stop the Bleed Training Kits to our hospital and EMS partners in the region that provide this valuable training to the community. Training is presented to businesses, schools, community members and churches to name a few. Additionally, each trauma designated facility in the region has their own specialized injury prevention programs targeted to meet the needs of their specific communities.

PERFORMANCE AND SYSTEM IMPROVEMENT

Participating organizations in RAC-R concur that ongoing monitoring and evaluation of the Trauma Care System through a well-defined System Performance Improvement (PI) Program is the primary way to improve trauma care thus, ultimately improving survival and reducing morbidity from injury. This is especially important in the predominately rural and frontier areas of TSA-R. Clear communications and rapid transport are crucial in a region with such a large land mass area. It is important that providers participate in the PI process with facilities within their catchment area. All member organizations agree that both organization-based and system-based PI are essential. Neither an individual entities nor provider’s information will be collected for any internal PI actions including disciplinary actions. Sentinel Events as defined by a certifying/accrediting body will be addressed by the individual entities. While organization-

based PI focuses primarily on the care rendered to individual patients, system-based PI focuses on the overall functioning of the system components and their interactions from pre-hospital care through rehabilitation.

By participating in RAC-R, all organizations accept the guiding principles for System PI as outlined by the Texas Department of State Health Services. EMS, Hospital, and System PI programs will be developed in close cooperation to monitor and improve trauma care in TSA-R. Regional data obtained from the Texas Department of State Health Services Trauma Registry will be reviewed for trends and identified issues and reported to the Executive Committee and Board of Directors. The identification of major injury types will be utilized in the development of appropriate Injury Prevention Programs for the region.

It is important to establish a PI plan to systematically monitor and evaluate trauma care from a system perspective. Participation in the PI process by all participating organizations, both EMS and hospital is encouraged. The Performance Improvement process will follow the guidelines as detailed in Section 161.031 – 161.032 and Section 773.092(e) of the Texas Health and Safety Code, which detail the confidentiality afforded activities of this type. Each document submitted for RAC-R Performance Improvement will be stamped CONFIDENTIAL and blinded, with all specific patient identifiers removed.

PATIENT CARE CONTINUUM

The Texas Department of State Health Services (DSHS) is the lead agency for trauma in the State of Texas and RAC-R is the lead agency for TSA-R. DSHS defines the regulatory standards for emergency medical service providers and trauma facilities which can be located at https://www.dshs.state.tx.us/emstraumasystems/default.shtm The American College of Surgeons defines the trauma facility criteria for the Level I, II, and III trauma centers in the 2022 Resources for Optimal Care of the Injured Patient. The American College of Surgeons defines the trauma facility criteria for the Level IV facilities in the 2014 Resources for Optimal Care of the Injured Patient. DSHS also provides trauma facility criteria above and beyond the American College of Surgeons standards. To review these guidelines, refer to the RAC-R website at www.rac-r.com. Per the criteria defined by DSHS and the American College of Surgeons, each facility should define their own trauma activation criteria. Due to the size and capabilities within TSA-R, the responsibility of lead trauma facility is designated to the Level I trauma facility in the region.

The Trauma Committee aids facilities seeking trauma facility designation. The trauma subcommittee through committee meetings, agenda items and networking help facilities identify any areas of need in trauma facility designation. Each facility that applies for trauma center designation must be a member in good standing of the RAC. Upon request of the designating hospital, the RAC will send a letter of participation to the designating body. Once the hospital receives notification of the dates of the site visit, the representative should contact the RAC

Board Member nearest their facility. A Board Member will be available to attend the visit to provide RAC support.

Any change in the trauma facilities capacity and capability should be reflected in EMRESOURCE. (https://emresource.juvare.com/login) Trauma facilities that cannot meet an essential criterion for trauma centers for a prolonged length of time (defined as thirty days or more) should report these issues to the RAC office for submission to the board as well as the designating body. The RAC trauma subcommittee can assist the facility in developing strategies to support the facility and maintain optimal care. DSHS defines the critical elements that must be reported to the State as the following:

- Loss of Trauma Medical Director (with no interim)
- Loss of Trauma Program Manager / Coordinator (with no interim)
- Loss of Surgical coverage (with no interim plan -Level I, II, and III)
- Loss of Orthopedic Coverage (with no interim plan – Level I, II, and III)
- Loss of Neurosurgical Coverage (with no interim plan – Level I, II)
- Loss of Trauma registry (with no interim plan)
- Loss of capabilities to provide Injury Prevention or Outreach Education (with no interim – Level I)
- Loss of ability to provide acute trauma resuscitation and critical care stabilization
- Closure of facility
- Decision to relinquish trauma designation

Transfer guidelines are reviewed annually and processed through the trauma subcommittee and approved by the board of directors. The Level I, II and III facilities are expected to accept trauma transfers based on the receiving facilities capacity and capability. Each hospital may have their own method or process for accepting transfers. For a list of hospitals with Trauma center designation refer to https://www.dshs.state.tx.us/emstraumasystems/etrahosp.shtm and https://emresource.juvare.com/login

The trauma system plan is integral to trauma facilities and pre-hospital emergency providers. The trauma plan will be signed annually by each facility's trauma medical director and EMS medical director. (Refer to **Appendix A** for the Medical Director Signature Page). These signature pages are included in the annual membership packet. To become a member of RAC-R, the trauma system plan signature page must be signed and submitted with a request for membership.

FACILITY CLOSURE OR LOSS OF TRAUMA DESIGNATION

Upon the decision of a facility to relinquish their trauma designation or close their facility, notification in writing must be immediately sent to DSHS and the RAC office.

DIVERSION/SATURATION

Proper posting on EMRESOURCE shall be considered the official and standard mechanism for notification in TSA-R. All EMS services are expected to participate in EMRESOURCE and to monitor it at all times for current system information and hospital status. An EMS agency may call a receiving hospital for information on the status of facilities in their area if they do not have access to monitor EMRESOURCE. The capacity and capability of trauma facilities is listed and tracked via EMRESOURCE. Hospitals are required to update their status daily. Facilities may provide messages such as alerts for equipment malfunction, maintenance or traffic concerns/road closures to assist EMS agencies in making a transport destination decision. Proper posting on EMRESOURCE shall be considered to be the official standard mechanism for notification from hospitals to EMS and other facilities in TSA-R.

RAC-R adheres to the definitions of Open, Internal Disaster and Evacuation outlining the status of the entire facility. Open, High Volume, and Saturation are used to describe the current capabilities of the Emergency Department, ICU, Trauma, Neurotrauma, Orthopaedic and Stroke capabilities as outlined by EMRESOURCE.

Any hospital that goes on trauma saturation must update their status in EMRESOURCE to indicate their saturation status. The EMRESOURCE web page is located at https://emresource.juvare.com/login. Every effort should be taken to minimize the time on trauma saturation. Trauma facilities should keep a log of all trauma saturation hours and report the time to the state. Trauma saturation hours can be monitored by running a status report on EMRESOURCE for regional saturation hours.

Level I facilities or other lead trauma facilities should not be on trauma saturation, unless there is a severe crisis. It is a standard per the American College of Surgeons that Level I, II, & III facilities must not be on diversion more than 400 hours annually.

REHABILITION

Rehabilitation is the process of helping a patient adapt to a disease or disability by teaching them to focus on their existing abilities. Within a rehabilitation center, physical therapy, occupational therapy, cognitive therapy, and speech therapy along with other specialty modalities can be implemented in a combined effort to increase a person’s ability to function optimally within the limitations placed upon them by disease or disability. To uphold the continuum of care from illness to health and offer a high-level of service, rehabilitation is a critical service offered within TSA-R through hospital-based programs and private organizations.

COALITION BUILDING

Coalition building is a continuous process of cultivating and maintaining relationships with stakeholders within TSA-R. Collaboration on injury prevention and trauma system development with the community partnerships are the key. Constituents include health care professionals, pre-hospital providers, refinery personnel, RAC-Q, insurers, payers, data experts, consumers, advocates, policy makers, trauma center administrators, and media representatives. Coalition priorities are trauma system development, injury awareness, injury prevention activities, policy making, financing initiatives, disaster preparedness, system integration, and promoting collaboration rather than competition between trauma centers and pre-hospital providers.

RESEARCH

RAC-R participates in system research on an ad hoc basis. The Board of Directors is responsible for governance and release of the data.

APPENDIX A

East Texas Gulf Coast Regional Trauma Advisory Council REGIONAL TRAUMA SYSTEM PLAN

Signature Page

I have read and reviewed the East Texas Gulf Coast Regional Trauma System Plan. I understand this is a regional and overarching plan and may not reflect the practice of my institution.

Approval of Trauma Medical Directors, EMS Directors and EMS Administrators:

_____
Facility / Service

_____
Name of the Trauma Medical Director
or EMS Medical Director

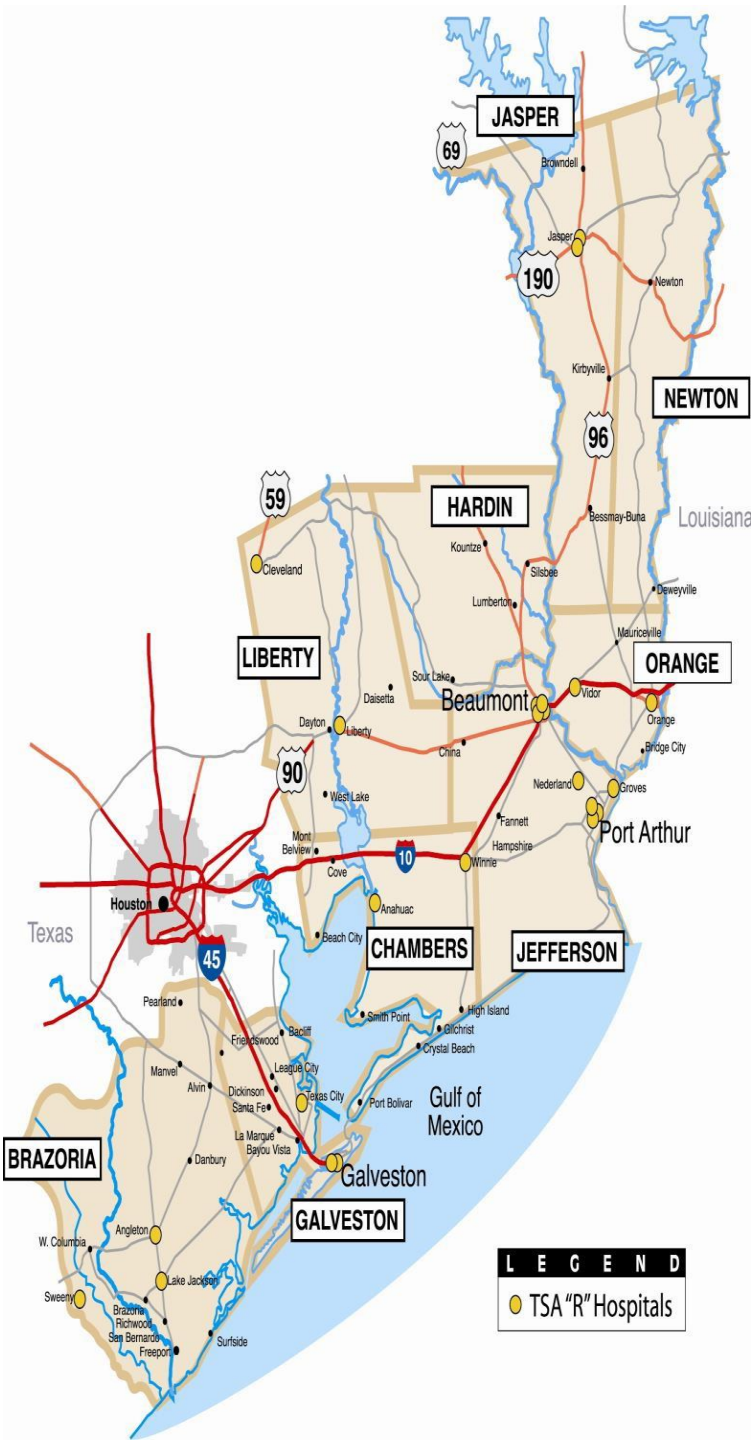
_____
Name of EMS Administrator

_____
Signature of the Trauma Medical Director
or EMS Medical Director

_____
EMS Administrator Signature

_____
Date

APPENDIX B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69
Browndell
Jasper
190
Newton
Kirbyville
NEWTON
96
59
HARDIN
Bessmay-Buna
Louisiana
Kountze
Silsbee
Cleveland
Lumberton
Deweyville
Mauriceville
LIBERTY
ORANGE
Sour Lake
Daisetta
Beaumont
Vidor
Orange
Dayton
Liberty
China
Bridge City
90
Nederland
Groves
West Lake
Fannett
Port Arthur
Mont Belvieu
Hampshire
Cove
10
Winnie
Houston
Anahuac
Texas
Beach City
CHAMBERS
JEFFERSON
45
Pearland
Smith Point
High Island
Friendswood
Bacliff
Gilchrist
Crystal Beach
Manvel
League City
Alvin
Dickinson
Santa Fe
Texas City
Port Bolivar
Gulf of Mexico
La Marque
Bayou Vista
BRAZORIA
Danbury
Galveston
GALVESTON
Angleton
W. Columbia
Lake Jackson
Sweeny
Brazoria
Richwood
San Bernardo
Freeport
Surfside
LEGEND
TSA "R" Hospitals

APPENDIX C

East Texas Gulf Coast Regional Advisory Council
Minimum Regional Trauma Activation Criteria

- Confirmed BP <90 at any time in adults and age-specific hypotension in children
- Gunshot wounds to the neck, chest, or abdomen
- GCS <9 (with mechanism attributed to trauma)
- Transfer patients from another hospital who require ongoing blood transfusion
- Patients intubated in the field and directly transported to the trauma center
- Patients who have respiratory compromise or are in need of an emergent airway
- Transfer patients from another hospital with ongoing respiratory compromise (excludes patients intubated at another facility who are now stable from a respiratory standpoint)
- Emergency Physician's discretion