NORTH CENTRAL TEXAS
TRAUMA REGIONAL ADVISORY COUNCIL

Regional Trauma System Plan

Endorsed by NCTTRAC Board of Directors
Date: April 8, 2025

Approved by NCTTRAC General Membership
Date: Pending June 6, 2025

Supersedes Regional Trauma System Plan
Date: October 5, 2023

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NCTTRAC serves the counties of Cooke, Fannin, Grayson, Denton, Wise, Parker, Palo Pinto, Ellis, Kaufman, Navarro, Collin, Hunt, Rockwall, Erath, Hood, Johnson, Somervell, Tarrant, and Dallas.

Any questions and/or suggested changes to this document should be sent to:

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APPROVAL AND IMPLEMENTATION

This plan applies to all counties within Trauma Service Area (TSA) E. TSA-E includes Collin, Cooke, Dallas, Denton, Ellis, Erath, Fannin, Grayson, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise counties.

This plan is hereby approved for implementation and supersedes all previous editions.

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Secretary Date

RECORD OF CHANGES

The North Central Texas Trauma Regional Advisory Council ensures that necessary changes and revisions to The Regional Trauma System Plan are prepared, coordinated, published, and distributed.

The plan will undergo updates and revisions:

- On an annual basis to incorporate significant changes that may have occurred;
- When there is a critical change in the definition of assets, systems, networks or functions that provide to reflect the implications of those changes;
- When new methodologies and/or tools are developed; and
- To incorporate new initiatives.

The Regional Trauma System Plan revised copies will be dated and marked to show where changes have been made.

"Record of Changes" form is found on the following page.

RECORD OF CHANGES

This section describes changes made to this document. Use this table to record:

- Location within document (i.e. page #, section #, etc.)
- Change Number, in sequence, beginning with 1
- Date the change was made to the document
- Description of the change and rationale if applicable
- Name of the person who recorded the change

Article/Section	Date of	Summary of Changes	Change Made by (Print Name)
Section 1 - Scope	10/3/2024	1. Revised verbiage to refer to the RAC Performance Criteria and DSHS website for available documents	Corrine Cooper
Section 2 – Regional Demographic	12/5/2024	2. Removed specific venue names to be a more generic description	Corrine Cooper
Section 2 – Regional Demographic	10/3/2024	3. Added rural county resource limitations	Christina Gomez
Section 2 – Regional Demographic	12/5/2024	4. Included EMSTR data & logistics	Christina Gomez
Section 2 – Regional Demographic	2/5/2025	5. Updated trauma facilities to current level	Corrine Cooper
Section 2 – Regional Demographic	2/5/2025	6. Referenced EMResource for complete list of resources available in the region	Corrine Cooper
Section 4 – Standing Committees	12/5/2024	7. Added a link to the NCTTRAC website as a resource	Corrine Cooper
Section 5 – Evidence of System Participation	12/5/2024	8. Added Advanced Practice Providers and specialty physician leaders to meet criteria for the self assessment	Corrine Cooper
Section 7 – Communication	2/5/2025	9. Included Pulsara as the preferred platform for notification	Corrine Cooper
Section 7 – Communication	2/5/2025	10. Updated communication equipment to include Starlink and Plum cases	Corrine Cooper
Section 8 – Medical Oversight	12/5/2024	11. Added Trauma Medical Director participation requirements	Corrine Cooper

Section 8 – Medical Oversight	12/5/2024	12. Revised to include EMS Medical Directors	Corrine Cooper
Section 10 – Prehospital Triage	12/5/2024	13. Update reference to guidelines	Corrine Cooper
Section 10 – Prehospital Triage	12/5/2024	14. Reference national standards and regional review process	Corrine Cooper
Section 11 – System Capacity and Capability Monitoring	12/5/2024	15. Updated section title	Corrine Cooper
Section 11 – System Capacity and Capability Monitoring	2/5/2025	16. Revised and relocated divert statement	Corrine Cooper
Section 13 – Interfacility Transfers	12/5/2024	17. Removed criteria as it is referenced in the guidelines	Corrine Cooper
Section 13 – Interfacility Transfers	12/5/2024	18. Updated indicator with new metric	Corrine Cooper
Section 15 – Special Populations	11/2/2024	19. Added new section to meet RAC Self-Assessment requirements	Corrine Cooper
Section 16 – System Performance Improvement	2/5/2025	20. Referenced utilizing the State EMS & Trauma Registry data provided to the RACs	Corrine Cooper
Section 16 – System Performance Improvement	2/5/2025	21. Added Data Management section to reference the Data Management Plan	Corrine Cooper
Section 16 – System Performance Improvement	12/5/2024	22. Added reference to the Regional System Performance Improvement Plan	Corrine Cooper
Section 17 – Rehabilitation	12/5/2024	23. Included verbiage to encourage facility participation in the RAC	Corrine Cooper
Section 18 – Injury Prevention and Public Education	2/5/2025	24. Included patient fall data provided to the RAC by DSHS	Corrine Cooper
Section 18 – Injury Prevention and Public Education	2/5/2025	25. Referenced the PEIP Fall Prevention Initiative Guidelines	Corrine Cooper
Section 20 – Disaster Preparedness and Response	2/5/2025	26. Updated reference and title to the Regional Readiness Plan and Regional Response Plan	Corrine Cooper
Section 21 - Research	10/3/2024	27. Updated regional research request process	Corrine Cooper

Final revisions should be submitted to the NCTTRAC Emergency Healthcare Systems Department at EHS2@NCTTRAC.org, telephone 817.608.0390.

Table of Contents

Document References

The documents below referenced within the Trauma System Plan are available for review and can be accessed via the links provided below. These supporting materials are intended to offer additional context, guidance, and detail relevant to the components outlined in the plan. Please refer to the links to ensure comprehensive understanding and alignment with the referenced standards and protocols.

ANNEX A: NCTTRAC Trauma Committee Standard Operating Procedures (SOPs)

ANNEX B: TSA-E EMResource Policies & Procedures

ANNEX C: Regional Guidelines

APPENDIX C-1: Trauma Triage & Transport Guidelines

ATTACHMENT C-1-A: Adult Trauma Triage & Transport Algorithm

ATTACHMENT C-1-B: Pediatric Trauma Triage & Transport Algorithm

APPENDIX C-2: Trauma Transfer Guidelines

APPENDIX C-3: Aircraft Utilization Guidelines

APPENDIX C-4: NCTTRAC Falls Prevention and Outreach Initiative Guidelines

APPENDIX C-5: Pediatric Blood Resource Document

APPENDIX C-6: Geriatric Trauma Treatment Considerations and Recommendations

ANNEX D: NCTTRAC System Performance Improvement Plan

1. SCOPE

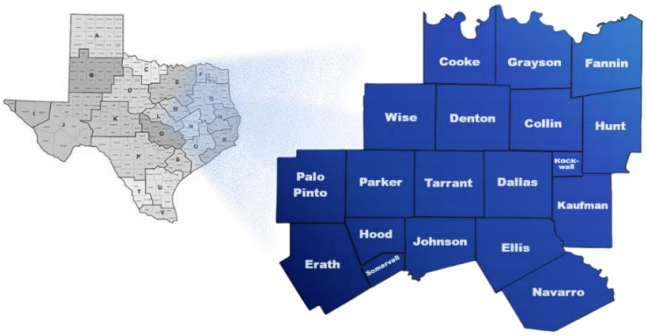
1.1 The Trauma System Plan for Trauma Service Area (TSA) – E was developed to meet the requirements within Texas Administrative Code (TAC) § 157.123 and the Regional Advisory Council Performance Criteria. It's purpose is to ensure the mission of the regional system is upheld, which is to develop and enhance the trauma and emergency healthcare system within the defined TSA. For more detailed information and access to these documents, including TAC § 157.123, the RAC Performance Criteria, and other relevant guidelines, stakeholders can visit the Department of State Health Services (DSHS) website, where the full range of resources and regulatory materials are available for review and reference.

1.2 This plan, updated annually and approved by NCTTRAC membership, is a resource for providers of trauma care across the spectrum, from first responder organizations to rehabilitation facilities. It identifies strategies to focus diverse resources in a collective way to reduce morbidity and mortality due to trauma, and includes additional key components such as injury prevention, public and professional education, system performance improvement, and disaster preparedness.

1.3 The Regional Trauma System Plan is a Guideline and has been developed in accordance with generally accepted trauma guidelines. (https://www.facs.org/quality-programs/trauma/quality/verification-review-and-consultation-program/standards/) In addition, the State of Texas DSHS levels of trauma care documents and rules will inform this guideline.(https://dshs.texas.gov/emstraumasystems/etrauma.shtm) **This plan does not establish a legal standard of care, but rather it is intended as an aid to decision-making in the care of trauma patients. The Regional Trauma System Plan is not intended to supersede the physician's or caregiver's judgement.**

2. REGIONAL DEMOGRAPHICS

2.1. Trauma Service Area E (TSA-E), known as the North Central Texas Trauma Regional Advisory Council (NCTTRAC), incorporates nineteen north central Texas rural, suburban, and urban counties: Collin, Cooke, Dallas, Denton, Ellis, Erath, Fannin, Grayson, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise counties. Recent population estimates indicate that 8.4 million people reside within the 15,574.71 square miles of TSA-E, representing over 28% of the entire population of the State of Texas.



2.2. When planning an integrated trauma system, it's crucial to address multiple factors, particularly those within TSA-E that frequently attract large-scale gatherings of both local and non-local visitors. Below is a breakdown of these factors by their function and purpose. The business community includes several key components: an international airport, a multiservice regional airport, multiple small airports, a military base, a nuclear power plant, and several regional entertainment venues. The entertainment venues feature an NFL stadium, an NBA/NHL arena, an MLB stadium, a multipurpose stadium, a NASCAR speedway, along with several large amusement parks and extensive convention centers hosting cultural, business, and political events. Additionally, the region is home to a large network of college campuses, including multiple community colleges and medical schools. TSA-E also hosts an automobile assembly plant and numerous national and international business headquarters.

2.3. TSA-E contains five rural counties, Cooke, Erath, Fannin, Palo Pinto, and Somervell, with populations less than 50,000 that can often face significant resource limitations, impacting timely and effective response. These areas frequently lack specialized trauma centers, which means patients may need to travel long distances for advanced care, delaying critical treatment. Limited staffing, including a shortage of trauma-trained medical personnel and emergency responders, exacerbates response times and restricts care capacity. Emergency Medical Services (EMS) response is further challenged by limited staffing, including a shortage of EMTs and paramedics. These constraints can lead to slower response times, with fewer ambulances and crews available to cover expansive rural areas.

2.4. In 2023, TSA-E recorded 760,247 EMS runs with patient contact, of which 31% involved trauma-related incidents. A total of 49,968 patients met the National Trauma Data Standard (NTDS) trauma patient criteria. The top five mechanisms of injury in the region included falls, motor vehicle collisions, being struck by objects, firearms, and cutting/piercing injuries. These statistics highlight the significant burden of trauma care within the region and emphasize the need for a robust and integrated trauma system to address both the high volume and diverse types of injuries effectively. The large number of trauma cases also underscores the importance of tailored strategies to optimize prehospital and hospital-based care to improve outcomes across this expansive and demographically diverse area.

2.5. As of the date of approval for this document NCTTRAC is served by the following:

2.5.1. Seven Level I adult trauma centers and one Level I pediatric trauma center.
2.5.2. Six Level II adult trauma centers and one Level II pediatric trauma center.
2.5.3. Twenty-one Level III adult trauma centers and one Level III pediatric trauma center.
2.5.4. Seventeen Level IV adult trauma centers.
2.5.5. Two facilities "in active pursuit" of trauma designation.
2.5.6. Numerous acute care hospitals.
2.5.7. Approximately 130 ground and air EMS services and over 140 first responder organizations (FROs).
2.5.8. For a current list of all trauma designated facilities, ground EMS agencies, air EMS agencies, FROs, and acute care hospitals, please refer to the members

webpage on the NCTTRAC website. A map of designated trauma facilities within TSA-E can be found on the NCTTRAC Trauma Committee webpage.

3. RAC LEADERSHIP

3.1. A list of RAC officers and the Executive Committee of the Board of Directors can be found on the NCTTRAC Board of Directors webpage. The Executive Committee of the Board of Directors consists of the Board Chair, Chair Elect, Secretary, Treasurer and Finance Committee Chair.

4. STANDING COMMITTEES

4.1. Committee leadership consists of a Committee Chair, Chair Elect, and Medical Director/Co-Medical Directors. These positions are elected for one-year terms; they are chosen by vote of the present and eligible voting members of the committee and ratified by a simple majority vote of the Board of Directors. The Chair Elect automatically ascends to the Chair position at the end of the current Chair's term. Committees may establish a "core group" by SOP to ensure balanced and appropriate participation in committee activities. NCTTRAC standing committees are open to any individual who wants to attend, with the exception of the System Performance Improvement Committee closed sessions.

4.2. A list of standing committees, including the chairperson for each, is available on the NCTTRAC website at www.ncttrac.org. The purpose, chair terms, roles/responsibilities, and voting participation for each committee are outlined in the NCTTRAC bylaws.

5. EVIDENCE OF SYSTEM PARTICIPATION

5.1. Announcements for trauma system planning are sent electronically to NCTTRAC membership to allow participation from interested members and to include a broad range of healthcare personnel such as physicians, nurses, EMS prehospital providers, advanced practice providers, and specialty physician leaders. Members have the option to attend meetings either virtually or in person at the NCTTRAC offices.

5.2. Announcements are made at the Board of Directors meetings for maximum visibility of members to participate. To provide evidence and track actual participation in trauma system planning, rosters are kept at NCTTRAC offices. Trauma designated facilities are required to meet minimum participation guidelines per *Annex A: NCTTRAC Trauma Committee Standard Operating Procedures (SOPs)*, as well as the NCTTRAC Membership and Participation SOP.

6. SYSTEM ACCESS

6.1. All counties in the State of Texas have access to the EMS System utilizing 911 service. Additionally, all TSA-E counties received robust updates including technology for cellular location. In the event 911 is out of service, anyone needing 911 should contact their city's non-emergency line for EMS, Fire, or Police. These numbers can generally be found on the municipality's website.

6.2. The 911 capabilities for EMS providers allow for efficient dispatch of response agencies

to the scene. If the telephone or network communication systems are down, EMS agencies and key facilities have access to two-way radios to communicate with dispatch, hospitals, and the NCTTRAC Emergency Medical Coordination Center (EMCC).

6.3. The EMCC helps coordinate response teams for disaster and regional surge responses through TSA-E resource and crisis applications such as EMResource. These responses include Emergency Medical Task Force (EMTF)- 2 composed of Ambulance Strike Teams (AST) and task forces with Ambulance Strike Team Leaders (ASTL), AMBUSes, Mobile Medical Units (MMU), RN Strike Teams and Medical Incident Support Team (MIST) personnel, which are also coordinated with DSHS and other EMTFs around the state. NCTTRAC is the lead agency for EMTF-2, which covers not only TSA-E but also TSA-C (Abilene) and TSA-D (Wichita Falls).

7. COMMUNICATION

7.1. Communication between hospitals, EMS providers, and medical control entities takes place using a variety of methods. Hospitals use EMResource to broadly communicate information regarding Emergency Department saturation, Emergency Department Advisory status, bed availability numbers, and clinical service line availability by updating dedicated status types in EMResource (see the section on system capacity and capability monitoring). The regionally preferred method for direct, point-to-point communication between EMS and hospital Emergency Departments is via Pulsara. EMS agencies can use Pulsara to notify hospitals about incoming patients and provide critical clinical details that ensure the right patient gets the right care at the right time. Additionally, the EMS Committee has endorsed using Pulsara to deliver the "Short Form" to Emergency Departments as a regional best practice. Other methods for communication between EMS providers, hospitals, and medical control entities include a combination of cell phones, landline phones, and dedicated radio frequencies. Hospitals, EMS providers, and medical control entities work together to determine the best method of communication for their specific circumstances. For example, in some areas the most effective means of communication is for EMS providers to call the hospital's Emergency Department business line phone using cell phones held by individual paramedics, whereas other areas are better served by the hospital ED using a public safety radio with a dedicated channel for EMS communications.

7.2. NCTTRAC supports the implementation of redundant communication systems to ensure that hospitals, EMS providers, and medical control entities can still communicate with one another in the event of a primary communications method failure. Using Hospital Preparedness Program (HPP) funding, NCTTRAC purchased amateur radios and VHF, UHF, and 700/800 public safety radios that can be given to hospitals and EMS providers as a means of redundant communication. NCTTRAC also purchased two Mobile Emergency Response Communications (MERC) trailers that can be deployed to provide temporary communications capabilities.

7.3. In addition to MERCs, NCTTRAC maintains multiple communications equipment caches that can be deployed in the event of a major communications failure. Starlinks and Plum Cases are both available to the Healthcare Coalition and provide dedicated high-speed internet and Voice Over Internet Protocol (VoIP) that can be turned off and on as needed. This provides a communication avenue that protects against a multitude of threats to

include Cyberthreat and system overload due to population surge.

7.4. Communications between multiple agencies responding to the same scene is generally dictated by the Incident Commander. Most neighboring jurisdictions share common radio frequencies or talk groups that allow for interoperable radio communications – the exact frequencies or radio systems vary based on the jurisdiction having authority. In addition to jurisdiction-specific interoperable systems, it is recommended that EMS providers ensure that their responding units are equipped with radios that have been programmed with the Texas Statewide Interoperability Channels identified in the Texas Statewide Interoperability Channel Plan.

8. MEDICAL OVERSIGHT

8.1. The advancement of a regional trauma care system relies on the active involvement of qualified physician providers with specialized expertise in treating trauma patients. According to TAC § 157.2, Trauma Program Medical Directors are required to participate in regional system planning and the development of the regional trauma system plan.

8.2. NCTTRAC has an established EMS Medical Directors Committee, which meets quarterly to provide guidance on the development and review of hospital and pre-hospital assessment tools, regional system plans, and triage and transport guidelines. Each NCTTRAC committee also includes elected committee medical directors who play a vital role in overseeing their respective service line committees. These Medical Directors are responsible for providing medical oversight, actively participating in committee initiatives, and collaborating with other RAC committees and Medical Directors to ensure a cohesive and integrated approach to regional trauma system planning.

9. REGIONAL MEDICAL CONTROL

9.1. Regional Medical Control is defined as a centralized location for receiving online and offline medical orders and for regional development of treatment protocols. As defined, there is no regional medical control in TSA-E.

9.2. Each EMS agency has its own Medical Director and Standard Operating Procedure (SOP). Each Medical Director has legal authority and responsibility under the Texas Administrative Code, Chapter 197, and the Texas Department of State Health Services (DSHS) Chapter 157 for developing the agency's local protocols and guidelines. TSA-E provides off-line guidelines to each EMS provider and Medical Director as recommended by the EMS, Trauma, and Medical Directors Committees that may be utilized and adopted. Medical Directors within TSA-E assume responsibility for trauma oversight as well as specific performance improvement to investigate patient outcomes for their EMS personnel.

10. PRE-HOSPITAL TRIAGE CRITERIA

10.1. The survival of the trauma patient is dependent upon rapid recognition and management of life-threatening injuries, followed by rapid transport to an appropriate facility. The NCTTRAC Trauma Triage and Transport Guidelines, attached as *Annex C Appendix C-*

1: NCTTRAC Trauma Triage and Transport Guidelines, were developed to assist emergency care providers at the scene, in conjunction with standard medical operational procedures on-line medical control, and national standards to evaluate the level of care required by and determine the patient's initial transport destination. Regional air transport resources may be appropriately utilized in order to reduce delays in providing optimal trauma care. Refer to *Annex C Appendix C-3: Aircraft Utilization Guidelines*.

10.2. The guidelines are aligned with the most recent national Trauma Center Field Triage Criteria outlined in the *American College of Surgeons, Resources for Optimal Care of the Injured Patient* [1], and the Centers for Disease Control (CDC). Guidelines are reviewed annually and revised as necessary by the Air, EMS, and Trauma focus groups, which include specialty physician leaders and appropriate service line committees. The EMS Medical Directors Committee conducts the final review and provides recommendations before the guidelines are submitted to the NCTTRAC Board of Directors for endorsement and implementation. Once approved, the documents are made available on the NCTTRAC website at www.NCTTRAC.org.

11. SYSTEM CAPACITY AND CAPABILITY MONITORING

11.1. EMResource is the primary tool in TSA-E for hospitals to communicate with EMS providers about any facility issues that may be relevant to EMS patient destination decisions. EMResource is used to report on the saturation level of a facility's Emergency Department, the overall status of a facility's Emergency Department, specific clinical service capabilities, facility bed availability, and interfacility transfer availability for MedSurg & ICU patients.

11.2. The *Hospital Intake Status* in EMResource is the official method for hospitals to communicate their ED status to pre-hospital partners.

11.2.1. If a hospital can accept incoming EMS traffic with no restrictions and without extended ambulance patient offload times, they should list their status as **Open**. If a facility's *Hospital Intake Status* is **Open**, they must update their status at least once every 24 hours.

11.2.2. Hospitals experiencing high levels of patient surge can change their *Hospital Intake Status* to **Advisory – ED Surge**; this notifies EMS agencies to anticipate extended patient off-load times and asks them to consider the hospital's current status when making patient destination decisions. When EMS sees that a potential destination hospital is on **Advisory – ED Surge**, they should consider whether the patient will be better served going to an alternate facility when deciding where to take the patient.

11.2.3. Hospitals unable to accept certain types of patients due to a clinical service closure can change their *Hospital Intake Status* to **Advisory – Capability** and list the types of patients they are unable to accept in the comments. When EMS sees that a potential destination hospital is on Advisory – Capability, they should reroute patients of the types listed in the comments to a facility that has the capability to treat that patient. Hospitals can pre-select if they are unable to accept Trauma, Stroke, or STEMI patients, and may utilize an "Other" category for all other patient types.

11.2.4. Hospitals experiencing an internal or external environmental disaster that prevents them from safely accepting any new patients can set their *Hospital Intake Status* to **Closed**. This should only be used when there is an external hazard at the facility that presents a danger to the patient (i.e. fire, flooding, active shooter); hospitals cannot go on **Closed** due to extreme patient surge or hospital staffing shortages.

11.3. TSA-E does not utilize "divert" status. Facilities may communicate information to EMS that may be relevant in the decision to transport to their destination, such as ED saturation, but may not post a "divert" status or comment within EMResource.

11.4. In addition to *Hospital Intake* Status, NCTTRAC has integrated the use of National Emergency Department Over Crowding Score (NEDOCS) within EMResource for hospitals to help determine emergency department saturation and reporting. Hospitals with emergency departments are required to update their NEDOCS once every 6 hours; if they do not, the system marks their NEDOCS as "Overdue". EMS providers are required to monitor the NEDOCS of facilities in their service area. This can be accomplished either by actively monitoring EMResource on the website or mobile application or by receiving notifications when the NEDOCS rises above a certain threshold. A high NEDOCS is generally associated with longer patient offload times for EMS.

11.5. Trauma Centers can note specific trauma-related service capabilities, such as Hand, Replant, Burn etc., using the appropriate EMResource status types. A full list of Trauma-related status fields can be found in EMResource under the view titled "TSA-E: Trauma".

11.6. All hospitals and EMS providers can create event notifications in EMResource. These events are used to inform the emergency healthcare partners in TSA-E about any incidents or occurrences that might affect the overall emergency healthcare system in TSA-E. For example, hospitals can create event notifications to alert EMS providers about construction that affects EMS traffic, or an EMS provider can create an event notification that alerts hospitals to an emergent mass casualty incident.

11.7. Proper posting on EMResource is considered the official and standard mechanism for notification in TSA-E. All EMS services are expected to monitor EMResource at all times for current system information. An EMS agency may call a receiving hospital for information on the status of facilities in their area if they do not have access. EMS agencies should use the information within EMResource to help inform patient destination decisions to ensure that all patients receive the appropriate care quickly and effectively.

11.8. A full listing of EMResource status types, policies, and procedures in TSA-E can be found in *Annex B: NCTTRAC EMResource Policies & Procedures*.

12. FACILITY TRIAGE CRITERIA

12.1. Patients will be triaged to the appropriate trauma facility, following the NCTTRAC Trauma Triage and Transport guidelines, with injured patients being transported to centers with appropriate capabilities. Each regional trauma center defines its own internal facility triage criteria. There is currently not a regional standard for internal facility triage criteria. Some centers have a single level trauma activation while others have multi-tiered and/or

specialty population specific criteria.

12.2. The ability of trauma facilities to monitor their resource capabilities is through NCTTRAC's web-based resource and crisis applications, such as EMResource. Individual trauma centers are responsible for determining if a patient exceeds the center's available resources and maintaining current capabilities, including the availability of call coverage for surgical specialties. Communication of hospital capabilities to pre-hospital and hospital providers is addressed through EMResource.

13. INTER-FACILITY TRANSFERS

13.1. Indications for Patient Transfer

13.1.1. Injured patients should be transferred to a higher level of care when the medical needs of the patient outweigh the resources at the initial treating facility. The *Annex C Appendix C-2: NCTTRAC Trauma Transfer Guidelines* identifies injury patterns that would benefit from a higher level of care and thus should be transferred to a Level I or Level II Trauma Center.

13.2. Time to Transfer

13.2.1. Access to timely trauma care is a system goal in TSA-E. The focus should be on reducing time from the onset of injury to definitive care. Facilities should provide initial stabilization and timely transport to the closest, most appropriate designated facility with definitive care capabilities. The time required to decide to transfer accounts for the greatest transfer delay. It is critical to decide to transfer early. Non-essential diagnostic testing and procedures will delay transfer and should be avoided. Attention should be directed at life-saving stabilization. Examples of stabilization that should be undertaken before transport include:

13.2.1.1. Maintenance and protection of airway
13.2.1.2. Decompression of tension and simple pneumothorax
13.2.1.3. Establishment of redundant large bore IV or IO
13.2.1.4. Maintenance of normothermia
13.2.1.5. Decompression of stomach if indicated, especially if transported by air

13.2.2. Attempts to stabilize the patient should be continued until the transfer is completed; however, the most severely injured patients may not be completely stabilized before transfer. The inability to completely stabilize a patient is not a contraindication of transfer.

13.2.3. Per NCTTRAC Trauma SPI Performance Indicators and DSHS Trauma Facility Audit Filters:

13.2.3.1. Severely and critically injured patients with a GCS of < 9 **or** systolic blood pressure for the following age parameters, will be transferred within two hours of arrival to the emergency department:

Pediatrics: 0 – 14 years	< 70 + (2 x age in years) mmHG
Adults: 15 – 64 years	< 90 mmHG
Geriatrics: 65+ years	< 110 mmHG

13.2.3.2. Inter-facility transfers should primarily occur within TSA-E; however, there may be occasions when patients are transferred outside of TSA-E due to the availability of resources or patient/family preference.

13.2.3.3. Inter-facility transfers should not occur more than once per patient. In the event two or more transfers occur before the patient reaches definitive care, a referral shall be made for review by the NCTTRAC SPI Committee.

13.2.4. Transferring facilities shall make efforts to send medical records and radiographic studies obtained during initial management to the accepting referral center.

13.2.5. Copies of studies may be sent in hard copy or electronically through web-based programs. Exhaustive scanning frequently must be repeated at the receiving facility, often because of the quality of images, failure to transfer the images to the receiving facility, or inability to read the disc transported with the patient. This results in further delays in definitive care and avoidable exposure of the patient to ionizing radiation and thus should also be avoided.

13.2.6. Physician-to-physician communication is essential between the initial facility and the accepting referral center. Physicians at the comprehensive and major trauma centers should be available for consultation with the sending provider before transfer. Early communication with the receiving trauma surgeons can streamline the transfer process and satisfy one of the EMTALA requirements for transfer.

13.3. Transfer Agreements

13.3.1. Trauma centers are required to have a process to expedite the transfer of applicable major and severe trauma patients to a higher level of care including written guidelines, written transfer agreements, and/or the NCTTRAC Trauma Transfer Guidelines. Level I and II trauma facilities may have written transfer agreements with other Level I and II facilities for specialty populations such as pediatrics, burn, replant, etc.

13.3.2. Coordination of the interfacility transfer is the responsibility of the initial facility. Transfers may be coordinated directly with referring hospitals through transfer centers or directly with accepting providers. Transfer Center phone numbers for Level I and II Trauma centers in TSA-E can be found within the NCTTRAC Trauma Transfer Guidelines.

13.3.3. As referenced in the NCTTRAC Triage and Transport Guidelines, if a patient and/or family refuses transfer to the accepting referral facility or higher level of care, an emergency physician or trauma surgeon at the referral facility will be notified of the situation. Any refusal shall be documented on the patient record.

13.4. Interfacility Transfer Communication

13.4.1. Hospitals should list their ability to accept interfacility transfers in EMResource using the statuses called *Status: MedSurg* and *Status: ICU*. Hospitals can show that their status to accept MedSurg or ICU level transfers is **Available**, **Available w/Restrictions** (can only accept certain transfers/case-by-case basis), or

Unavailable (cannot accept any transfers). Hospitals that list their status as **Available w/Restrictions** or **Unavailable** must update the status every 12 hours.

14. PLAN FOR DESIGNATION OF POTENTIAL TRAUMA FACILITIES

14.1. As required by DSHS, Trauma facilities within the TSA E region must maintain NCTTRAC membership in good standing, as well as meet active participation requirements. Facilities seeking In Active Pursuit (IAP) trauma designation status shall notify DSHS, NCTTRAC, and local providers of IAP intent.

14.2. Trauma Facilities that cannot meet an essential criterion must notify the Office of EMS/Trauma Systems, NCTTRAC, all other affected RACs and EMS agencies, and healthcare facilities to which it customarily transfers-out trauma patients or from which it customarily receives trauma transfers-in.

14.3. DSHS defines the critical elements that must be reported to the State as the following:

14.3.1. Loss of Trauma Medical Director (all levels)
14.3.2. Loss of Trauma Program Manager / Trauma Coordinator (all levels)
14.3.3. Loss of Neurosurgery Coverage (Level I & II)
14.3.4. Loss of Orthopedic Coverage (Level I, II, & III)
14.3.5. Loss of general / trauma surgery capabilities (all levels)
14.3.6. Loss of Trauma Registry (all levels)
14.3.7. Loss of anesthesiology (Level I, II, & III)
14.3.8. Loss of ability to provide acute trauma resuscitation and critical care stabilization

14.4. In support of the facility, the NCTTRAC Trauma Committee Systems Performance Improvement (SPI) Subcommittee will help determine appropriate resolution efforts. The facility will notify affected EMS agencies of the limitations of the facility.

15. SPECIAL POPULATIONS

15.1. Pediatrics

15.1.1. Pediatric patients require specialized attention within the trauma system due to their unique physiological, anatomical, and developmental differences compared to adults. Ensuring that all levels of care within the trauma system are pediatric-ready is vital to delivering timely, effective, and appropriate care for injured children. To support this mission, NCTTRAC collaborates on the Pediatric Readiness Improvement Project, which focuses on enhancing pediatric emergency department readiness through targeted education and quality improvement initiatives.

15.1.2. A recent Pediatric Readiness Assessment conducted within TSA-E achieved a 34% response rate, with an average readiness score of 77. The assessment identified the top three barriers to pediatric readiness as the lack of educational resources, the absence of a Quality Improvement (QI) plan, and the lack of

pediatric-specific policies. Recognizing these opportunities for improvement, the NCTTRAC Trauma and Pediatric Committees have prioritized readiness development through initiatives such as the Regional Pediatric Simulation Workshop. This workshop fosters collaboration across all levels of care, including EMS and hospital providers, ensuring a unified approach to pediatric trauma readiness. NCTTRAC continues to focus on developing and disseminating resources, templates, and training to address these gaps, enhance readiness scores, and support improved outcomes for pediatric trauma patients.

15.1.3. Facilities without pediatric specialty care must have clear and actionable transfer protocols to higher-level pediatric-capable centers. While awaiting transfer, stabilization efforts should be maintained to optimize patient outcomes. To support these efforts, the NCTTRAC Pediatric Committee has developed the *Annex C Appendix C-5:* Pediatric Mass Transfusion of Blood Products Administration Guidelines. This resource provides critical guidance to facilities managing hemodynamically unstable pediatric patients, ensuring continuity of care until transfer is complete.

15.2. Geriatrics

15.2.1. The geriatric population presents unique challenges in trauma care due to age-related physiological changes, comorbid conditions, and variations in response to injury. Ensuring geriatric readiness at all levels of the trauma system is essential to addressing the specific needs of older adults and improving outcomes. To support this mission, NCTTRAC participates in collaborative initiatives aimed at enhancing geriatric trauma care through education, resource development, and quality improvement efforts tailored to this vulnerable population. As part of these efforts, the Falls Prevention Coalition Work Group has created *Annex C Appendix C-6: Geriatric Treatment Considerations and Recommendations* to serve as a valuable resource for providers.

15.3. Bariatric

15.3.1. Bariatric patients present unique challenges within the trauma system due to their increased risk for injury, complex medical needs, and potential complications during emergency response, transport, and treatment. The rising prevalence of obesity within TSA-E underscores the importance of developing specialized protocols and resources to address this vulnerable population effectively.

15.3.2. EMS triage and transport of bariatric patient recommendations are included in the Trauma Triage and Transport Guidelines as referenced above. Many EMS agencies in TSA-E face resource limitations, including inadequate access to bariatric-specific equipment and vehicles. EMS agencies within TSA-E are encouraged to utilize the FY24 EMS Bariatric Resource Document, which provides a comprehensive list of regional agencies with bariatric transport capabilities. This document serves as a critical tool for streamlining interagency collaboration and ensuring that bariatric patients are transported efficiently and safely to appropriate facilities.

15.4. Behavioral Health

15.4.1. The behavioral health population presents unique challenges within the trauma system, as mental illness, substance use disorders, and cognitive impairments increase the risk of injury and complicate treatment. Common mechanisms of injury include falls, motor vehicle collisions, assaults, and self-harm. These patients often require specialized care that integrates both physical and behavioral health considerations to achieve optimal outcomes.

15.4.2. Prehospital care for behavioral health patients requires EMS providers to be trained in recognizing behavioral health crises, de-escalating situations, and balancing physical trauma care with patient and provider safety. Coordination with mental health crisis teams and access to specialized transport resources can enhance prehospital care and reduce complications during transit. In the hospital setting, trauma centers must implement protocols to identify and manage behavioral health conditions in trauma patients. This includes screening for mental health crises, ensuring access to behavioral health specialists, and creating environments that prioritize safety and minimize stress. Discharge planning should include connections to behavioral health resources to address underlying conditions and reduce the risk of recurrent trauma.

15.4.3. NCTTRAC supports the integration of behavioral health into the trauma system through collaborative initiatives, training programs, and resource development. The Trauma Committee actively promotes the sharing of behavioral health resources and best practices during monthly committee meetings through standing agenda items and open discussions. This collaborative approach ensures ongoing education, resource sharing, and the development of innovative strategies to improve outcomes for behavioral health patients across TSA-E.

16. SYSTEM PERFORMANCE IMPROVEMENT PROGRAM

16.1. The NCTTRAC Trauma System Performance Improvement (SPI) Subcommittee is responsible for trauma system performance improvement activities. SPI processes are divided among nine (9) service line committees: Air Medical, Cardiac, Emergency Department Operations, Emergency Medical Services, Pediatric, Perinatal, Regional Emergency Preparedness, Stroke, and Trauma.

16.2. The Trauma SPI Subcommittee will notify the Trauma Committee Chair of any trauma cases or system issues that have been reported and need review. The Trauma SPI focus group, comprised of the Trauma Committee Chair, Chair Elect, Medical Director, and two elected committee members as approved by the committee. The Trauma SPI focus group will review each reported case/issue in a closed session and make recommendations to the Trauma Committee, the Executive Committee, and as appropriate, the Board of Directors for determinations and action plans.

16.3. Data Collection

16.3.1. Regional data collected and managed by an outsourced third-party service provider as well as the State EMS and Trauma Registry are utilized to support Trauma Committee goals and performance improvement initiatives. Member hospitals with a capable registry are required by the Trauma Committee to submit data through the regional registry to support a comprehensive and useful data set. Resources are made available through NCTTRAC to facilitate the

training of individual members on data submissions. The regional registry utilizes the National Trauma Data Bank (NTDB) inclusion criteria and data set.

16.3.2. Other NCTTRAC committees may request registry data. All data requests should be submitted through the NCTTRAC ticket system available on the website. The Executive Committee will approve/deny all data requests. If approved, the Chair or Chair-Elect of the committee requesting the data will be required to share the results with the Board of Directors.

16.4. Data Management

16.4.1. Data collected through the regional trauma registry is managed and utilized in accordance with applicable federal and state laws as outlined in our Regional Program Participation Agreement (RPPA) and Business Associate Agreement (BAA). Data is used to identify opportunities for improvement, develop regional goals with defined measurable objectives in accordance with the SPI Plan, and monitor trends and outcomes. For more information on these processes, please refer to *NCTTRAC Data Management Plan*, which can be found on the NCTTRAC Admin & Governance webpage.

16.5. Trauma System Performance Improvement

16.5.1. The goal of Trauma System Performance Improvement is to reduce injury and death from trauma in TSA-E by identifying educational needs and opportunities for improvement in trauma patient care and system processes.

16.5.2. The Trauma Committee collaborates with the System Performance Improvement (SPI) Committee to define committee goals and trauma performance indicators for the region. The Trauma Committee standards and performance indicators are developed from committee consensus, evidence-based practice guidelines, the *American College of Surgeons Resources for Optimal Care of the Injured Patient*[1], and DSHS Trauma Facility Designation rules/requirements. All designated trauma centers must comply and adhere to the standards of care determined by their verifying and designating agencies.

16.5.3. The *Annex E NCTTRAC System Performance Improvement Plan* details the committee's processes to review identified referred events, identifies opportunities for improvement, defines the action plans and data required to correct the event, and establishes measures to evaluate the action plan through to event resolution.

16.5.4. The Trauma Committee monitors regional trauma performance indicators and goals on a monthly dashboard which shall be presented to the committee and the Board of Directors. The trauma performance indicators and goals are reviewed/revised annually and defined in the Trauma Committee SOP.

16.5.5. A Trauma Registry Workgroup has been established by the Trauma Committee to assist with evaluating regional data, identifying data needs, providing education to other registrars, and sharing best practices.

17. REHABILITATION

17.1. 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, and speech therapy 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.

17.2. 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-E through hospital-based programs and private organizations. Transfer protocols for rehabilitation facilities are determined by individual facilities. Rehabilitation facilities within the region are encouraged to attend and actively participate in regional planning and initiatives to ensure comprehensive, coordinated care across the trauma system.

18. INJURY PREVENTION AND PUBLIC EDUCATION

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

18.2. Prevention Strategies are based on epidemiologic data collected through available local, regional, state, and national patient data systems. Collaboration with community coalitions and partners, policymakers, and other vested stakeholders define the interventions targeting specific populations. Intervention programs seek to create a measurable reduction of injury and increase prevention strategies (such as increased use of seatbelts), that have measurable outcomes in a specific timeline. Staffing and community partners are essential for success.

18.3. Falls represent a critical focus for injury prevention efforts within TSA-E, as they account for 61% of trauma patients in the region in 2023. Of these, 67% of fall-related injuries involve patients aged 65 years or older, and 84% of trauma fatalities in this age group are fall-related. These statistics highlight the need for targeted fall prevention initiatives, particularly for older adults, to reduce morbidity and mortality. Programs aimed at reducing fall risks, such as community-based balance and strength training, home safety assessments, and awareness campaigns, are essential to addressing this significant public health concern.

18.4. The NCTTRAC Trauma Public Education and Injury Prevention Subcommittee serves as a resource to identify prevention programs, events, and other prevention resources available to members and the community in TSA-E. Regional, state, and national data will be utilized to determine current trauma trends and address specific priorities. Workgroups and coalitions may also be developed to focus on specific mechanisms and/or populations for educational opportunities. The subcommittee is currently advancing a Fall Prevention Initiative, which integrates prehospital, hospital, and post-acute or long-term care facilities to create a comprehensive approach to reducing fall-related injuries and fatalities. Members are encouraged to reference *Appendix C-4: NCTTRAC Falls Prevention and Outreach Initiative Guidelines* for further information on this initiative.

19. COALITION AND PARTNERSHIP BUILDING

19.1. Coalition and Partnership building is a continuous process of cultivating and maintaining relationships with stakeholders within the NCTTRAC trauma service area. Collaboration on injury control and trauma system development with community partnerships is key. Constituents include health care professionals, prehospital providers, insurers, payers, data experts, consumers, advocates, policy makers, trauma center administrators, and media representatives. Coalition priorities are trauma system development, regional system guidelines, financing initiatives and disaster preparedness, system integration, and promoting collaboration rather than competition between trauma centers and prehospital providers. It is desired that every member of NCTTRAC participate in at least one activity or one committee.

19.2. Currently most initiatives around Injury Prevention are carried out by members of NCTTRAC hospital and prehospital providers. NCTTRAC supports collaborative partnerships with community leaders to assist with injury awareness and prevention activities.

20. DISASTER PREPAREDNESS AND RESPONSE

20.1. Disaster preparedness and response activities among the emergency healthcare system in TSA-E are conducted at the regional level through the Health Care Coalition (HCC). The HCC has been developed and funded as part of the federal Hospital Preparedness Program (HPP). The TSA-E HCC is composed of partner organizations from four core groups: hospitals, EMS, public health, and emergency management. These four groups work together as the HCC to promote emergency preparedness and healthcare delivery response. The HCC's purpose is to:

20.1.1. Lead collaborative regional planning, formulate strategies, and make recommendations to the NCTTRAC Board of Directors to ensure the best possible approaches to regional HCC planning can be achieved in TSA-E.

20.1.2. Identify and assess regional needs in order to develop possible options for strengthening the overall resiliency of regional response capabilities based upon federal and state guidance and best practices (these include the Hospital Preparedness Program, Centers for Medicare and Medicaid Services, Federal Emergency Management Agency, etc.)

20.1.3. Serve to identify the regional priorities set forth by current federal and state guidelines by utilizing input from Subject Matter Experts to set strategic planning goals and initiatives.

20.2. The TSA-E HCC conducts disaster preparedness and response activities in accordance with the Trauma Service Area-E Health Care Coalition Regional Readiness Plan and Regional Response Plan, which can be found on the HCC-E Regional Plans webpage.

20.3. Coordinated medical responses that are timely and exercised routinely can mitigate damages and save lives. The response goal of the HCC is to promote resiliency and adequate surge capacity and capability across TSA-E during a mass casualty or disaster situation. Effective response and recovery require a coordinated effort among public and private entities. Hospitals and healthcare facilities are encouraged to be active

participants in emergency preparedness efforts, including partnering with EMS, emergency management, public health, and other entities.

20.4. The TSA-E HCC regional response structure promotes jurisdictional cooperation and coordination, but recognizes the autonomy, operational authority, and unique characteristics of each jurisdiction at the facility, local, regional, and state levels.

21. RESEARCH

21.1. NCTTRAC participates in regional research on an ad hoc basis. The Board of Directors is responsible for governance and release of the data for all research purposes. Members interested in pursuing a regional research project can submit their request to the appropriate service line committee for review. Should the committee vote to endorse the proposed initiative, the Executive Committee is responsible for governance and release of the data for all research purposes.

22. REFERENCES

22.1. American College of Surgeons, Committee on Trauma (2022). Resources for optimal care of the injured patient.