



**NORTH CENTRAL TEXAS
TRAUMA REGIONAL ADVISORY COUNCIL**

2022 Regional Stroke System Plan

**Reviewed by NCTTRAC Board of Directors Date:
August 10, 2021**

**Approved by NCTTRAC General Membership Date:
April 13, 2021**

**Supersedes Regional Stroke System Plan Date:
April 13, 2021**

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<p>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.</p>
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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.

Signature on File

Secretary

8/11/2021

Date

RECORD OF CHANGES

The North Central Texas Trauma Regional Advisory Council ensures that necessary changes and revisions to The Regional Stroke 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 Stroke 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 Change	Summary of Changes	Change Made by (Print Name)
All	7/7/2021	Changed dates to reflect FY22 approval	Corrine Cooper
Section IX	7/7/2021	Reformatted sentence structure	Corrine Cooper
Section IX	7/7/2021	Updated metropolitan and non-metropolitan terminology used by DSHS, as it relates to population density	Corrine Cooper
Section XII	7/7/2021	Updated EMResource verbiage regarding ED operations status	Corrine Cooper
All	7/26/2021	Changing designations numbers to roman numerals for each level	Christina Gomez
All	7/26/2021	Changed Regional Stroke Plan to Regional Stroke System Plan throughout section where mentioned	Christina Gomez
Section V, IX, and X	7/26/2021	Replaced verbiage: Paradigms and protocols replaced with guidelines	Christina Gomez
Section VII	7/26/2021	Changed verbiage for Medical Direction of Prehospital Care Providers to solidify timeframe of updates and responsibilities	Christina Gomez
Section XI	7/26/2021	Changed verbiage of Decision Criteria to better align with Air Medical transport times	Christina Gomez
Section XIII	7/26/2021	Reformatted sentence structure for clarification of inter-facility transfer criteria	Christina Gomez
Section IX	7/26/2021	Added vitals and blood glucose to system triage section	Christina Gomez

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

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1. SCOPE

1.1 Mission

1.1.1 The mission of the North Central Texas Trauma Regional Advisory Council (NCTTRAC) Stroke Committee is to develop a cohesive and aligned patient-centered regional stroke system of care (SSOC) that identifies and engages all potential key stakeholders with the purpose to improve the knowledge of the public, encourage primordial and primary prevention, advance and facilitate stroke therapy, improve secondary prevention and recovery from stroke; as well as reduce disparities in stroke care within the region. Such efforts will provide the infrastructure to facilitate achieving the primary goal of the Regional Stroke System Plan, to mitigate the effects of stroke within the region.

1.2 Vision

1.2.1 NCTTRAC Stroke Committee will provide leadership in stroke treatment by creating a broad stakeholder coalition with the responsibility and resources to develop, operate, evaluate and integrate a regional SSOC based on relevant guideline recommendations.^{1,2} Stakeholders should draw from key constituents, including: healthcare providers, patients, caregivers, hospitals, home health companies, regulatory agencies and payers.

1.3 Organization

1.3.1 One of the NCTTRAC Stroke Committee's goals is to provide the infrastructure and leadership necessary to sustain an exemplary and concerted regional SSOC within the designated nineteen county region known as Trauma Service Area E (TSA-E), which strives to improve the level of care provided to persons living or traveling through this region. NCTTRAC standing committees and member organizations (hospitals, first responder organizations, emergency medical services (EMS) providers, air medical providers, emergency management and public health) work collaboratively to ensure that quality care is provided to stroke patients throughout the continuum of stroke care. The continuum of the eight domains of a SSOC include community education, primordial prevention, primary prevention, EMS response, acute stroke treatment, secondary prevention, stroke rehabilitation and continuous quality improvement (QI).¹

1.4 Regional Plan

1.4.1 The Regional Stroke System Plan has been developed in accordance with generally accepted stroke guidelines, as well as procedures for implementation of a comprehensive EMS and regional SSOC. This plan does not establish a legal standard of care, but rather is intended as an aid to decision-making in care of stroke patients. The Regional Stroke System Plan is not intended to supersede the physician's prerogative to order treatment.

2. STROKE SYSTEMS OF CARE GOALS

2.1 The purpose of the Stroke Committee shall be to facilitate the collaboration and advancement of a regional SSOC that is based on accepted standards of care and guideline statements. The NCTTRAC Stroke Committee will solicit participation from key stakeholders comprised of: broadly healthcare providers, patients, caregivers, hospitals, home health companies, regulatory agencies, professional societies involved in health care and payers. NCTTRAC Stroke Committee will encourage regional participation in providing and outlining quality stroke care that is patient-focused, complies with state and national guidelines and

seeks to improve public health in the 8 domains of a SSOC: community education, primordial prevention, primary prevention, EMS response, acute stroke treatment, secondary prevention, stroke rehabilitation and continuous QI.¹ Policies that standardize the organization of stroke care throughout the continuum should be enacted and indorsed. Such policies should aim to lower barriers to seeking emergency care for stroke, to ensure that stroke patients receive care at appropriate facilities in a timely manner, and to facilitate access to secondary prevention, rehabilitation and recovery resources after stroke.¹ Adopted from current guidelines, NCTTRAC Stroke Committee shall develop a plan for a regional SSOC that addresses these key domains.¹

3. RECOGNITION AND RESPONSIBILITIES OF STROKE FACILITIES

3.1 Goals

- 3.1.1 The goals of the NCTTRAC Stroke Committee and Regional Stroke System Plan are to ensure that patients seeking emergency care for stroke receive care at the appropriate facilities in a timely manner, and to facilitate access to secondary prevention, rehabilitation and recovery resources after stroke. The NCTTRAC Stroke Committee promotes collaboration and commitment among the stroke facilities to develop uniform stroke systems standards that address stroke patient needs throughout the continuum of care; addressing the eight domains of a SSOC: community education, primordial prevention, primary prevention, EMS response, acute stroke treatment, secondary prevention, stroke rehabilitation and continuous QI.¹
- 3.1.2 The NCTTRAC Stroke Committee encourages and promotes stroke centers within the region to work in an integrated fashion, providing and sharing best practices. Additionally, the collaboration seeks to establish recommendations for system coordination and inter-facility transfers; assuring that high acuity stroke patients receive appropriate consideration for thrombectomy, thrombolysis, neurosurgical and neurocritical care.
- 3.1.3 Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.
- 3.1.4 Committees Charged
 - 3.1.4.1 Responsibilities charged to the NCTTRAC Stroke, Medical Directors and EMS Committees.
- 3.1.5 Objectives
 - 3.1.5.1 The NCTTRAC Stroke Committee will utilize the Texas Department of State Health Services (DSHS) recognized designation for stroke facilities, that provides the framework for stroke care within the region; Comprehensive Stroke Facility/Level I, Primary Stroke Facility/Level II and Support Stroke Facility/Level III. The stroke facility names will change to reflect the new stroke facility designation, the anticipated new names will be outlined in the 2021 Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation. The anticipated new names will be: Comprehensive Stroke Centers (CSC/Level I), Advanced or non-Comprehensive Thrombectomy Stroke Centers (Level II/TSC), Primary Stroke Centers (PSC/Level III) and Acute Stroke-Ready (Level IV/ASRH).

- 3.1.5.2 Stroke Center accreditation remains the cornerstone process to ensure healthcare facilities remain committed to meeting overall high patient-safety standards. The DSHS shall determine the designation level for each facility by physical location, based on, but not limited to, national stroke standards, the location's own resources and level of care capabilities; as well as compliance with the requirements outlined by the Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation. Designated stroke facilities in the NCTTRAC SSOC, including children's facilities capable of caring for pediatric strokes, shall meet the current department recognized national stroke standards of care for the stroke designation; actively participate in the RAC Stroke Committee and transport plan; and submit data to the DSHS department as requested. Stroke facilities are required to receive and maintain stroke facility designation as outlined by the Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation. Additional goals, considerations and responsibilities for NCTTRAC stroke facilities as outlined by guideline statements¹ and Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation:
- 3.1.5.2.1 The Joint Commission and other certification programs offer four advanced levels of stroke certification for accredited facilities. All levels of certification utilize a standard method of delivering care centered on evidence-based guidelines for stroke care. Each level builds on the capabilities of the previous certification.
 - 3.1.5.2.2 The CSC, TSC, PSC, and ASRH framework provides an appropriate platform for the data-driven development of hospital-based processes of care and outcome metrics.
 - 3.1.5.2.3 Stroke facility treatment processes, technical outcomes (reperfusion rates), complications, and patient clinical outcomes should be tracked. All certified stroke facilities should meet or exceed the standards as outlined by the DSHS approved stroke facility certifying agency.
 - 3.1.5.2.4 All levels of stroke centers should work within the region in an integrated fashion, providing and sharing best practices.
 - 3.1.5.2.5 The TCS is a new level of care recently identified to address the need for greater access to thrombectomy in the community. TSC certification is intended for regions of the country that do not have ready access to CSCs; CSC are the preferred destination for patients with suspected LVO when they are within acceptable transport times. If no CSC is available, a TSC should be the preferred destination for these patients from among all nearby PSCs.^{1,3}
 - 3.1.5.2.6 Stroke centers should adopt approaches to secondary prevention that address all major modifiable risk factors and that are consistent with the national guidelines for all patients with a history or a suspected history of stroke or TIA.
 - 3.1.5.2.7 Stroke centers should provide education and training for patients and family members. Clear, comprehensive, and timely

communication across the inpatient and outpatient post-stroke continuum of care is essential to ensure appropriate medical and rehabilitation care.

- 3.1.5.2.8 To standardize the post-acute care after stroke discharge, stroke centers should comprehensively screen for post-acute complications, provide individualized care plans for patients during the transition of care, provide referrals to community services, and reinforce secondary prevention and self-management of stroke risk factors and lifestyle changes to decrease the risk of recurrent stroke. Trained stroke nurses, nurse practitioners, social workers, community health workers, and others should play a pivotal role.
- 3.1.5.2.9 Stroke care centers should ensure that all stroke survivors receive a standardized screening evaluation during the initial hospitalization to determine whether rehabilitation services are needed and the type, timing, location, and duration of such therapy.
- 3.1.5.2.10 Long-term primary care and specialist (physiatrist or neurology) follow-up should be arranged to identify patients with residual impairments so that these patients receive appropriate continued rehabilitation.
- 3.1.5.2.11 Efforts should be made to advance the use of technology and patient-reported outcomes and to facilitate improved care transitions in stroke care. These interventions should be refined on the basis of continuous QI measurement and methods. Such efforts not only will bolster overall stroke prevention, treatment, and recovery but also may reduce the persistent disparities observed in stroke care. Before implementation, new policies should be evaluated for potential adverse impact on access to care and disparities in care.
- 3.1.5.2.12 A healthcare facility may not use the terms "stroke facility," "stroke hospital," "stroke center," "comprehensive stroke center," "enhanced stroke center," "primary stroke center," "acute stroke ready hospital," "acute stroke ready center" or similar terminology in its signs or advertisements or in the printed materials and information it provides to the public, unless the healthcare facility is currently designated as that level of stroke facility according to the process described by the Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation.
- 3.1.5.2.13 EMResource is the official means of notification of these capabilities and their availability. A facility relinquishing stroke designation shall provide 30 days advance notice to the DSHS Department, NCTTRAC, EMS providers and facilities which customarily transfer-out and/or transfer-in stroke patients.
- 3.1.5.2.14 A designated facility must provide written notification of a temporary event or decision impacting the ability of a stroke facility to comply with designation requirements to maintain the

current designation status, or to increase the stroke facilities capabilities that affect the region. The notice shall be provided as soon as possible within 24 hours to the EMS providers, healthcare facilities to which it customarily transfers–out and/or transfers–in stroke patients, NCTTRAC and the DSHS Department.

- 3.1.5.3 NCTTRAC will not designate stroke facilities at any level, but may set minimum standards for what is considered active participation for the purposes of a Letter of Participation:

- 3.1.5.3.1 Stroke facility needs to maintain a valid DSHS designation as a Stroke Center.

- 3.1.5.3.2 NCTTRAC minimum participation requirements as defined in the NCTTRAC Bylaws (See [Annex A: NCTTRAC Bylaws](#)) or Standard Operating Procedures.

4. COMMUNITY EDUCATION AND STROKE PREVENTION

4.1 Goals

- 4.1.1 Through a collaboration between NCTTRAC key stroke stakeholders, the SSOC will seek to address risk factors and behavior modifications aimed at community education, primordial prevention, primary prevention and secondary prevention of stroke. An additional goal is to increase public, physician, hospital and EMS personnel awareness of the signs and symptoms of stroke, stroke treatment options, and best practices as outlined by the NCTTRAC Stroke Committee and current guidelines. Public education programs should be sustainable over time and designed to reach racially/ethnically, age and gender diverse populations.

4.2 Committee Charged

- 4.2.1 Responsibilities charged to the NCTTRAC Stroke Committee.

4.3 Objectives

- 4.3.1 The NCTTRAC stroke system key stakeholders will partner to achieve the following objectives either in collaboration or independently as a pillar in the stroke care system¹:

- 4.3.1.1 Support local and regional educational initiatives to increase stroke awareness (including stroke warning signs, risk factors, primary and secondary prevention, and recovery), aimed at the general and pediatric population with enriched targeting of populations at increased risk for stroke and poor outcomes after stroke.¹

- 4.3.1.2 Adopt innovative behavioral interventions and encourage research in tools that support sustainable improvements addressing barriers to healthy behaviors, prevention adherence, and behavioral responses to warning symptoms.¹

- 4.3.1.3 Public health leaders and medical professionals shall plan and implement public education programs focused on stroke systems and the need to seek emergency care (by calling 9-1-1) in a rapid manner. These programs shall be designed to reach diverse populations. Such educational programs should be aimed to increase use of the 9-1-1 EMS system, to reduce stroke onset to ED arrival times, increase EMS prehospital notification and to increase timely use of stroke treatments.¹

- 4.3.1.4 Adopt approaches to secondary prevention that address all major modifiable risk factors and that are consistent with the national guidelines for all patients with a history or a suspected history of stroke or TIA.¹
- 4.3.1.5 Support education and training for patients and family members. Clear, comprehensive, and timely communication across the inpatient and outpatient post-stroke continuum of care is essential to ensure appropriate medical and rehabilitation care.¹

5. SYSTEM ACCESS

5.1 Goal

- 5.1.1 The goal for system access within TSA-E is two-fold: 1) access to emergency stroke care within the region must be rapidly available; 2) EMS must be available to provide quality health care to patients in TSA-E. In portions of this region, First Responder Organizations (FRO) may provide initial treatment pending EMS arrival.

5.2 Committees Charged

- 5.2.1 Responsibilities charged to the NCTTRAC EMS and Stroke Committees.

5.3 Objectives

- 5.3.1 In consultation with EMS leaders, local, regional, and state agencies, as well as medical authorities and local experts, NCTTRAC will develop triage guidelines that ensure that all patients with a known or suspected stroke are rapidly identified, assessed and triaged as outlined in this document. Standardized approaches to prehospital stroke assessment, triage, management and inter-facility documentation as outlined by the NCTTRAC Regional Stroke Plan is encouraged for 9-1-1 call centers and EMS dispatchers.
- 5.3.2 One of the primary elements of an EMS/Stroke system is to provide access to EMS and subsequent mobilization of a medical response to the scene. Every call for emergency services should universally and automatically be accompanied by location identifying information. A regional system providing dedicated lines that allow direct routing of emergency calls is ideal. Routing is based on telephone exchange areas, not municipal boundaries. Automatic Number Identification (ANI) and Automatic Location Identification (ALI) should be available. Alternative Routing allowing 9-1-1 calls to be routed to a designated alternative location is in effect. Most areas route their calls to the county 9-1-1 in case of overload or failure.
- 5.3.3 When calls come into a 9-1-1 center, the communication system ensures that the call taker has the appropriate written protocols as well as proper training. The caller should not have to talk to more than two telecommunications personnel. The call transfer equipment used in transferring these calls should take no longer than ten seconds and the equipment must have a history of being 95% reliable.
- 5.3.4 The 9-1-1 center should utilize specific screening protocols for potential stroke patients and prioritize EMS dispatch at the appropriate level for patients screening positive for acute stroke.⁴⁻⁶ The 9-1-1 centers should utilize QI processes to review screening and dispatch for patients transported by EMS who are suspected of having a stroke, and whenever possible review the actual final clinical hospital diagnoses. Call takers should have annual stroke education training requirements to maintain knowledge and proficiency.

6. EMS AND COMMUNICATIONS

6.1 Goals

- 6.1.1 EMS communications systems must provide the means by which emergency resources can be accessed, mobilized, managed and coordinated. An emergency assistance request and the coordination of the response require communication linkages for: 1) access to EMS from the scene of the incident, 2) dispatch and coordination of EMS resources, 3) coordination with medical facilities and 4) coordination with other public safety and emergency personnel. It is imperative that EMS personnel provide prehospital notification to the receiving stroke facility that a suspected stroke patient is in route, this allows the receiving stroke facility to mobilize the appropriate resources prior to patient arrival and expedite care.
- 6.1.2 Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

6.2 Committees Charged

- 6.2.1 Responsibilities charged to the NCTTRAC EMS and Stroke Committees

6.3 Objectives

- 6.3.1 The system of communication is an integral part of a regional plan for the care of stroke patients. Networks should be geographically integrated and based on the functional need to enable routine and special large-scale operations for communications among EMS and other public safety agencies. Utilization of system status management technology should be considered for both areas with high demand of mobile resources and for those areas where resources may not be readily available on a routine basis but would benefit from shifting resources from one geographic area to another.
- 6.3.2 EMS communication center(s) should be staffed with fully trained tele-communicators. The ideal tele-communicator should have completed an Emergency Dispatch course, such as the Emergency Medical Dispatch: National Standard Curriculum as offered from the National Highway Traffic Safety Administration and the U.S. Department of Transportation.
- 6.3.3 NCTTRAC encourages 100% participation from all EMS agencies within the nineteen counties that comprise TSA-E. By enhancing participation, NCTTRAC can identify quality issues related to response times. NCTTRAC can then move toward the resolution of these issues through assessment, education, intervention, and evaluation through system process improvement (SPI) procedures.
- 6.3.4 EMS agencies should ensure that stroke management education is provided at least yearly and is integrated as a "core care competency" for EMS providers. It is recommended that a total of 4 hours of continuing credit be obtained from the 144 hours that are required during the 4-year recertification cycle with DSHS. This education should be developed and delivered in conjunction with regional stroke facilities and local/regional EMS partners. Stroke management education should include:
 - 6.3.4.1 Adopt and train EMS providers to a single stroke screening tool and severity scale for identifying suspected acute stroke due to LVO.^{7, 8}
 - 6.3.4.2 Train EMS providers to destination plans based on stroke facility locations and capability, anticipated transport times, and patient acuity.⁹ The local

algorithm should include consideration of air medical transport for longer transport distances.

6.3.4.3 Regional inter-facility transport agencies should be trained for the safe and rapid transport of stroke patients, including patients who received thrombolytic therapy or who require consideration for EVT.

6.3.4.4 EMS agencies should develop and train providers on prehospital stroke notification protocols with receiving stroke facilities. Pre-arrival notification enables activation of stroke teams facilitating direct transport of the patient to the CT scanner on ED arrival and rapid evaluation of the patient by the ED physician and stroke team.

6.3.5 All participating prehospital agencies should engage in QI programs coordinated with the SSOC, with an emphasis on dispatch, response, field triage, and transitions of care. Agencies should assess their adherence to recommended targets for prehospital performance in acute stroke care.²

7. MEDICAL OVERSIGHT

7.1 Goal

7.1.1 The development of a regional SSOC requires the active participation of qualified physician providers. Physicians should be clinically qualified in their area of practice and have expertise and competence in the treatment of stroke patients. The regional SSOC will be developed under the direction of representatives of NCTTRAC medical staff throughout the region.

7.2 Committee Charged

7.2.1 Responsibilities are charged to the NCTTRAC Medical Directors Committee.

7.3 Objective

7.3.1 Provide consistent medical oversight to ensure regional guidelines align with national standards.

8. REGIONAL PREHOSPITAL MEDICAL CONTROL

8.1 Goals

8.1.1 The Regional Stroke System Plan will assist with identification and education of regional medical control resources, standardize guidelines and analyze accessibility of medical control resources. Additionally, it will identify and educate NCTTRAC EMS Providers and serve as a source for medical direction.

8.2 Committees Charged

8.2.1 Responsibilities are charged to the NCTTRAC EMS, Medical Directors and Stroke Committees.

8.3 Objectives

8.3.1 All EMS Providers have a Medical Director for their service. The Medical Directors have signed a form verifying that they are following the NCTTRAC guidelines for the treatment of patients within their area. These forms are updated and maintained by the NCTTRAC administrative office.

8.3.2 NCTTRAC encourages coordinated medical control in our region and to that end has organized a Medical Directors Committee which meets periodically to review the protocols and guidelines for EMS Providers within TSA-E. Several medical directors have multiple EMS Providers working with them to help consolidate and control the prehospital care of the stroke patients, but this is not a mandatory requirement at this

time. Through the efforts of the Medical Directors Committee, NCTTRAC will continue to work towards developing consistency and standardization of the guidelines used within our region.

- 8.3.3 Physician Involvement in Regional Plan Development – The Medical Directors Committee meets quarterly to conduct its usual business and to review and approve regional planning components, policies and guidelines related to medical care. Each EMS Medical Director and at least one physician from each NCTTRAC hospital has the opportunity for representation on this standing working group. All physicians within TSA-E are invited to attend these meetings.
- 8.3.4 Medical Direction of Prehospital Care Providers – In accordance with DSHS guidelines, all NCTTRAC prehospital care providers function under medical control through a delegated physician practice. Regional EMS guidelines are available online to all EMS Providers for incorporation into local protocols. Annual reviews and updates are completed and distributed upon approval. EMS Medical Directors may choose to adopt these guidelines with their emergency healthcare systems.
- 8.3.5 Regional Quality Improvement – The Medical Directors Committee meets quarterly to conduct business and to carry out regional QI activities. (Please see System PI section for more details).
- 8.3.6 EMResource – EMResource is the official means by which hospitals can update EMS Providers as to their DSHS stroke designation level. It is the responsibility of the DSHS stroke facilities to maintain an accurate status reflecting the level of designation by law. Additionally, it is the responsibility of the EMS Providers to use EMResource to verify a hospital's DSHS designation and to monitor if the facility is experiencing any issues that could affect the hospital's ability to provide appropriate stroke care.
 - 8.3.6.1 A facility relinquishing stroke designation shall provide 30 days advance notice to the DSHS Department, NCTTRAC, EMS providers and facilities which customarily transfer-out and/or transfer-in stroke patients.
 - 8.3.6.2 A designated facility must provide written notification of a temporary event or decision impacting the ability of a stroke facility to comply with designation requirements to maintain the current designation status, or to increase the stroke facilities capabilities that affect the region. The notice shall be provided as soon as possible within 24 hours to the EMS providers, healthcare facilities to which it customarily transfers-out and/or transfers-in stroke patients, NCTTRAC and the DSHS Department.
- 8.3.7 Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

9. PREHOSPITAL STROKE TRIAGE AND MANAGEMENT

9.1 Goals

- 9.1.1 The NCTTRAC SSOC provides triage guidelines to assist pre-hospital providers with the rapid identification, assessment, and triage of all suspected stroke patients with the aim to lower barriers to seeking emergency care for stroke and to ensure that stroke patients receive care at appropriate facilities in a timely manner. Pediatric Stroke patients (0<18 yo) will be transported to the nearest Pediatric Stroke Center: Children's Health or Cook Children's Medical Center.

9.2 Committees Charged

- 9.2.1 Responsibilities are charged to the NCTTRAC EMS, Stroke, Medical Directors and Emergency Department Operations Committees.

9.3 Purpose

- 9.3.1 In consultation with EMS leaders, local, regional, and state agencies, as well as medical authorities, current national guideline statements and local experts; NCTTRAC will develop triage guidelines that ensure that all patients with a known or suspected stroke are rapidly identified, assessed and triaged as outlined below.¹⁻³ Standardized approaches to prehospital stroke assessment, triage, management and inter-facility documentation as outlined by the NCTTRAC Regional Stroke Plan is encouraged for 9-1-1 call centers and EMS dispatchers.
- 9.3.2 The prehospital acute stroke triage and transport recommendations serve to direct the triage of adult patients (greater than or equal to 18 years of age) to the most appropriate facility, based on duration and severity of symptoms. In the event EMS encounters an acute stroke patient under the age of 18, contact the closest pediatric facility or Medical Control for guidance. Multi-society endorsed guideline statements and recommendations¹⁻³ as well as consensus of expert opinion (Pediatric Neurologist, Vascular Neurologists, Neuroendovascular Surgeons and Neurosurgeons) based on clinical experience and in conferment with NCTTRAC Medical Directors and Stroke Committee members are outlined in these recommendations. See [Annex B: NCTTRAC Acute Stroke Triage Algorithm](#), from the American Heart Association Mission: Lifeline Stroke Algorithm.³
- 9.3.3 Regional stakeholders must collaborate to consider local prehospital and health care resources, individual stroke center performance and geographic considerations to create an optimal SSOC and destination protocol to ensure effective and efficient stroke care.¹ Ideal destination plans need to factor in all available data sources including traffic patterns, site-specific performance data and associated clinical outcomes.¹ EMS agencies should implement destination plans based upon both time and severity for patients with suspected LVO within 24 hours of last known well that prioritize a nearby CSC over other centers of lower capability when available within acceptable transport times ([Annex B: NCTTRAC Acute Stroke Triage Algorithm](#)).
- 9.3.4 In response to the perceived need for greater access to thrombectomy, several of the accrediting agencies for stroke centers introduced a fourth level of certification for facilities that can effectively perform EVT but do not meet all the criteria of a CSC, the Thrombectomy Capable Stroke Center (TSC). The American Stroke Association 2019 SSOC Recommendations and the American Heart Association Mission: Lifeline Stroke outline that the TSC certification is intended for regions of the country that are not readily accessible to CSCs; CSC are the preferred destination for patients with suspected LVO when they are within acceptable transport times.¹ If no CSC is available, a TSC should be the preferred destination for these patients from among all nearby PSCs.¹⁻³
- 9.3.5 In the absence of new data, it is reasonable to adapt the Mission: Lifeline algorithm to the needs of the community.¹⁻³ When several stroke center options exist within similar travel times, EMS should seek care at the facility capable of offering the highest level of stroke care.¹⁻³ No randomized trial data exist to support a definitive recommendation on the acceptable additional time when considering triaging a patient with suspected LVO to a CSC. Therefore, the Mission: Lifeline Stroke Committee felt it was best to err on the side of caution and initially set the total transport time from scene to CSC at 30 minutes. However, patients eligible for IV thrombolysis (0-3 hours

from last known well) should be routed to the nearest ASRN or PSC if transport to the nearest CSC or TSC would make them ineligible on arrival due to additional transport time. In suburban and rural setting, prehospital destination plans and inter-facility transport policies should prioritize transport of suspected LVO patients to a facility with well-defined evaluation and stabilization protocols to minimize Door-In-Door-Out (DIDO) times for patients requiring transfer to a higher level of care.³ In rural communities or those where large distances separate stroke centers, additional transport time, including air medical transport, of up to 30 additional minutes may be reasonable.^{1, 3}

9.4 Stroke System of Care Modification for Metropolitan, Non-Metropolitan and Frontier Communities

9.4.1 The following is adapted from the American Heart Association Mission: Lifeline Stroke recommendation for Emergency Medical Services for acute stroke triage and routing.¹⁻

³ These modifications to transport time thresholds are suggested to help EMS agencies adjust their regional stroke triage protocols according to local resources in collaboration with key stakeholders.³

9.4.1.1 A Metropolitan SSOC modification is appropriate for a metro region (RUCA code 1)¹⁰ These areas have high population density (50,000+ inhabitants) and abundant healthcare resources, with access to one or more TSC/CSC within 30 min transport time by EMS ground.

9.4.1.2 A Non-Metropolitan SSOC modification is appropriate for large residential communities adjacent to an urban core (RUCA codes 2-3). These areas generally have a population density closer to the urban threshold and may have access to both nearby community hospitals as well as suburban or urban advanced stroke centers within a 30–60-minute transport time by EMS air or ground. Patients with suspected LVO should be routed directly to a CSC if the additional transport time past the nearest TSC does not exceed 30 minutes, and the maximum total transport time from scene to CSC does not exceed 45 minutes. If no CSC is within 45 minutes, then EMS should go directly to a TSC if the additional transport time past the nearest PSC or ASRH does not exceed 30 minutes, and the maximum total transport time from scene to TSC does not exceed 45 minutes. If no TSC or CSC exists within 45 minutes total travel time, then EMS should go to the nearest ASRH or PSC.

9.4.1.3 A Frontier SSOC modification as appropriate for a very small or nonmetropolitan region (RUCA codes 4-10). These areas generally have low population density (<50,000 inhabitants), limited local general healthcare resources, few nearby ASRH or PSC, and often no TSC/CSC within 60 minutes transport time by EMS ground, although there may be one within 60 minutes by air. Patients with suspected LVO should be routed directly to a CSC if the additional transport time past the nearest TSC does not exceed 30 minutes, and the maximum total transport time from scene to CSC does not exceed 60 minutes. If no CSC is within 60 minutes, then EMS should go directly to a TSC if the additional transport time past the nearest PSC or ASRH does not exceed 30 minutes, and the maximum total transport time from scene to TSC does not exceed 60 minutes.

9.4.2 The COVID-19 pandemic further emphasizes the need for flexible adaptation of prehospital triage and inter-facility transport in response to local and regional factors.

Preferential routing of suspected LVO patients to centers with thrombectomy capability may be of even greater importance when in-hospital and inter-facility delays are amplified in conditions such as the COVID-19 pandemic.

9.4.3 Prehospital Triage of Stroke Patients

9.4.3.1 Basic Level

9.4.3.1.1 Assess and support ABCs according to UNIVERSAL CARE – ADULT:

- 9.4.3.1.1.1 A (Airway): Airway support and ventilator assistance are recommended for patients with acute stroke who have decreased consciousness or who have compromised airway. Ensure airway patency with suctioning and OPA or NPA, as needed.
- 9.4.3.1.1.2 B (Breathing): Supplemental oxygen should be provided to maintain oxygen saturation > 94% (continuous monitoring).
- 9.4.3.1.1.3 C (Circulation): Evaluate, document, and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines (CPG).
- 9.4.3.1.1.4 D (Disability): Assess and document GCS, pupillary size and reactivity.
- 9.4.3.1.1.5 E (Exposure/Environmental): Assess for evidence of traumatic injury, especially head injury.

9.4.3.1.2 Positioning/stabilization:

- 9.4.3.1.2.1 Place the patient in a supine position, head of the bed elevated 30 degrees.
- 9.4.3.1.2.2 Cardiac monitoring during transport is recommended. If there is evidence of shock, treat according to the Shock CPG.
- 9.4.3.1.2.3 If there is hypoglycemia (POC glucose < 60 mg/dL), treat according to Diabetic Emergencies CPG.
- 9.4.3.1.2.4 If there is Seizure activity, treat according to the Seizure CPG.

9.4.3.2 Assessment

9.4.3.2.1 History - Interview patient, family members and other witnesses to determine symptoms, time of symptom discovery and last known well, or last time patient without symptoms:

- 9.4.3.2.1.1 Obtain mobile number of next of kin and witnesses.
- 9.4.3.2.1.2 NOTE: For “wake up strokes” the time documented is the time last known well not the time the patient was found.
- 9.4.3.2.1.3 NOTE: Sudden onset of any of the following suggests the possibility of acute stroke:
 - 9.4.3.2.1.3.1 Numbness or weakness of face, arm and/or leg (especially on one side of the body)
 - 9.4.3.2.1.3.2 Confusion
 - 9.4.3.2.1.3.3 Trouble speaking or understanding language

- 9.4.3.2.1.3.4 Trouble seeing in one or both eyes or double vision
- 9.4.3.2.1.3.5 Trouble walking
- 9.4.3.2.1.3.6 Dizziness
- 9.4.3.2.1.3.7 Loss of balance or coordination
- 9.4.3.2.1.3.8 Sudden onset of severe headache with no known cause (suggests hemorrhagic stroke)
- 9.4.3.2.1.3.9 Any asymmetry of the neurological exam
- 9.4.3.2.2 Additional History:
 - 9.4.3.2.2.1 Obtain patient history including co-morbid conditions.
 - 9.4.3.2.2.2 Items to Report: seizure at onset, head trauma, history of recent surgeries, history of bleeding problems, signs of possible brain hemorrhage [severe headache of sudden onset, nausea/vomiting with headache or loss of consciousness (LOC)].
 - 9.4.3.2.2.3 Additional history: Past medical history, allergies (iodinated contrast).
 - 9.4.3.2.2.4 Be alert to common stroke mimics*.
 - 9.4.3.2.2.5 Determine if patient has pre-existing substantial disability (e.g. need for nursing home care or unable to walk independently).
 - 9.4.3.2.2.6 Medications – obtain a list of all medications including blood thinners such as direct thrombin inhibitors, factor Xa inhibitors, low molecular weight heparin and unfractionated heparin [i.e. warfarin (Coumadin), rivaroxaban (Xarelto), dabigatran (Pradaxa), apixaban (Eliquis), edoxaban (Savaysa), enoxaparin (Lovenox)]. (If possible, record when last dose was taken.)
 - 9.4.3.2.2.7 Device/implant history (i.e. left ventricular assist device, pacemaker, valve replacement).
- 9.4.3.2.3 Examination
 - 9.4.3.2.3.1 Assess and record blood pressure, rate, rhythm, respiratory rate and oxygen saturation.
 - 9.4.3.2.3.2 Apply a validated and standardized instrument for stroke screening such as FAST (Face, Arm, Speech, Time), Los Angeles Prehospital Stroke Screen, or Cincinnati Prehospital Stroke Scale
 - 9.4.3.2.3.3 In prehospital patients who screen positive for suspected stroke, apply a standard prehospital stroke severity assessment tool Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion

Evaluation Scale (RACE) or Vision, Aphasia, Neglect (VAN) Assessment.

- 9.4.3.3 Management
 - 9.4.3.3.1 EMS personnel should begin the initial management of stroke in the field as outlined in this document.
 - 9.4.3.3.2 Prevent aspiration, HOB > 30. Ensure airway patency with suctioning and OPA or NPA, as needed.
 - 9.4.3.3.3 Provide supplemental oxygen if needed to keep oxygen saturation > 94%
 - 9.4.3.3.4 Treatment of hypertension is NOT recommended unless blood pressure > 220/120 mmHg.
 - 9.4.3.3.5 Treat hypotension. Evaluate, document and treat signs/symptoms of shock according to the Shock CPG. If possible, obtain EKG during workup, as long as it does not delay transport to appropriate stroke facility.
 - 9.4.3.3.6 Avoid dextrose containing fluids in non-hypoglycemic patients.
 - 9.4.3.3.7 Perform and document a POC Glucose analysis and treat according to the ASA 2019 Guidelines for Management of Acute Ischemic Stroke.²
 - 9.4.3.3.7.1 Hypoglycemia (blood glucose < 60 mg/dL) should be treated in patients suspected of acute ischemic stroke.
 - 9.4.3.3.8 To facilitate expedited stroke workup in the ED, place at least one 18 or 20 gauge IV in the antecubital fossa or forearm (right preferable).
 - 9.4.3.3.9 To facilitate fastest Door-to-Needle and stroke care, if possible collect blood sample to provide receiving facility, however, as long as it does not delay transfer.
- 9.4.3.4 System Triage
 - 9.4.3.4.1 Goal for on-scene time, 10-15 minutes or less. Encourage family to go directly to the ED if not transported with the patient.
 - 9.4.3.4.2 See [Annex B: NCTTRAC Acute Stroke Triage Algorithm](#) for the Acute Stroke Triage Algorithm.
 - 9.4.3.4.3 Call stroke alert, pre-notify receiving facility that a suspected stroke patient is in route so that the appropriate resources may be mobilized before patient arrival.
 - 9.4.3.4.3.1 Goal to provide: LKW, vitals, blood glucose, stroke severity score, next of kin phone number
 - 9.4.3.4.4 Goal: 30 seconds for EMS to ED triage nurse hand-off.
 - 9.4.3.4.5 Bypass Exclusions:
 - 9.4.3.4.5.1 If severe or life-threatening trauma is suspected in addition to stroke, transfer to the appropriate level trauma center.
 - 9.4.3.4.5.2 Patients under hospice care or with Medical Orders for Scope of Treatment (MOST) that outlines no emergency measures should go to the nearest appropriate hospital.

- 9.4.3.4.5.3 Common ischemic stroke mimics: alcoholic intoxication, cerebral infections, drug overdose, hemorrhagic stroke, hypoglycemia, hyperglycemia, metabolic disorders, atypical migraines, neuropathies (e.g. Bell's palsy), seizure, post-ictal state and tumors.

10. PEDIATRIC STROKE TRIAGE AND MANAGEMENT

10.1 Goals

- 10.1.1 To increase awareness and identification of strokes in the pediatric population (infants and children less than 18 years of age), as well as increase rapid triage and transport to the nearest appropriate pediatric facility.

10.2 Committees Charged

- 10.2.1 Responsibilities are charged to the NCTTRAC EMS, Stroke, Pediatric, Medical Directors and Emergency Department Operations Committees.

10.3 Purpose

- 10.3.1 In consultation with EMS leaders, local, regional, and state agencies, as well as medical authorities, current national guideline statements and local pediatric neurology experts; NCTTRAC will develop triage guidelines that ensure that all pediatric patients with a known or suspected stroke are rapidly identified, assessed and triaged as outlined below. 1-3,11 The prehospital acute stroke triage and transport recommendations serve to direct the regional triage of pediatric patients with acute stroke to the most appropriate facility. In the event EMS encounters an acute stroke in a pediatric patient (0 to < 18 years), contact Cook Children's Medical Center or Children's Health Dallas for guidance. These pediatric hospitals have a stroke program that meets subspecialty and imaging capability to manage strokes in patients under age 18 years.

10.4 Prehospital Triage of Stroke Patients

10.4.1 Basic Level

- 10.4.1.1 Assess and support ABCs according to UNIVERSAL – PEDIATRIC:
 - 10.4.1.1.1 A (Airway): Airway support and ventilator assistance are recommended for patients with acute stroke who have decreased consciousness or who have compromised airway. Ensure airway patency with suctioning and OPA or NPA, as needed.
 - 10.4.1.1.2 B (Breathing): Supplemental oxygen should be provided to maintain oxygen saturation > 94% (continuous monitoring).
 - 10.4.1.1.3 C (Circulation): Evaluate, document and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines (CPG).
 - 10.4.1.1.4 D (Disability): Assess and document GCS, pupillary size and reactivity.
 - 10.4.1.1.5 E (Exposure/Environmental): Assess for evidence of traumatic injury, especially head injury.
- 10.4.1.2 Positioning/stabilization:
 - 10.4.1.2.1 Place the patient in a supine position, head of the bed elevated 30 degrees.
 - 10.4.1.2.2 Cardiac monitoring during transport is recommended.

- 10.4.1.2.3 If there is evidence of shock, treat according to the Shock CPG.
- 10.4.1.2.4 If there is hypoglycemia (POC glucose < 60 mg/dL), treat according to Diabetic Emergencies CPG.
- 10.4.1.2.5 If there is Seizures, treat according to the Seizure CPG
- 10.4.2 Assessment
 - 10.4.2.1 History
 - 10.4.2.1.1 Consider stroke in any pediatric patient with new onset headache and/or sudden new-onset focal neurological symptoms.
 - 10.4.2.1.2 Causes include:
 - 10.4.2.1.2.1 Congenital heart conditions/surgery
 - 10.4.2.1.2.2 Sickle Cell Disease and other hematologic conditions, such as those causing abnormal blood clotting
 - 10.4.2.1.2.3 Infectious/inflammatory (vasculitis) and non-inflammatory blood vessel conditions
 - 10.4.2.1.2.4 Metabolic conditions
 - 10.4.2.1.2.5 Drug ingestion like cocaine or methamphetamine
 - 10.4.2.1.3 Presentation: Seizures at presentation are more common than in the adult population and more common in children under age 2 years.
 - 10.4.2.1.4 Infants may present with focal weakness, altered level of consciousness and seizures.
 - 10.4.2.1.5 Children may present with new onset headache, focal neurologic deficit, altered level of consciousness, slurred speech or refusal to speak and seizures.
 - 10.4.2.1.6 Possible stroke related focal neurologic deficits:
 - 10.4.2.1.6.1 Hemiparesis
 - 10.4.2.1.6.2 Speech disturbance: aphasia/confusion, dysarthria, slurring of speech
 - 10.4.2.1.6.3 Visual disturbance
 - 10.4.2.1.6.4 Cranial neuropathies
 - 10.4.2.1.6.5 Hemisensory loss
 - 10.4.2.1.6.6 Ataxia-loss of balance
 - 10.4.2.1.6.7 New onset seizure: < 2 years old have increased risk of stroke presenting as new onset seizure
 - 10.4.2.1.6.8 Lateralized tonic-clonic activity
 - 10.4.2.1.6.9 Seizure with post-ictal focal deficit that does not resolve quickly
 - 10.4.2.1.7 Head and eye deviation indicates focal lesion. Interview patient, family members and other witnesses to determine symptoms, time of symptom discovery and last known well (LKW), or last time patient without symptoms:
 - 10.4.2.1.8 Obtain mobile number of next of kin and witnesses.

- 10.4.2.1.9 NOTE: For “wake up strokes” the time documented is the time last known well not the time the patient was found.
- 10.4.2.1.10 NOTE: Sudden onset of any of the following suggests the possibility of acute stroke:
 - 10.4.2.1.10.1 Numbness or weakness of face, arm and/or leg (especially on one side of the body)
 - 10.4.2.1.10.2 Confusion
 - 10.4.2.1.10.3 Trouble speaking or understanding language
 - 10.4.2.1.10.4 Trouble seeing in one or both eyes or double vision
 - 10.4.2.1.10.5 Trouble walking
 - 10.4.2.1.10.6 Dizziness
 - 10.4.2.1.10.7 Loss of balance or coordination
 - 10.4.2.1.10.8 Sudden onset of severe headache with no known cause (suggests hemorrhagic stroke)
 - 10.4.2.1.10.9 Any asymmetry of the neurological exam
- 10.4.2.2 Additional History:
 - 10.4.2.2.1 Obtain patient history including co-morbid conditions.
 - 10.4.2.2.2 Items to Report: seizure at onset, head trauma, history of recent surgeries, history of bleeding problems, signs of possible brain hemorrhage [severe headache of sudden onset, nausea/vomiting with headache or loss of consciousness (LOC)].
 - 10.4.2.2.3 Additional history: Past medical history, allergies (iodinated contrast).
 - 10.4.2.2.4 Be alert to common stroke mimics*.
 - 10.4.2.2.5 Determine if patient has pre-existing substantial disability (e.g. unable to walk independently).
 - 10.4.2.2.6 Medications – obtain a list of all medications including blood thinners such as direct thrombin inhibitors, factor Xa inhibitors, low molecular weight heparin and unfractionated heparin [i.e. warfarin (Coumadin), rivaroxaban (Xarelto), dabigatran (Pradaxa), apixaban (Eliquis), edoxaban (Savaysa), enoxaparin (Lovenox)]. (If possible, record when last dose was taken.)
 - 10.4.2.2.7 Device/implant history (i.e. left ventricular assist device, pacemaker, valve replacement).
- 10.4.2.3 Examination
 - 10.4.2.3.1 Assess and record blood pressure, rate, rhythm, respiratory rate and oxygen saturation.
 - 10.4.2.3.2 Apply a validated and standardized instrument for stroke screening such as FAST (Face, Arm, Speech, Time), Los Angeles Prehospital Stroke Screen, or Cincinnati Prehospital Stroke Scale.

- 10.4.2.3.3 In prehospital patients who screen positive for suspected stroke, apply a standard prehospital stroke severity assessment tool Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE) or Vision, Aphasia, Neglect (VAN) Assessment.
- 10.4.2.3.4 Alternatively, the Pediatric Committee recommends use of the Pediatric NIHSS ([Annex C: Pediatric NIHSS](#)) in the pediatric population.

10.4.3 Management

- 10.4.3.1 EMS personnel should begin the initial management of stroke in the field as outlined in this document.
- 10.4.3.2 Prevent aspiration, HOB > 30. Ensure airway patency with suctioning and OPA or NPA, as needed.
- 10.4.3.3 Provide supplemental oxygen if needed to keep oxygen saturation > 94%.
- 10.4.3.4 Normotension target systolic blood pressure, between 50th and 90th percentile for age.
- 10.4.3.5 Pediatric Systolic Blood Pressure Parameters: (chart follows on next page)

Systolic Blood Pressure Parameters- Female

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	111	128	133
5 years	94	113	130	145
6-10 years	96	121	139	145
11-18 years	105	131	151	157
>18 years	110	140	161	168

Systolic Blood Pressure Parameters- Male

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	112	129	134
5 years	95	113	130	136
6-10 years	96	121	139	145
11-18 years	105	140	161	168
>18 years	110	140	161	168

- 10.4.3.6 Treat hypotension. Evaluate, document and treat signs/symptoms of shock according to the Shock CPG. If possible, obtain EKG during workup, as long as it does not delay transport to the appropriate facility.
- 10.4.3.7 Avoid dextrose containing fluids in non-hypoglycemic patients.
- 10.4.3.8 Perform and document a POC Glucose analysis and treat according to the ASA 2019 Guidelines for Management of Acute Ischemic Stroke.

- 10.4.3.8.1 Hypoglycemia (blood glucose < 60 mg/dL) should be treated in patients suspected of acute ischemic stroke.
 - 10.4.3.9 To facilitate expedited stroke workup in the ED, place 2 peripheral IVs.
 - 10.4.3.10 To facilitate fastest Door-to-Needle and stroke care, if possible collect blood sample to provide receiving facility, however, as long as it does not delay transfer.
- 10.4.4 System Triage
 - 10.4.4.1 Goal for on scene time, 10-15 minutes or less. Encourage family to go directly to the ED if not transported with the patient.
 - 10.4.4.2 Destination decision-making for pediatric patients less than 18 years of age with possible stroke:
 - 10.4.4.3 Transport to or contact Cook Children's Medical Center or Children's Health Dallas for guidance. Call stroke alert, pre-notify receiving facility that a suspected stroke patient is in route so that the appropriate resources may be mobilized before patient arrival.
 - 10.4.4.3.1 Pre-notification should include: patient's name, phone number for next of kin, LKW, stroke screening tool score and stroke severity screening tool score.
 - 10.4.4.4 Goal: 30 seconds for EMS to ED triage nurse hand-off.
 - 10.4.4.5 Common ischemic stroke mimics: alcoholic intoxication, cerebral infections, drug overdose, hemorrhagic stroke, hypoglycemia, hyperglycemia, metabolic disorders, atypical migraines, neuropathies (e.g. Bell's palsy), seizure, post-ictal state and tumors.

11. HELICOPTER ACTIVATION

- 11.1 Goal
 - 11.1.1 Regional air transport resources may be appropriately utilized in order to reduce delays in providing optimal stroke care.
- 11.2 Committees Charged
 - 11.2.1 Responsibilities are charged to the NCTTRAC Air Medical Committee with input from the EMS and Stroke Committees and guidance from the Medical Directors Committee.
- 11.3 Decision Criteria
 - 11.3.1 Consider Air Medical Transport when:
 - 11.3.1.1 Helicopter activation/scene response may be considered when it can reduce transportation time or provide advanced life support.
 - 11.3.1.2 Where ground transportation may take greater than 30 minutes, consider air medical transport.
 - 11.3.2 Patients meeting criteria for helicopter dispatch should be transported to the most appropriate designated stroke facility.
 - 11.3.3 Pediatric patients should be transported to Cook Children's Medical Center or Children's Health Dallas.
 - 11.3.4 Refer to [Annex D: Aircraft Utilization and Systems Performance Review](#)

12. FACILITY DIVERSION

- 12.1 Goal

- 12.1.1 NCTTRAC stroke facilities will communicate the availability of acute stroke patient care capability status promptly and clearly to the regional EMS and other facilities through EMResource to ensure that stroke patients are transported to the closest appropriate stroke facility. Pediatric patients should be transported to Cook Children's Medical Center or Children's Health Dallas.
- 12.2 Committees Charged
 - 12.2.1 Responsibilities charged to the NCTTRAC EMS, Medical Directors and Stroke Committees.
- 12.3 System Objective
 - 12.3.1 The system objective is to ensure that stroke patients will be transported to the closest appropriate facility.
 - 12.3.2 There is no longer an official category of "divert" in Trauma Service Area (TSA) E. 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. 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, and facility bed availability.
 - 12.3.3 NCTTRAC has integrated the use of National Emergency Department Over Crowding Study (NEDOCS) scoring within EMResource for hospitals to help determine emergency department saturation and reporting.
 - 12.3.4 In addition to their ED saturation, facilities report on the general status of their Emergency Department using the "Open / Advisory-Capability / Advisory-ED Surge / Closed" status in EMResource. Facilities may choose from the following status options:
 - 12.3.4.1 Open: The ED is open and accepting patients with no limitations.
 - 12.3.4.2 Advisory – Capability: Hospital is advising EMS about a clinical service closure so that EMS can make an informed decision regarding patient destinations. Hospitals can still receive EMS patients. EXAMPLE: "Advisory – Trauma; Stroke; STEMI; Other – see comments".
 - 12.3.4.3 Advisory – ED Surge: Hospital is advising EMS about high patient census in the ED that may affect EMS wait times. Hospital can still receive EMS patients. EMS should try to route patients to a different appropriate facility as allowed by their agency protocols.
 - 12.3.4.4 Closed: The ED is suffering from an internal disaster/facility emergency that is preventing them from accepting patients. Examples may include fire, flooding, power outage, water shortage, structural damage, etc. This facility cannot accept EMS patients. This status option is not to be used for patient surge and should not be used to address internal staffing issues. Comments are mandatory. This status option must be updated once every 4 hours.
 - 12.3.5 In addition to the statuses outlined above, there are three stroke-specific hospital statuses in EMResource. These statuses and their status options are detailed below.
 - 12.3.5.1 Status: Stroke General Service

- 12.3.5.1.1 Reflects the current status of a facility's ability to provide general stroke services. Should be updated as needed. Does not reflect DSHS designation status.
- 12.3.5.1.2 Facilities can select from the following status options. Definitions for each status option are provided.
- 12.3.5.1.3 Available: This facility can currently provide general stroke services.
- 12.3.5.1.4 Unavailable: This facility is temporarily unable to provide general stroke services. Comments are mandatory. This status option must be updated at least once every 4 hours.
- 12.3.5.1.5 Not Provided: This facility does not provide general stroke services.
- 12.3.5.2 Status: Stroke NeuroIR
 - 12.3.5.2.1 Reflects the current status of a facility's ability to provide NeuroIR services. Can only be updated by Level I (Comprehensive) designated facilities. Should be updated as needed.
 - 12.3.5.2.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 12.3.5.2.3 Available: This facility can currently provide NeuroIR services.
 - 12.3.5.2.4 Unavailable: This facility is temporarily unable to provide NeuroIR services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 12.3.5.2.5 Not Provided: This facility does not provide NeuroIR services.
- 12.3.5.3 Status: Stroke NeuroSurg
 - 12.3.5.3.1 Reflects the current status of a facility's ability to provide NeuroSurg services. Can only be updated by Level I (Comprehensive), Level II (Primary), or Level III (Support) designated facilities. Should be updated as needed.
 - 12.3.5.3.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 12.3.5.3.3 Available: This facility can currently provide NeuroSurg services.
 - 12.3.5.3.4 Unavailable: This facility is temporarily unable to provide NeuroSurg services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 12.3.5.3.5 Not Provided: This facility does not provide NeuroSurg services.
- 12.3.6 All hospitals and EMS providers have the ability to 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.
- 12.3.7 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.

- 12.3.8 A full listing of EMResource status types, policies, and procedures in TSA-E can be found in [Annex E: TSA-E EMResource Policies & Procedures](#).
- 12.3.9 A facility relinquishing stroke designation shall provide 30 days advance notice to the DSHS Department, NCTTRAC, EMS providers and facilities which customarily transfer-out and/or transfer-in stroke patients.
- 12.3.10 A designated facility must provide written notification of a temporary event or decision impacting the ability of a stroke facility to comply with designation requirements to maintain the current designation status, or to increase the stroke facilities capabilities that affect the region. The notice shall be provided as soon as possible within 24 hours to the EMS providers, healthcare facilities to which it customarily transfers-out and/or transfers-in stroke patients, NCTTRAC and the DSHS Department.
- 12.3.11 Designated stroke facilities failing to meet and /or maintain critically essential criteria, as outlined by the State of Texas and the accrediting agency (TJC, DNV-GL, etc.) shall provide notification about such failings within five days to the NCTTRAC, the DSHS office, regional EMS and other healthcare facilities (from which it receives and to which it transfers stroke patients) through EMResource.
- 12.3.12 Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

13. INTER-FACILITY TRANSFERS

13.1 Goal

- 13.1.1 The goal for establishing and implementing inter-facility transfer criteria in NCTTRAC is to ensure that stroke patients requiring additional or specialized care and treatment beyond a facility's capability are identified and transferred to the most appropriate facility as quickly as possible. Regional facilities transferring stroke patients to a higher level of care, for the purposes of endovascular revascularization therapy (EVT), an urgent neurosurgical procedure or other urgent treatment, should establish goal Door-In Door-Out (DIDO) time for patients arriving to the emergency department. For patients with LVO in need of transfer for mechanical thrombectomy goal DIDO should be set to meet current ASA guidelines.

13.2 Committees Charged

- 13.2.1 Responsibilities charged to the NCTTRAC Stroke Committee with input from Air Medical, Emergency Department Operations, EMS and Medical Directors Committees.

13.3 Purpose

- 13.3.1 The inter-facility transfer recommendation encourages identification and expedited transfer of stroke patients requiring additional or specialized care and treatment beyond a facility's capability. In the absence of high-quality evidence or guideline statements, consensus of expert opinion based on clinical experience and conferment with vascular neurologists, neurosurgeons and emergency

department physicians was obtained. Refer to the latest NCTTRAC Stroke Committee source documents; Inter-Facility Transfer Guideline and Inter-Facility EMS Transport Documentation.

13.4 Objectives

- 13.4.1 To ensure that all regional facilities caring for stroke patients within the NCTTRAC SSOC develop, adopt and adhere to care protocols that reflect current care guidelines as established by national and international professional organizations along with state/federal agencies and laws.
 - 13.4.1.1 Patients identified to have an acute ischemic stroke from a large vessel occlusion (LVO) and are less than 24 hours from last known well should be considered for transfer to a Comprehensive Stroke Center (Level 1) if eligible for EVT.
 - 13.4.1.2 Patients < 18 years identified to have an acute ischemic stroke from a large vessel occlusion (LVO) and are less than 24 hours from last known well consider transfer to Cook Children's Medical Center or Children's Health Dallas.
- 13.4.2 To establish well delineated guidelines for triage and transportation.
- 13.4.3 To outline a goal transfer time for TSA-E:
 - 13.4.3.1 DIDO of 90 minutes for patients with LVO (Emergency)
 - 13.4.3.2 Picture to Door-Out of 90 minutes for patients with LVO (Inpatient)

13.5 Facility Triage from Emergency Department and Inpatient Service

- 13.5.1 Prehospital triage as outlined in [Annex B: NCTTRAC Acute Stroke Triage Algorithm](#)
- 13.5.2 All facilities caring for stroke patients within the SSOC should develop, adopt and adhere to care protocols that reflect current care guidelines as established by national and international professional organizations and state and federal agencies and laws. Refer to the latest NCTTRAC Stroke Committee source document Inter-Facility Transfer Guideline for further detail.
- 13.5.3 Use of telestroke and teleradiology networks in the evaluation of AIS patients can be effective for correct IV thrombolysis eligibility decision making and may be reasonable for triaging patients with AIS who may be eligible for inter-facility transfer in order to be considered for mechanical thrombectomy.
- 13.5.4 Regional facilities that may transfer patients for higher level of care, should establish hand-off, transfer protocols and procedures that ensure safe and efficient patient care within and between facilities.
- 13.5.5 Protocols for inter-facility transfer of patients should be established and approved beforehand so that efficient patient transfers can be accomplished at all hours of the day and night.
- 13.5.6 Regional facilities that may transfer patients for higher level of care, should establish transfer protocols, terminology (code stroke), agreements and procedures that ensure safe and efficient patient care with EMS agencies that are capable of transportation via ground and air.
- 13.5.7 Use of the NCTTRAC Stroke Committee endorsed inter-facility stroke terminology to convey level of stroke emergency is recommended:
 - 13.5.7.1 Level 1 Stroke – Patient with an ischemic or hemorrhagic stroke in need of an emergent intervention.

- 13.5.7.2 Level 2 Stroke – Patient with an ischemic or hemorrhagic stroke in need of an urgent transfer for higher level of care but without emergent need of an intervention.
- 13.5.7.3 Level 3 Stroke – Patient with an ischemic or hemorrhagic stroke in need of transfer but without emergent or urgent needs.
 - 13.5.7.3.1 Level 1 and level 2 Strokes, time from *agency notification* to transportation *arrival at the transferring hospital* ≤ 30 minutes. Consider option of lights and sirens.
- 13.5.7.4 Level 1 stroke, if ground transportation will take > 30 minutes to reach the receiving facility consider air transport.
- 13.5.7.5 In all patients within 24 hours from last known well that are suspected of having an acute ischemic stroke early identification of possible LVO is recommended.
 - 13.5.7.5.1 Consider utilizing a stroke severity scale or NIHSS upon arrival to the emergency room to identify possible LVOs or the Pediatric NIHSS in the pediatric population ([Annex C: Pediatric NIHSS](#))
 - 13.5.7.5.2 Recommended stroke severity scale: Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE) or Vision, Aphasia, Neglect (VAN) Assessment.
- 13.5.8 Early Notification of CSC (Level 1) and activation of EMS transport team.
 - 13.5.8.1 Notify CSC (Level 1) on arrival and dispatch EMS transport team (should be on standby for transfer prior to imaging), if LVO screen is positive and patient meets established criteria for transfer.
- 13.5.9 It may be useful for primary stroke centers and other healthcare facilities that provide initial emergency care, including administration of IV thrombolysis, to develop the capability of performing emergency noninvasive intracranial vascular imaging to most appropriately select patients for transfer for endovascular intervention and to reduce the time to mechanical thrombectomy.
 - 13.5.9.1 0-6 hours from last known well: EVT eligibility will be based in part on NIHSS, CT ASPECT score and demonstration of a LVO on CT angiogram of the head and neck.
 - 13.5.9.2 6-24 hours from last known well: EVT eligibility will be based in part on NIHSS, CT ASPECT score, demonstration of LVO on CT angiogram of head and neck and target mismatch profile on CT perfusion, DW-MRI or MRI perfusion (performed either at transferring or receiving facility).
 - 13.5.9.3 0-24 hours from last known well in a pediatric patient: MRI is ideally used. MRI RAPID and MRI with arterial spin labeling are just a few of the tools considered for EVT eligibility. EVT in pediatric patients (0-<18 years) should only be considered at a pediatric center with an established stroke program such as Cook Children's Medical Center or Children's Health Dallas.
- 13.5.10 Regional facilities triaging stroke patients suspected of having an intracranial LVO (positive stroke severity screen) should consider concurrent vascular imaging with noncontrast head CT or MRI/MRA in patients < 18 years of age

(contact Cook Children's Medical Center or Children's Health Dallas for guidance).

- 13.5.10.1 6-24 hours from last known well consider CT perfusion, DW-MRI or MRI perfusion if capable.
- 13.5.11 In patients with AIS who awake with stroke symptoms or have unclear time of onset > 4.5 hours from last known well or at baseline state, MRI to identify diffusion-positive FLAIR-negative lesions can be useful for selecting those who can benefit from IV alteplase administration within 4.5 hours of stroke symptom recognition.
- 13.5.12 For patients who otherwise meet criteria for EVT, a noninvasive intracranial vascular study is recommended during the initial imaging evaluation of the acute stroke patient, but should not delay IV thrombolysis if indicated.
 - 13.5.12.1 For patients who qualify for IV thrombolysis according to guidelines from professional medical societies, initiating IV thrombolysis before noninvasive vascular imaging is recommended for patients who have not had noninvasive vascular imaging as part of their initial imaging assessment for stroke. Noninvasive intracranial vascular imaging should then be obtained as quickly as possible or at the receiving facility if intracranial vascular imaging will add delay to transfer.
 - 13.5.12.2 For pediatric patients (0 to < 18 years) giving IV alteplase prior to noninvasive vascular imaging is not recommended. Contact Cook Children's Medical Center or Children's Health Dallas for guidance.
- 13.5.13 Per ASA guidelines: for patients who otherwise meet criteria for EVT, it is reasonable to proceed with CTA if indicated in patients with suspected LVO before obtaining a serum creatinine concentration in patients without a history of renal impairment. (Not applicable for pediatric patients.)
- 13.5.14 If LVO is identified on imaging: immediate transfer with goal metrics as outlined above.
- 13.5.15 If no LVO is identified on imaging: notify receiving facility and transportation crew if transfer is cancelled.
- 13.5.16 Patients with large territorial cerebral and cerebellar infarctions are at high risk for developing brain swelling and herniation. Consideration should be given to transfer to a higher level of care if neurocritical care and neurosurgical needs cannot be met at the transferring facility.
- 13.5.17 All related documents should accompany all stroke patient transfers:
 - 13.5.17.1 Diagnostics scans and reports if available
 - 13.5.17.2 Hospital records
 - 13.5.17.3 Medication Administration Record
- 13.5.18 Untimely transfers may be reported to the NCTTRAC SPI Committee for review.
- 13.6 EMS Transportation for Inter-Facility Care
 - 13.6.1 Use of the NCTTRAC Stroke Committee endorsed inter-facility stroke terminology to convey level of stroke emergency is recommended:
 - 13.6.1.1 Level 1 Stroke – Patient with an ischemic or hemorrhagic stroke in need of an emergent intervention.

- 13.6.1.2 Level 2 Stroke – Patient with an ischemic or hemorrhagic stroke in need of an urgent transfer for higher level of care but without emergent need of an intervention.
- 13.6.1.3 Level 3 Stroke – Patient with an ischemic or hemorrhagic stroke in need of transfer but without emergent or urgent needs.
 - 13.6.1.3.1 Level 1 and level 2 Strokes, time from *agency notification* to transportation *arrival at the transferring hospital* ≤ 30 minutes. Consider option of lights and sirens.
- 13.6.2 Level 1 stroke, if ground transportation will take > 30 minutes to reach the receiving facility consider air transport.
- 13.6.3 NCTTRAC Pediatric Committee recommends that a pediatric stroke patient or patient with findings that meet NCTTRAC stroke guidelines (age less than 18) is an emergent transfer despite Level terminology and should be discussed with tertiary pediatric medical center and transferred, as such.
- 13.6.4 Refer to the latest NCTTRAC Stroke Committee endorsed Inter-Facility EMS Transport Documentation.
- 13.6.5 Stroke Patient Transport: Stroke patients in NCTTRAC are transported according to patient need, availability of air transport resources, and environmental conditions.
 - 13.6.5.1 Pediatric patients < 18 years old, contact Cook Children’s Medical Center or Children’s Health Dallas for guidance.
- 13.6.6 Ground transport capable of providing appropriate level of care should be utilized based on patient needs. For instance, transportation via ALS or MICU ground ambulance should be considered for patients receiving IV thrombolysis.
- 13.6.7 All related documents should accompany all stroke patient transfers:
 - 13.6.7.1 Diagnostics scans and reports, if available
 - 13.6.7.2 Hospital records
 - 13.6.7.3 Medication Administration Record
- 13.6.8 Transport teams should follow established transfer protocols and procedures to ensure safe and efficient patient care with the mindset that “time is brain”. Because time from onset of symptoms to treatment has such a powerful impact on outcomes, there should be the same level of urgency during inter-facility transfers as there in the prehospital setting.
- 13.7 Management
 - 13.7.1 Prevent aspiration, HOB ≥ 30 . Ensure airway patency with suctioning and OPA or NPA, as needed.
 - 13.7.2 Transportation team will monitor vitals and perform neuro assessments, such as an NIHSS/Neuro Assessment, at a minimum of every 15 minutes.
 - 13.7.3 Supplemental oxygen to keep oxygen saturation $> 94\%$, maintain continuous monitoring.
 - 13.7.4 Monitor and treat blood pressure using appropriate parameters (post IV thrombolysis, ICH or SAH). See [Annex F: 2019 ASA Blood Pressure Recommendation](#).
 - 13.7.4.1 Adult patients (≥ 18 years-old) blood pressure goal:: patients receiving IV thrombolysis infusion BP $< 180/105$; patients not eligible for IV thrombolysis BP $< 220/120$ mmHg may be reasonable.
 - 13.7.4.2 Pediatric patients ($0- < 18$ years-old) systolic blood pressure parameters:

Systolic Blood Pressure Parameters- Female

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	111	128	133
5 years	94	113	130	145
6-10 years	96	121	139	145
11-18 years	105	131	151	157
>18 years	110	140	161	168

Systolic Blood Pressure Parameters- Male

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	112	129	134
5 years	95	113	130	136
6-10 years	96	121	139	145
11-18 years	105	140	161	168
>18 years	110	140	161	168

- 13.7.5 Treat hypotension. Evaluate, document, and treat signs/symptoms of shock according to the Shock CPG.
- 13.7.6 Avoid dextrose containing fluids in non-hypoglycemic patients.
- 13.7.7 If IV thrombolysis infusion completes during transport, the remaining drug within the tubing should be infused using an infusion of normal saline at the same rate as the thrombolysis infusion. Do not change the original set volume to be infused (VTBI) on the pump. When the VTBI alarms as complete, this will be the IV thrombolysis infusion completion time.
- 13.7.8 Monitor for signs of orolingual angioedema. Contact Medical Control should any signs or symptoms develop. See [Annex G: 2019 ASA Angioedema Recommendation](#) for management of orolingual angioedema associated with IV thrombolysis.
- 13.7.9 Monitor for signs and symptoms of neurological deterioration. Worsening of neurological exam (NIHSS worsening of ≥ 4 points) could represent hemorrhagic conversion of the stroke or worsening ischemia. Contact Medical Control for guidance and send prenotification to the receiving facility.
 - 13.7.9.1 Pediatric patients < 18 years old, contact Cook Children's Medical Center or Children's Health Dallas for guidance.

14. SYSTEM PERFORMANCE IMPROVEMENT

- 14.1 In adherence to the ASA 2019 Update to AIS Guidelines, NCTTRAC participating organizations must have multicomponent QI initiatives, which include ED education and multidisciplinary teams with input from neurological experts, aimed at improving stroke care.
- 14.2 The NCTTRAC Stroke Committee will organize a multidisciplinary QI Work Group to review and monitor stroke care quality benchmarks, indicators, evidence-based practices, and outcomes within the region. Stroke facility participation in a stroke data registry is

recommended to promote consistent adherence to current treatment guidelines, to allow continuous QI, and to improve patient outcomes. Additionally, integration of prehospital records including National EMS Information System (NEMISIS) data elements into stroke registries should occur to enhance total system performance. It is recognized that continuous QI processes, implemented by each component of a SSOC and the NCTTRAC system as a whole, can be useful in improving patient care and outcomes.

- 14.3 The NCTTRAC Stroke Committee strongly encourages standardized data collection and reporting from healthcare entities and data sharing between them consistent with the exceptions to privacy laws governing routine healthcare operations and QI.¹²⁻¹⁴ These systems should include elements from the provision of stroke care from stroke detection and 911 activation through hospital discharge.³ Outcomes should be used to assess effectiveness of the systems of care.

14.4 Goals

- 14.4.1 As outlined by the ASA 2019 Update to AIS Guidelines, multicomponent QI programs to improve stroke care demonstrate clear utility in safely increasing thrombolysis use in the community hospital setting. Establishing and monitoring target time goals can be beneficial to monitor and enhance system performance. As such, the NCTTRAC Stroke Committee established the goal to monitor and evaluate the performance of the NCTTRAC stroke system and the impact of the system development. NCTTRAC regional facilities participating in the stroke system of care must have a separate performance improvement system for stroke patients. Continuous QI processes, implemented by the stroke system as a whole will provide a means of improving patient care and outcomes.

14.5 Committees Charged

- 14.5.1 Responsibilities are charged to the NCTTRAC Stroke Committee.

14.6 Objectives

- 14.6.1 To provide a multidisciplinary forum for stroke care providers to evaluate stroke patient outcomes from a system perspective and to assure the optimal delivery of stroke care.
- 14.6.2 To facilitate the sharing of information, knowledge and scientific data.
- 14.6.3 To provide a process for medical oversight of regional stroke operations.
- 14.6.4 Establish regional quality measures:
 - 14.6.4.1 EMS Prenotification Triage Time
 - 14.6.4.2 Use of Prehospital Stroke Screening and Stroke Severity Tools
 - 14.6.4.3 Door-to-Needle
 - 14.6.4.4 DIDO
 - 14.6.4.5 Door-to-Device

14.7 Discussion

- 14.7.1 To assess the impact of regional stroke development, system performance must be monitored and evaluated from an outcomes perspective. A plan for the evaluation of operations is needed to determine if system developments are meeting the stated goals.
- 14.7.2 Directions – The direction for the development of a NCTTRAC Regional QI program is derived from the Texas EMS Rules: 25 TAC: Rule §157.123 (c)(II)(H), Regional EMS Trauma Systems (effective September 1, 2000) requires “a regional performance improvement (PI) program is developed and implemented.” Additional support and direction for regional performance improvement program development specific to stroke facility designation can be

found in 25 TAC: Rule §157.133 (t)(3)(M), Requirements for Stroke Facility Designation (effective August 30, 2009).

- 14.7.3 Authority - The authority and responsibility for regional QI rests with the Regional Advisory Council. This will be accomplished in a comprehensive, integrated manner through the work of the Medical Directors Committee as well as the Stroke and EMS Committees.

- 14.7.3.1 Scope & Process – The Stroke Committee, Stroke Committee System Performance Improvement (SPI) subgroup (within the Stroke Committee) and the Medical Directors Committee serve as the oversight committee for regional performance improvement. Referrals for follow-up and feedback to and from the EMS Committee and Providers ensure system-wide multidisciplinary performance improvement.
- 14.7.3.2 The Stroke Committee SPI subgroup will comprise the Stroke Committee Chair, Chair Elect, Medical Director and two elected or appointed members of the Stroke Committee to review SPI referrals, issues or requests in a closed session.
- 14.7.3.3 Specific SPI activities may include the review of SPI events that fall outside the Stroke Committee's approved SPI indicators.
- 14.7.3.4 The Stroke Committee SPI subgroup, in consultation with the Stroke Committee, will determine the type of data and manner of collection, set the agenda for the PI process within the regularly-scheduled meetings of the committee, and identify the events and indicators to be evaluated and monitored. Indicator identification will be based on high risk, high volume and problem prone parameters. Indicators will be objective, measurable markers that reflect stroke resources, procedural/patient care techniques and/or systems/process outcomes.
- 14.7.3.5 Occurrences will be evaluated from a system outcomes perspective and sentinel events will be evaluated on a case by case basis. Activities and educational offerings will be presented to address knowledge deficits and case presentations or other appropriate mediums will be designed to address systems and behavioral problems. All actions will focus on the opportunity to improve patient care and systems operation. The results from committee activities will be summarized and communicated to the RAC membership. Problems identified that require further action will be shared with the persons and entities involved for follow-up and loop closure. Committee follow-up and outcome reports will be communicated on a standard format.
- 14.7.3.6 The functions and effectiveness of NCTTRAC QI process will be evaluated on an annual basis in conjunction with the annual evaluation of the NCTTRAC Bylaws. All PI activities and committee proceedings are strictly confidential. Individuals involved in performance management activities will not be asked to review cases involving their facility or affiliated healthcare system.
- 14.7.3.7 Stroke Centers will provide individual follow-up on acute stroke transports directly to the EMS agency transporting the patient.

14.8 Data Collection

- 14.8.1 Participation in the RDC is recommended to promote consistent adherence to current treatment guidelines, to allow continuous regional QI and to improve patient outcomes.
- 14.8.2 Data will be shared with EMS by each certified/designated facility. Data sharing may occur within NCTTRAC.
- 14.8.3 Summary reports are submitted for each NCTTRAC facility and EMS provider.
- 14.8.4 Sentinel events will be used to focus attention on specific situations/occurrences of major significance to patient care outcomes and be reviewed by the Stroke Committee SPI subgroup.
- 14.8.5 Performance Improvement data is reviewed and updated annually.
- 14.9 Confidentiality - All information and materials provided and/or presented during closed SPI meetings are strictly confidential. Closed Stroke Committee SPI subgroup meeting participants will sign a *NCTTRAC SPI Confidentiality Agreement* prior to the start of each closed meeting.

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**NORTH CENTRAL TEXAS TRAUMA
REGIONAL ADVISORY COUNCIL, INC.
(NCTTRAC)**



BYLAWS

**Reviewed by the NCTTRAC Board of Directors
April 13, 2021**

**Approved by the NCTTRAC General Membership
September 19, 2019**

Supersedes Bylaws approved September 20, 2018



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ARTICLE I

Name

1.1 The official name of this organization shall be North Central Texas Trauma Regional Advisory Council, Inc. (NCTTRAC). For member and public education purposes, variations such as, but not limited to, North Central Texas Regional Advisory Council for Trauma, Acute, and Emergency Healthcare may be used in marketing or branding materials.

1.2 The principal place of business of NCTTRAC shall be 600 Six Flags Dr., Suite 160, Arlington, Texas 76011, in the State of Texas, unless and until determined otherwise by the NCTTRAC Board of Directors (Board).

1.3 NCTTRAC will establish and maintain a website for public access to include current information. (www.NCTTRAC.org)

ARTICLE II

Definitions

2.1 NCTTRAC is a 501(c)(3) nonprofit organization which functions according to its duly adopted charter, and federal and state law, including Texas Administrative Code Title 25 §157.2. The organization facilitates the development, implementation, and operation of comprehensive trauma, acute, and emergency healthcare systems based on accepted evidence-based standards of care principles to decrease morbidity and mortality.

2.1.1 The nineteen Texas counties comprising Trauma Service Area (TSA) - E include: Collin, Cooke, Dallas, Denton, Ellis, Erath, Fannin, Grayson, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise counties.

2.1.2 The composition of TSA-E may be changed if a county requests realignment into or out of TSA-E to another bordering TSA pursuant to requirements and approval of the Texas Department of State Health Services (DSHS).

2.1.3 NCTTRAC participants may include, but are not limited to, interested healthcare facilities, organizations, agencies, entities, advocates, and professional societies providing or involved in healthcare delivery, education, injury prevention, rehabilitation, and emergency preparedness within TSA-E.

ARTICLE III

Mission

3.1 The Mission of the North Central Texas Trauma Regional Advisory Council is to promote and coordinate a system of quality trauma, acute, and emergency healthcare and preparedness in North Central Texas.

Vision

3.2 To be recognized as a leader for promoting quality trauma, acute, and emergency healthcare and preparedness.

Philosophy

3.3 The philosophies of NCTTRAC are:

3.3.1 We prepare through research, data management, education, injury and illness prevention, and emergency management.

3.3.2 We support through the development of Regional Plans and Guidelines, resources, communications, and advocacy.

3.3.3 We respond to the needs of the regional emergency healthcare coalition and the State of Texas.

ARTICLE IV

Membership

4.1 Membership in NCTTRAC shall include Voting and Associate Members. The requirements and eligibility for membership in NCTTRAC include submission of a completed membership application, payment of applicable membership dues and Board approval. Additional membership criteria can be found in the Membership and Active Participation Standard Operating Procedure (SOP).

4.1.1 Membership Categories

4.1.1.1 Members

4.1.1.1.1 Organizations, agencies and entities providing health-related care, education, injury prevention, advocacy, rehabilitation or preparedness within TSA-E shall be eligible for voting membership in NCTTRAC.

4.1.1.1.2 Each Member shall have one vote.

4.1.1.2 Associate Members

4.1.1.2.1 Individuals or organizations not identified above shall be eligible for associate membership.

4.1.1.2.2 Associate Members are non-voting.

4.1.1.2.3 Additional information on Associate Membership is available in the NCTTRAC Sponsorship Standard Operation Procedure (SOP).

4.1.2 Final determination of Member or Associate Member status shall be approved by the Board.

4.2 NCTTRAC shall maintain equal opportunity and access to all its membership for fair representation and participation.

4.3 NCTTRAC shall assure that dues, fees or other financial incentives do not determine the number of votes awarded to a Voting Member.

4.4 In order to retain voting privileges, Members shall maintain active and consistent participation according to the Membership and Active Participation SOP.

4.5 NCTTRAC shall assess dues and fees based on a rate schedule that has been approved by the General Membership.

ARTICLE V

Officers

5.1 The officers of NCTTRAC and its Board are: Chair, Chair Elect, Secretary and Treasurer and shall be known as the Officers. The remainder of the Board will be known as Directors as specifically described in Article VII.

5.2 Nomination and Election

5.2.1 Elections for Chair Elect, Secretary, and Treasurer are routinely held at the September General Membership Meeting of each odd year.

5.2.2 Nominations for Officers are accepted in person or in writing until 21 days prior to the election.

5.2.3 Nominees must accept the nomination prior to the election.

5.2.4 Officers shall be elected at a NCTTRAC General Membership Meeting in accordance with the Voting and Elections SOP.

5.2.5 Any Officer may be removed by a majority vote of the NCTTRAC Membership.

5.3 Chair

5.3.1 Job Description

5.3.1.1 The Chair shall set the agenda and preside at all General Membership and Board Meetings and shall have the authority to call emergency or special Board Meetings in accordance with the Conducting Official Business Meetings SOP.

5.3.1.2 The Chair shall appoint a documented representative of a NCTTRAC Member in good standing as an interim officer or Committee Chair to fill any vacancy until a replacement is duly elected.

5.3.1.3 The Chair shall have the authority to appoint the Chairs of all ad-hoc committees or workgroups.

5.3.1.4 The Chair represents NCTTRAC at Governor's EMS and Trauma Advisory Council (GETAC) Meetings and other meetings as necessary.

5.3.1.5 The Chair is obligated to communicate appropriate information to whatever audience may be warranted, based on information received.

5.3.1.6 The Chair shall have check signing privileges according to the Transactions of the Organization SOP.

5.3.1.7 The Chair, as a member of the Board participates in the hiring and/or firing of the Executive Director.

5.3.2 Term of Office

5.3.2.1 The duration of the Chair term shall be two years. The Chair ascends from Chair Elect.

5.3.2.2 In the event the Chair is unable to fulfill the term, the Chair Elect shall ascend to Chair. The term of the new Chair shall be the remainder of the unfulfilled term of the previous Chair. The Executive Committee will recommend to the Board for determination if the new Chair will additionally serve the two-year term that would have been served originally.

5.4 Chair Elect

5.4.1 Job Description

5.4.1.1 The Chair Elect shall, in the absence or disability of the Chair, perform the duties and exercise the powers of the Chair, and shall perform such other duties as the Board prescribes.

5.4.1.2 The Chair Elect is a member of the Finance Committee.

5.4.1.3 The Chair Elect may represent NCTTRAC at Governor's EMS and Trauma Advisory Council (GETAC) Meetings and other meetings as necessary.

5.4.1.4 The Chair Elect is obligated to communicate appropriate information to whatever audience may be warranted, based on information received.

5.4.1.5 The Chair Elect shall have check signing privileges according to the Transactions of the Organization SOP.

5.4.1.6 The Chair Elect, as part of the Board, participates in the hiring and/or firing of the Executive Director.

5.4.1.7 The Chair Elect leads the annual bylaws and standard operating procedures review process to include review and continuation of Standing Committees/Subcommittees.

5.4.2 Term of Office

The duration of the Chair Elect term shall be two years. Nominations for Chair Elect shall come from the General Membership. The nominee for Chair Elect must be a documented representative of a NCTTRAC member organization good standing. The Chair Elect shall ascend to Chair. In the event the Chair Elect is unable to fulfill the term, there shall be an election at the next eligible General Membership Meeting to replace the Chair Elect for the remainder of the unfulfilled term.

5.5 Secretary

5.5.1 Job Description

5.5.1.1 The Secretary shall be responsible for the minutes and records of all general membership and Board Meetings.

5.5.1.2 The Secretary is responsible for voting actions and a list of designated members at each Board and General Membership Meeting to identify members in good standing for voting purposes.

5.5.1.3 The Secretary works with staff to coordinate meeting notification correspondence and support to include meeting location, date, time and agenda.

5.5.1.4 The Secretary is familiar with and refers to, for guidance, the most current edition of "Robert's Rules of Order".

5.5.1.5 The Secretary shall have check signing privileges according to the Transactions of the Organization SOP.

5.5.1.6 The Secretary may represent NCTTRAC at Governor's EMS and Trauma Advisory Council (GETAC) Meetings and other meetings as necessary.

5.5.1.7 The Secretary is obligated to communicate appropriate information to whatever audience may be warranted, based on information received.

5.5.1.8 The Secretary, as part of the Board, participates in the hiring and/or firing of the Executive Director.

5.5.2 Term of Office

The duration of the Secretary term shall be two years. Nominations for Secretary shall come from the General Membership. The nominee for Secretary must be must be a documented representative of a NCTTRAC member organization in good standing. In the event the Secretary is unable to fulfill the term, there shall be an election at the next eligible General Membership Meeting to replace the Secretary for the remainder of the unfulfilled term.

5.6 Treasurer

5.6.1 Job Description

5.6.1.1 The Treasurer oversees the financial records of NCTTRAC.

5.6.1.2 The Treasurer is a member of the Finance Committee.

5.6.1.3 The Treasurer shall make a current financial statement available on a scheduled basis, no less than every General Membership Meeting.

5.6.1.4 The Treasurer oversees the outside annual audit review.

5.6.1.5 The Treasurer shall have check signing privileges according to the Transactions of the Organization SOP.

5.6.1.6 The Treasurer may represent NCTTRAC at Governor's EMS and Trauma Advisory Council (GETAC) Meetings and other meetings as necessary.

5.6.1.7 The Treasurer is obligated to communicate appropriate information to whatever audience may be warranted, based on information received.

5.6.1.8 The Treasurer, as part of the Board, participates in the hiring and/or firing of the Executive Director.

5.6.2 Term of Office

The duration of the Treasurer term shall be two years. Nominations for Treasurer shall come from the General Membership. The nominee for Treasurer must be must be a documented representative of a NCTTRAC member organization in good standing. In the event the Treasurer is unable to fulfill the term, there shall be an election at the next eligible General Membership Meeting to replace the Treasurer for the remainder of the unfulfilled term.

5.7 Succession of Officers

5.7.1 In the event both the Chair and Chair Elect are unable to fulfill their duties, the succession of responsibility will be first to the Secretary then to the Treasurer.

5.7.2 In the event all officers are unable to fulfill their duties, the Board shall elect a representative from the Board to fulfill the duties of the Chair.

ARTICLE VI

Executive Committee of the Board of Directors

6.1 The Executive Committee of the Board of Directors shall be known as The Executive Committee and will consist of:

- 6.1.1 Chair
- 6.1.2 Chair Elect
- 6.1.3 Secretary
- 6.1.4 Treasurer
- 6.1.5 Finance Committee Chair
- 6.1.6 Medical Directors Committee Chair

6.2 Election, Removal and Vacancies of Executive Committee members

6.2.1 Each Executive Committee Member is confirmed as a member of the Board after election by their respective committee or election by NCTTRAC Membership (as stated in Article V Section 5.2 Nominations and Elections) and ratification by the Board.

6.2.2 Each elected Executive Committee Member will hold office until whichever of the following occurs: (a) a successor is elected, (b) resignation, (c) removal from office by the Board or general membership, (d) removal from office by their respective committee, after ratification by the Board, (e) death, or (f) disability.

6.2.3 Officers, as a part of the Executive Committee, but elected by the General Membership may be removed by a 2/3rds majority vote of the NCTTRAC membership as defined in the Voting & Elections SOP.

6.3 Duties of the Executive Committee

6.3.1 Each Executive Committee Member must be a documented representative of a NCTTRAC member organization in good standing as defined in the Membership & Participation SOP.

6.3.2 The Executive Committee shall participate in Closed Session investigations of a Director removal and provide recommendations to the Board.

6.3.3 The Executive Committee will take recommendations from service line committees that have system performance improvement functions for appropriate designation/accreditation of hospitals related to initial or changes to designation/accreditation. Recommendations will be reviewed and discussed in a closed Executive Committee session to determine the best course to be taken prior to consideration and action by the full board.

6.3.4 The RAC Chair and/or an Executive Committee member recognizes their responsibility to attend DSHS meetings and identified mandatory meetings called by DSHS. Failure to comply with mandatory attendance requirements without prior DSHS approval may be cause for removal.

ARTICLE VII

Board of Directors

7.1 The Board shall consist of:

- 7.1.1 Chair (only votes in the event of a tie)
- 7.1.2 Chair Elect
- 7.1.3 Secretary
- 7.1.4 Treasurer
- 7.1.5 Air Medical Committee Chair / Chair Elect
- 7.1.6 Cardiac Committee Chair / Chair Elect
- 7.1.7 Emergency Department Operations Committee Chair / Chair Elect
- 7.1.8 EMS Committee Chair / Chair Elect
- 7.1.9 Finance Committee Chair / Chair Elect
- 7.1.10 Hospital Executive – East
- 7.1.11 Hospital Executive – West
- 7.1.12 Medical Director Committee Chair / Chair Elect
- 7.1.13 Pediatric Committee Chair / Chair Elect
- 7.1.14 Perinatal Committee Chair / Chair Elect
- 7.1.15 Regional Emergency Preparedness Committee Chair / Chair Elect
- 7.1.16 Stroke Committee Chair / Chair Elect
- 7.1.17 Trauma Committee Chair / Chair Elect
- 7.1.18 Zones Representative
- 7.1.19 Immediate Past Chair (ex officio, non-voting)

7.2 Election, Removal, and Vacancies of Directors

- 7.2.1 Each Director is confirmed as a member of the Board after election by their respective committee and ratification by the Board.
- 7.2.2 Any Director may be removed with or without cause at a Board Meeting by a majority vote of the Board after a Closed Executive Committee investigation and recommendation, provided that proper notice of the intention to act on the matter has been given in the notice calling the meeting.

7.2.3 Each elected Director will hold office until whichever of the following occurs: (a) a successor is elected, (b) resignation, (c) removal from office by the Board, (d) removal from office by their respective committee, after ratification by the Board, (e) death, or (f) disability.

7.3 Duties of the Board

7.3.1 The NCTTRAC Board shall act on behalf of the organization and has the principal responsibility for the organization's mission, and the legal accountability for its operations.

7.3.2 The Board shall determine NCTTRAC's mission and purpose.

7.3.2.1 The Board shall conduct periodic strategic planning to review and update the organization's mission and purpose for accuracy and validity.

7.3.2.2 Each Officer, Director and Committee Chair Elect should fully understand and support the organization's mission and the strategic plan.

7.3.3 The Board shall ensure effective organizational planning.

7.3.3.1 The Board must actively participate with staff in the overall planning process and assist in implementing organizational goals.

7.3.3.2 The Board shall set policy through the development of strong organizational plans including, but not limited to, organizational bylaws, SOPs, and the strategic plan.

7.3.4 The Board shall ensure adequate resources for NCTTRAC to fulfill its mission and shall manage those resources effectively.

7.3.4.1 The Board shall ensure that adequate financial controls are in place to safeguard its resources and preserve the tax-exempt status of the organization.

7.3.4.2 The Board shall actively participate in the development of the annual budget.

7.3.5 The Board shall ensure that NCTTRAC's programs and services are consistent with the organization's mission and shall monitor their effectiveness.

7.3.6 The Board shall ensure legal and ethical integrity and maintain accountability.

7.3.6.1 The Board shall establish pertinent organizational policies and procedures.

7.3.6.2 The Board shall adhere to provisions of the organization's Bylaws and Articles of Incorporation.

7.3.7 The Board shall oversee training of new Officers, Directors and Committee Chairs Elect and assess Board participation and performance.

7.3.7.1 New Officers, Directors and Committee Chairs Elect shall be provided with information related to their Board responsibilities as well as NCTTRAC's history, needs and challenges.

7.3.7.2 The Board shall regularly evaluate its performance in order to recognize its achievements and determine areas that need to be improved.

7.3.8 The Board shall be responsible for NCTTRAC's statement of position in matters of activism, advocacy and/or organizational endorsement. If time constraints do not allow for position development by full Board consensus the responsibility shall be delegated to the Executive Committee or Officers of the Board If time constraints are extreme.

7.3.9 Each Officer and Director shall perform his or her duties in good faith and in a manner he or she reasonably believes to be in the best interest of NCTTRAC.

7.3.9.1 Each Officer and Director shall perform his or her duties with such care as an ordinarily reasonable and prudent person in a like position with respect to a similar corporation would use under similar circumstances.

7.3.9.2 Each Officer and Director shall read and attest to the Conflict of Interest SOP at least annually.

7.3.9.3 Each Officer, Director and Standing Committee Chair Elect shall complete training related to the roles and responsibilities of the Board.

7.4 Requirements of the Board

7.4.1 Each Officer and Director must be a documented representative of a NCTTRAC member organization in good standing as defined in the Voting and Elections SOP.

7.4.2 The Officers and Directors shall participate in accordance with the Membership and Active Participation SOP.

7.4.3 All Officers, Directors and Standing Committee Chairs Elect are required to review and complete the DSHS Board Training requirement at least annually. This training and verification shall be completed within 30 days of elected or appointed participation on the Board.

7.5 Quorum

7.5.1 A quorum is defined as 50% of the voting members of the Board who are present at the call for a vote.

7.5.2 A simple majority vote of the quorum is required to take action.

7.6 Meetings

7.6.1 Meeting times and locations shall be set by the Chair and posted on the NCTTRAC website calendar.

7.6.2 The NCTTRAC Chair is responsible for approving the Board agenda and making copies available at the meeting.

7.6.3 The Secretary is responsible for ensuring that minutes are acceptable for presentation at meetings.

7.7 Directors are volunteers and not compensated, but may be reimbursed for direct expenses in accordance with the Officer / Committee Travel Reimbursement SOP.

7.8 All Officers and Directors are expected to attend all Board Meetings.

7.8.1 If an Officer or Director is absent for two consecutive regular Board Meetings, without accepted excuse, the Officer or Director will be notified by the Board Officers in writing of the consecutive absences.

7.8.1.1 Excused absence requests must be conveyed to the Executive Committee (or delegated Board Officer) for approval prior to the missed meeting.

7.8.1.2 Consensus of the Executive Committee will determine the approval of each excused absence request.

7.8.2 If, after being notified, the Officer or Director misses the next regular Board Meeting, the Chair should bring the situation to the Executive Committee's attention for discussion and resolution.

7.8.3 A cumulative attendance record less than or equal to 50% without prior approvals will be cause for removal.

7.8.4 Attendance rosters will be maintained on a rolling fiscal year calendar.

7.9 The Chair has the authority to call or postpone ad-hoc, special, and closed Board Meetings in accordance with Article VIII Section 8.2.4 within the Bylaws. In the event that a special meeting is called, notice of the purpose will be provided along with the notice of the time, date, and location as discussed in Section 8.2.4 herein.

ARTICLE VIII

Meetings

8.1 All meetings are open to the public and posted on the NCTTRAC website with exceptions for special, ad hoc, or closed meetings.

8.2 General Membership Meetings of all NCTTRAC Members are held in compliance with State contract requirements and will include, but are not limited to Board and Standing Committee/Subcommittee reports to update the Members on NCTTRAC activities.

8.2.1 Voting will be conducted in accordance with the Voting and Elections SOP.

8.2.2 The Chair has the discretion to postpone or reschedule General Membership Meetings.

8.2.2.1 Except for a catastrophic event, a minimum of twenty-four (24) hours notice shall be given.

8.2.3 Written or printed notice stating the place, day, and time of the General Membership Meeting will be delivered not less than fifteen days nor more than sixty days before the meeting. The notice will provide the meeting location and the electronic system access information. The notice will be delivered in person, by electronic transmission, or by mail. In the event that a special meeting of Members is called, notice of the purpose or purposes of the meeting will also be provided.

8.3 Board Meetings are held at least quarterly to take action on NCTTRAC's behalf.

ARTICLE IX

Committees

9.1 The Standing Committees established by NCTTRAC shall include, but are not limited to: Air Medical Committee; Cardiac Committee; Emergency Department Operations Committee; Emergency Medical Services Committee; Finance Committee; Medical Directors Committee; Pediatric Committee; Perinatal Committee; Regional Emergency Preparedness Committee; Stroke Committee; Trauma Committee. Subcommittees to the aforementioned Standing Committees may be established within these Bylaws. All Administrative Criteria applicable to standing Committees, as outlined in this article, shall also apply to Subcommittees of Standing Committees. Standing Committees and Subcommittees may be comprised of voting and nonvoting Members. In addition, non-member agencies or organizations representing key partners in the Trauma Service Area–E (TSA-E) emergency healthcare system are also encouraged to participate in Standing Committee/Subcommittee activities.

9.1.1 Standing Committee/Subcommittee Meetings, with the exception of closed sessions as defined in the Closed Meetings SOP, are open to any individual who wants to attend the meeting.

9.1.2 Standing Committees/Subcommittees shall meet at least quarterly.

9.1.3 Standing Committees shall establish and review on an annual basis a Standard Operating Procedure (SOP) that outlines committee makeup, responsibilities, goals, and products (at minimum). A Standing Committee SOP template is provided by NCTTRAC staff as a guide in addressing overarching Board of Directors expectations and considerations on a fiscal year basis.

9.1.4 The business of a Standing Committee shall be decided by a majority of the eligible votes cast as defined in the Committee SOP. The business of Subcommittees will be defined in the affiliated Standing Committee SOP.

9.1.4.1 On each Standing Committee/Subcommittee, there may be formed either a broad member representation or a documented Core Group of committee representatives that will be the deciding body for that committee's activities. Such documentation will be established in the form of a Standing Committee SOP approved by the Board.

9.1.4.1.1 The Core Group, documented as the "voting representatives of the committee" may consist of both documented representative of a NCTTRAC Member in good standing, as well as delegated representatives of identified and approved partner agencies or organizations.

9.1.4.1.2 The business of a Standing Committee/Subcommittee with an established Core Group will be directed by its Chair-derived consensus of attendees or a deliberate vote of its Core Group.

9.1.4.1.3 In the absence of an established Core Group for a Standing Committee/Subcommittee, the business of the committee will be directed by its Chair-derived consensus or deliberate vote of a documented representative of a NCTTRAC Member in good standing.

9.1.4.2 No NCTTRAC Voting Member or Core Group organization shall have more than one vote per action item in individual Standing Committee/Subcommittee Meetings.

9.1.4.3 The NCTTRAC Member's Primary Voting Representative may appoint a Standing Delegate to serve as a regular attendee to Standing Committees/Subcommittees for purposes of both subject matter representation and voting.

9.1.4.3.1 Standing Delegates shall be appointed in writing and/or email originating from the NCTTRAC Member's Primary Voting Representative.

9.1.5 The Chair of a Standing Committee/Subcommittee

9.1.5.1 The Standing Committee/Subcommittee Chair term is one year. The Chair of a Standing Committee/Subcommittee ascends from the Committee Chair Elect.

9.1.5.2 The Standing Committee/Subcommittee Chair must be a documented representative of a NCTTRAC Member organization in good standing.

9.1.5.3 The Standing Committee/Subcommittee Chair cannot hold more than one elected position with NCTTRAC at a time.

9.1.5.4 In the event the Standing Committee/Subcommittee Chair is unable to fulfill the term, the Chair Elect shall ascend to Chair. The term of the new Chair shall be the remainder of the unfulfilled term of the previous Committee Chair. The Committee will recommend if the new Chair will additionally serve the one-year term that would have been served originally for review by the Executive Committee and ratification by the Board.

9.1.6 The Chair of each Standing Committee/Subcommittee has the following responsibilities:

9.1.6.1 The Chair of each Standing Committee is a voting member of the Board.

9.1.6.2 The Chair of each Standing Committee in collaboration with NCTTRAC staff is responsible for the development of and adherence to an SOP related to committee functions and membership. Guidance on specific SOP content is provided by NCTTRAC staff as approved by the Board. All committee SOP's will be reviewed annually with the intent of final Board approval prior to the start of the NCTTRAC fiscal year.

9.1.6.3 The Chair of each Standing Committee is responsible for presenting committee and subcommittee reports to the Board on a periodic basis as approved by the Board.

9.1.6.4 The Chair of each Standing Committee/Subcommittee is responsible for representing the collective vote or consensus of the members or Core Group of the Standing Committee/Subcommittee.

9.1.6.5 The Chair of each Standing Committee/Subcommittee shall vote only in the event of a tie vote of the Standing Committee/Subcommittee.

9.1.6.6 The Chair of each Standing Committee/Subcommittee has the authority to call or postpone Standing Committee/Subcommittee Meetings.

9.1.6.7 Any workgroup not identified in the approved SOP must be established by the NCTTRAC Chair in accordance with Section 5.3 of these Bylaws.

9.1.6.8 Further clarification of responsibilities regarding conduct of meetings is found in the Conducting Official Business Meetings SOP.

9.1.7 The Chair Elect of each Standing Committee/Subcommittee is chosen by vote of the present and eligible Voting Members or Core Group as stated in 9.1.3 and approved by a simple majority vote of the Board in accordance with the Voting and Elections SOP.

9.1.7.1 The Standing Committee/Subcommittee Chair Elect term shall be one year.

9.1.7.2 Nominations for Standing Committee/Subcommittee Chair Elect shall come from its present and eligible Voting Members or Core Group.

9.1.7.3 The Standing Committee/Subcommittee Chair Elect must be a documented representative of a NCTTRAC Member in good standing.

9.1.7.4 The Standing Committee/Subcommittee Chair Elect cannot hold more than one elected position with NCTTRAC at a time.

9.1.7.5 In the event the Standing Committee/Subcommittee Chair Elect is unable to fulfill the term, there shall be an election at the next Standing Committee/Subcommittee Meeting to replace the Chair Elect for the remainder of the term.

9.1.8 The Chair Elect of each Standing Committee/Subcommittee has the following responsibilities

9.1.8.1 The Chair Elect assists the Chair with committee/subcommittee functions and assumes the Chair responsibilities for Standing Committee/Subcommittee activity and meeting management in the temporary absence of the Chair.

9.1.8.2 The Chair Elect of each Standing Committee is a voting member of the Board in the absence of the Standing Committee Chair.

9.1.8.3 The Chair Elect of each Standing Committee/Subcommittee has the authority to call or postpone Standing Committee/Subcommittee Meetings in the absence of the Standing Committee Chair.

9.1.8.4 The Chair Elect automatically ascends to the Chair position at the end of the

current Chair's term.

9.1.8.5 The Standing Committee/Subcommittee Chair Elect is chosen by vote of the present and eligible Voting Members or Core Group as stated in 9.1.3 and approved by a simple majority vote of the Board in accordance with the Voting and Elections SOP.

9.1.9 Call for removal of or complaint against any Chair of a Standing Committee/Subcommittee shall be delegated to the Executive Committee for investigation and recommendation. Recommendation shall be presented to the Board for action.

9.1.10 Purpose and responsibilities of Standing Committees/Subcommittees:

9.1.10.1 Air Medical Committee

9.1.10.1.1 Responsible for affecting and supporting safe air medical operations and high quality clinical care provided by air medical transport services in TSA-E.

9.1.10.1.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.1.2.1 Professional Development

9.1.10.1.2.2 Injury / Illness Prevention and Public Education

9.1.10.1.2.3 System Performance Improvement

9.1.10.1.3 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP.

9.1.10.1.4 Provide interface with other RAC committees, the Texas Association of Air Medical Service (TAAMS), and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.2 Cardiac Committee

9.1.10.2.1 Responsible for the development of an acute cardiac care system for TSA-E. This includes the development of guidelines for rapid transport to appropriate facilities of patients suffering ST-Elevation Myocardial Infarction (STEMI), and other acute cardiac conditions.

9.1.10.2.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.2.2.1 Professional Development

9.1.10.2.2.2 Injury / Illness Prevention and Public

Education

9.1.10.2.2.3 System Performance Improvement

9.1.10.2.3 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP.

9.1.10.2.4 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.3 Emergency Department Operations Committee

9.1.10.3.1 Responsible for improving Emergency Department operations in TSA-E by engaging in and supporting the development and implementation of clinical guidelines and processes; and enhancing communication, collaboration and alignment amongst the EDs, ED partners in care, and other NCTTRAC Committees in TSA-E.

9.1.10.3.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.3.2.1 Professional Development

9.1.10.3.2.2 Injury / Illness Prevention and Public Education

9.1.10.3.2.3 System Performance Improvement

9.1.10.3.3 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP

9.1.10.3.4 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.4 Emergency Medical Services (EMS) Committee

9.1.10.4.1 Responsible for coordinating and improving the clinical care provided by all levels of prehospital providers within TSA-E.

9.1.10.4.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.4.2.1 Professional Development

9.1.10.4.2.2 Injury / Illness Prevention and Public

Education

9.1.10.4.2.3 System Performance Improvement

9.1.10.4.3 Provide guidance in the development and review of pre-hospital assessment tools, regional plans and treatment guidelines, Committee SOP

9.1.10.4.4 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC) and keep members informed on latest developments in prehospital transportation and care.

9.1.10.5 Finance Committee

9.1.10.5.1 Responsible for planning, monitoring, and overseeing the organization's financial resources, including, but not limited to, budgeting, financial reporting, and the creation and monitoring of internal controls and financial policies as well as oversight of the annual independent audit.

9.1.10.5.2 Provide interface with other RAC committees, professional associations, and state agencies appropriate to RAC/Member funding considerations.

9.1.10.6 Medical Director Committee

9.1.10.6.1 Responsible for recommending a minimum standard of practice for providers participating in the trauma, acute, emergency healthcare and disaster response system of TSA-E.

9.1.10.6.2 The committee will be comprised of the elected committee medical directors of the following committees: Air Medical, Cardiac, Emergency Department Operations, EMS, Pediatric, Perinatal, Regional Emergency Preparedness, Stroke, and Trauma.

9.1.10.6.3 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and Committee SOP.

9.1.10.6.4 Provide interface with other RAC committees, professional associations appropriate to their service lines, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.7 Pediatric Committee

9.1.10.7.1 Responsible for promoting pediatric expertise through advocacy and education.

9.1.10.7.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.7.2.1 Professional Development

9.1.10.7.2.2 Injury / Illness Prevention and Public Education

9.1.10.7.2.3 System Performance Improvement

9.1.10.7.3 Serve as the resource for information regarding pediatric care, pediatric emergency preparedness, and identify needs or trends in the management of injured and acutely ill children.

9.1.10.7.4 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP

9.1.10.7.5 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.8 Perinatal Committee

9.1.10.8.1 Responsible for the development of a Perinatal Region of Care (PCR) in TSA-E including the Regional Perinatal System Plan. This plan identifies all resources available in the PCRs for perinatal care including resources for emergency and disaster preparedness.

9.1.10.8.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.8.2.1 Professional Development

9.1.10.8.2.2 Injury / Illness Prevention and Public Education

9.1.10.8.2.3 System Performance Improvement

9.1.10.8.3 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP.

9.1.10.8.4 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.9 Regional Emergency Preparedness Committee (REPC)

9.1.10.9.1 Responsible for jointly identifying and recommending plans and solutions that support improvements in TSA-E emergency/disaster preparedness and response between medical emergency preparedness stakeholders.

9.1.10.9.1.1 The Healthcare Coalition (HCC) Planning Subcommittee is tasked with providing subject matter expertise in regional all hazards disaster planning support.

9.1.10.9.1.2 The Emergency Medical Task Force (EMTF)–2 Subcommittee is tasked with providing subject matter expertise in regional and state planning, mobilization, recruiting, training, operations, recovery, and fiscal responsibilities.

9.1.10.9.2 Serves as the steering committee that provides recommendations and support to the NCTTRAC Board and staff regarding execution of the Texas Hospital Preparedness Program contract as administered by the Texas DSHS for EMTF-2, and TSAs C, D, and E.

9.1.10.9.3 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.9.3.1 Professional Development

9.1.10.9.3.2 Injury / Illness Prevention and Public Education

9.1.10.9.3.3 System Performance Improvement

9.1.10.9.4 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP

9.1.10.9.5 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.10 Stroke Committee

9.1.10.10.1 Responsible for development of an acute stroke care system for TSA-E, including the development of guidelines for acute stroke care in Level I, II, and III Stroke Centers as specified in the Regional Stroke Plan.

9.1.10.10.2 Establish standing agenda items and corresponding responsibilities (e.g. by individual appointment, workgroup, or subcommittee) to address, and document in the committee SOP, the following topics:

9.1.10.10.2.1 Professional Development

9.1.10.10.2.2 Injury / Illness Prevention and Public Education

9.1.10.10.2.3 System Performance Improvement

9.1.10.10.3 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP

9.1.10.10.4 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.1.10.11 Trauma Committee

9.1.10.11.1 Responsible for the oversight of the trauma system for TSA-E, including the TSA-E Regional Trauma System Plan (Plan). This Plan includes strategies to focus diverse resources in a collective strategy to reduce morbidity and mortality due to trauma.

9.1.10.11.1.1 The Professional Development Subcommittee is tasked with identifying and meeting professional development needs for all levels of providers throughout TSA-E.

9.1.10.11.1.2 The Public Education / Injury Prevention (PEIP) Subcommittee is tasked promoting injury and illness prevention and public awareness through advocacy and education.

9.1.10.11.1.3 The System Performance Improvement (SPI) Subcommittee is tasked with shared oversight of emergency healthcare system performance improvement activities with individual service line Committees of NCTTRAC.

9.1.10.11.2 Provide guidance in the development and review of hospital and pre-hospital assessment tools, regional plans and treatment guidelines, and the Committee SOP

9.1.10.11.3 Provide interface with other RAC committees, professional associations appropriate to the service line, and the Governor's EMS and Trauma Advisory Council (GETAC).

9.2 Trauma Service Area –E is divided into geographic areas referred to as Zones. NCTTRAC is supportive of member efforts to organize and meet at the local level on specific issues affecting them.

9.2.1 The current Zones are:

9.2.1.1 Zone 1 – Cooke, Grayson and Fannin counties;

9.2.1.2 Zone 2 – Denton and Wise counties;

9.2.1.3 Zone 3 – Palo Pinto and Parker counties;

9.2.1.4 Zone 4 – Ellis, Kaufman and Navarro counties;

- 9.2.1.5 Zone 5 – Collin, Hunt and Rockwall counties;
- 9.2.1.6 Zone 6 – Erath, Hood, Johnson and Somervell counties;
- 9.2.1.7 Zone 7 – Tarrant County; and
- 9.2.1.8 Zone 8 – Dallas County.
- 9.2.2 Zone Meetings are open to any individual who wants to attend the meeting.
- 9.2.3 Zone Meetings shall occur at least quarterly and follow the guidance provided by the Zones Communications and Reporting SOP.
- 9.2.4 Each Zone Representative is chosen by vote of the present and eligible voting members of the Zone.
 - 9.2.4.1 Nominations for each Zone Representative shall come from the Zone membership.
- 9.2.5 Each Zone Representative has the following responsibilities:
 - 9.2.5.1 Serve as the primary liaison between the zone membership, the Zones Liaison, the Board, NCTTRAC Committee, and staff.
 - 9.2.5.2 Report grassroots activity to the Zones Liaison at least quarterly.
 - 9.2.5.3 Represent the collective vote of the members in the Zone.
 - 9.2.5.4 Call or postpone Zone Meetings.
 - 9.2.5.4.1 Further clarification of responsibilities regarding conduct of meetings is found in the Conducting Official Business Meetings SOP.
 - 9.2.5.5 Ensure that timely Zone Representative elections are held as described in the Zone Communication and Reporting SOP.
- 9.2.6 The Zones Liaison to the Board (Zones Liaison) has the following responsibilities:
 - 9.2.6.1 Serve as the primary liaison between each of the eight (8) Zone Representatives and the Board of Directors, NCTTRAC Committees, and staff.
 - 9.2.6.2 Report grassroots activity to the Board of Directors and NCTTRAC's General Membership on a periodic basis as approved by the Board.
 - 9.2.6.3 Represent the collective vote of the Zone Representatives.
- 9.2.7 Call for removal of, or complaint against, any Zone Representative shall be delegated to the Executive Committee for investigation and recommendation. The recommendation shall be presented to the Board for action.

9.2.8 Zone Representatives shall biannually elect one Zones Liaison to serve on the Board as a voting member. That voting member cannot simultaneously serve as an Officer or Standing Committee/Subcommittee Chair.

9.2.8.1 The Zones Liaison to the Board of Directors must be a documented representative of a NCTTRAC Member organization in good standing.

ARTICLE X

Fiscal Policies

NCTTRAC shall maintain current, true, and accurate financial records, including all income and expenditures. All records, books, and annual reports of the financial activity of NCTTRAC shall be kept at the principal office of NCTTRAC.

10.1 The fiscal year for NCTTRAC is defined as the first day of September through the last day of August of the following year.

10.2 NCTTRAC shall maintain financial records in accordance with Generally Accepted Accounting Principles (GAAP).

10.3 NCTTRAC provides financial reports in accordance with contract or grant guidance or as otherwise required by law.

10.4 NCTTRAC is a nonprofit organization under Section 501(c)(3) of the Internal Revenue Code of 1986, as amended, as recognized by the Internal Revenue Service. As such, no one individual or entity may profit from the activities of NCTTRAC.

10.5 The Finance Committee in collaboration with NCTTRAC staff prepares an annual budget. The budget is presented for approval to the Board.

10.6 The Board may accept any contribution, gift, bequest, or devise for the general purpose or for any special purpose of NCTTRAC.

10.7 NCTTRAC may be wound up and terminated by a vote of at least 2/3rds of the voting membership present and voting in accordance with the Texas Business Organizations Code (TBOC). Upon winding up and termination, any eligible existing funds of NCTTRAC shall be distributed to an appropriate organization or entity that shall utilize the funds to continue the mission of NCTTRAC.

10.8 Indemnity and Insurance

10.8.1 NCTTRAC will indemnify its Officers, Directors, employees, and agents to the fullest extent permitted by the TBOC and may, if and to the extent authorized by the Board, indemnify any other person whom it has the power to indemnify against liability, reasonable expense, or any other matter.

10.8.2 As may be provided by specific action of the Board, NCTTRAC may purchase and maintain insurance on behalf of any person who is or was an Officer, Director, employee or agent of NCTTRAC against any liability asserted against him or her and incurred by such person in such a capacity or arising out of his or her status, whether or not NCTTRAC would have the power to indemnify him or her against the liability under this Section.

10.9 Limitation of Liability – A Director of NCTTRAC shall not be liable to NCTTRAC or its Members for monetary damages arising as a result of an act or omission committed by the Director while acting within his or her capacity as a Director, except that this Section shall not eliminate or limit the liability of a Director for:

10.9.1 Breach of a Director's duty of loyalty to NCTTRAC or its Members;

10.9.2 An act or omission not in good faith that constitutes a breach of duty of the Director to NCTTRAC or that involves intentional misconduct or a knowing violation of the law;

10.9.3 A transaction from which a Director received an improper benefit, whether or not the benefit resulted from an action taken within the scope of the Director's office; or

10.9.4 An act or omission for which the liability of a Director is expressly provided for by statute.

10.10 Annual Audit – The Board shall ensure that an annual audit of NCTTRAC's financial records be performed every year by a qualified agency or individual within four months of the end of the fiscal year.

ARTICLE XI

Parliamentary Authority

11.1 The most current edition of "Robert's Rules of Order" shall be used as a general guide to parliamentary procedure for meetings.

ARTICLE XII

Amendment of Bylaws

12.1 NCTTRAC Bylaws shall be reviewed at least annually.

12.1.1 A Bylaws workgroup, led by the Chair Elect, shall be assembled for the annual review.

12.1.2 Proposed Bylaws amendments shall be presented at a General Membership Meeting by the Bylaws Workgroup in accordance with the Bylaws.

12.1.3 Copies of proposed Bylaws amendments shall be made available to Members at least 21 days prior to the meeting in which they shall be considered for adoption.

12.1.4 Bylaws amendments, as contained in the notice of such meeting, may be adopted according to the NCTTRAC SOP.

ARTICLE XIII

Signatures

13.1 These Bylaws shall be effective immediately upon approval by the General Membership and signed and dated by the Secretary unless a later effective date is specified and approved.

ARTICLE XIV

Proxies

14.1 A Voting Member can be represented by proxy.

14.1.1 Such proxy shall be originated and/or signed by the Member's documented Primary Voting Representative and filed with NCTTRAC prior to the vote as defined in the Voting and Elections SOP.

14.1.2 Such proxy shall be limited to an individual that represents the same Member organization, agency, or its parent corporation as the Voting Member's Primary Representative assigning proxy.

14.1.3 No individual shall hold more than one proxy at a time, unless granted between Members within the same corporation.

14.1.4 No such proxy shall be valid after the expiration of ninety (90) days from the date of its execution or as otherwise specified.

14.2 Voting by proxy is not available for Board Meetings.

ARTICLE XV

Financial Books and Records

15.1 NCTTRAC shall keep true and complete books and records of accounts, together with minutes of the proceedings of the Board.

15.2 The Board shall maintain current, true, and accurate financial records with full and correct entries made with respect to all financial transactions of NCTTRAC, including all income and expenditures.

15.3 All records, books, and annual reports of the financial activity of NCTTRAC shall be kept at the principle office of NCTTRAC.

ARTICLE XVI

Transactions of the Organization

16.1 The Executive Director has the authority to enter into contracts or execute and deliver any instrument in the name of and on behalf of NCTTRAC in accordance with the Transactions of the Organization SOP.

16.2 NCTTRAC shall maintain depository accounts to meet the business needs of NCTTRAC including depositing funds as authorized by the Executive Director.

16.3 Check signing authority shall be established in accordance with the Transactions of the Organization SOP.

16.4 The Board may make gifts or contributions on behalf of NCTTRAC in accordance with the Transactions of the Organization SOP.

16.5 NCTTRAC Officers and Directors shall sign a conflict of interest statement annually and update as needed.

16.5.1 Individuals are required to disclose any conflict of interest to the Board at the time that the conflict is identified.

16.6 NCTTRAC Members, officers, and staff shall conduct the business of the organization in a manner that is not otherwise prohibited by statute, by the Articles of Incorporation of NCTTRAC, or by these Bylaws.

16.7 Expenditure authority is defined by the Transactions of the Organization SOP.

CERTIFICATE BY SECRETARY

The undersigned, being the Secretary of North Central Texas Trauma Regional Advisory Council, Inc. hereby certifies that the foregoing Bylaws were duly adopted by the Members of said corporation effective on the 19th day of September, 2019.

In Witness Whereof, I have signed this certification on this the 13th day of April, 2021.

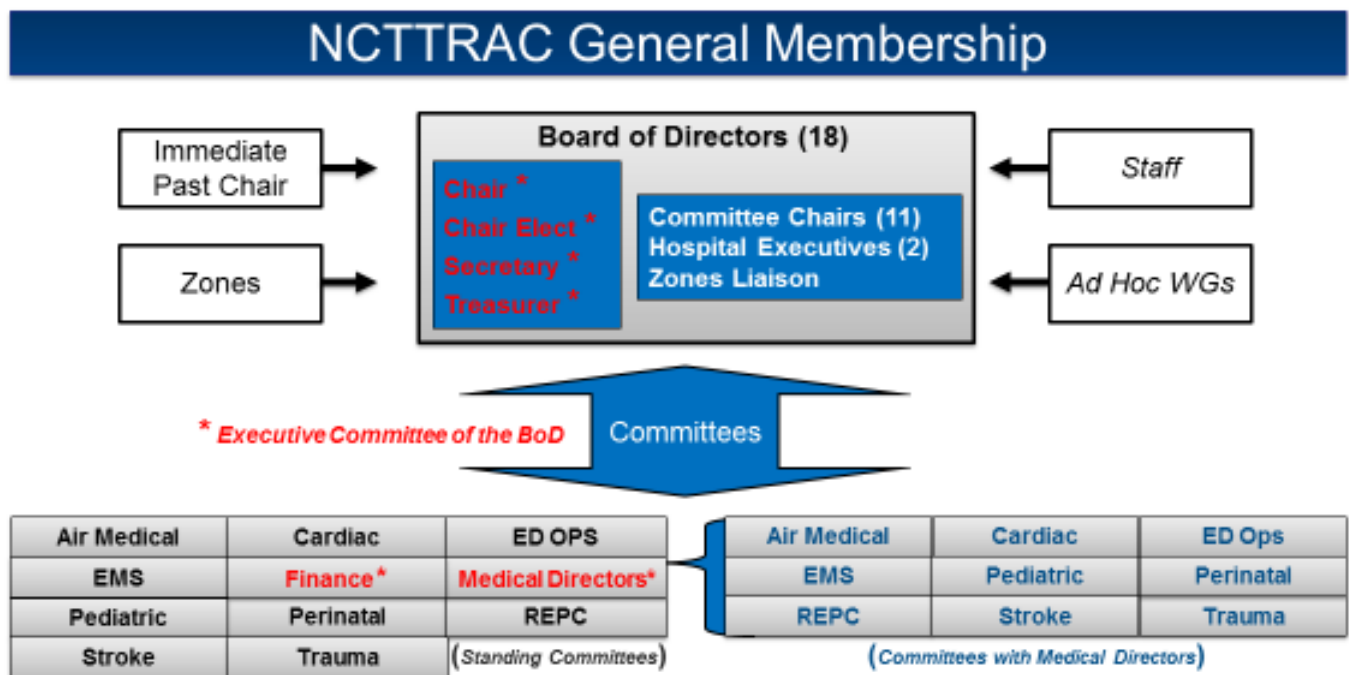
Original Signed by

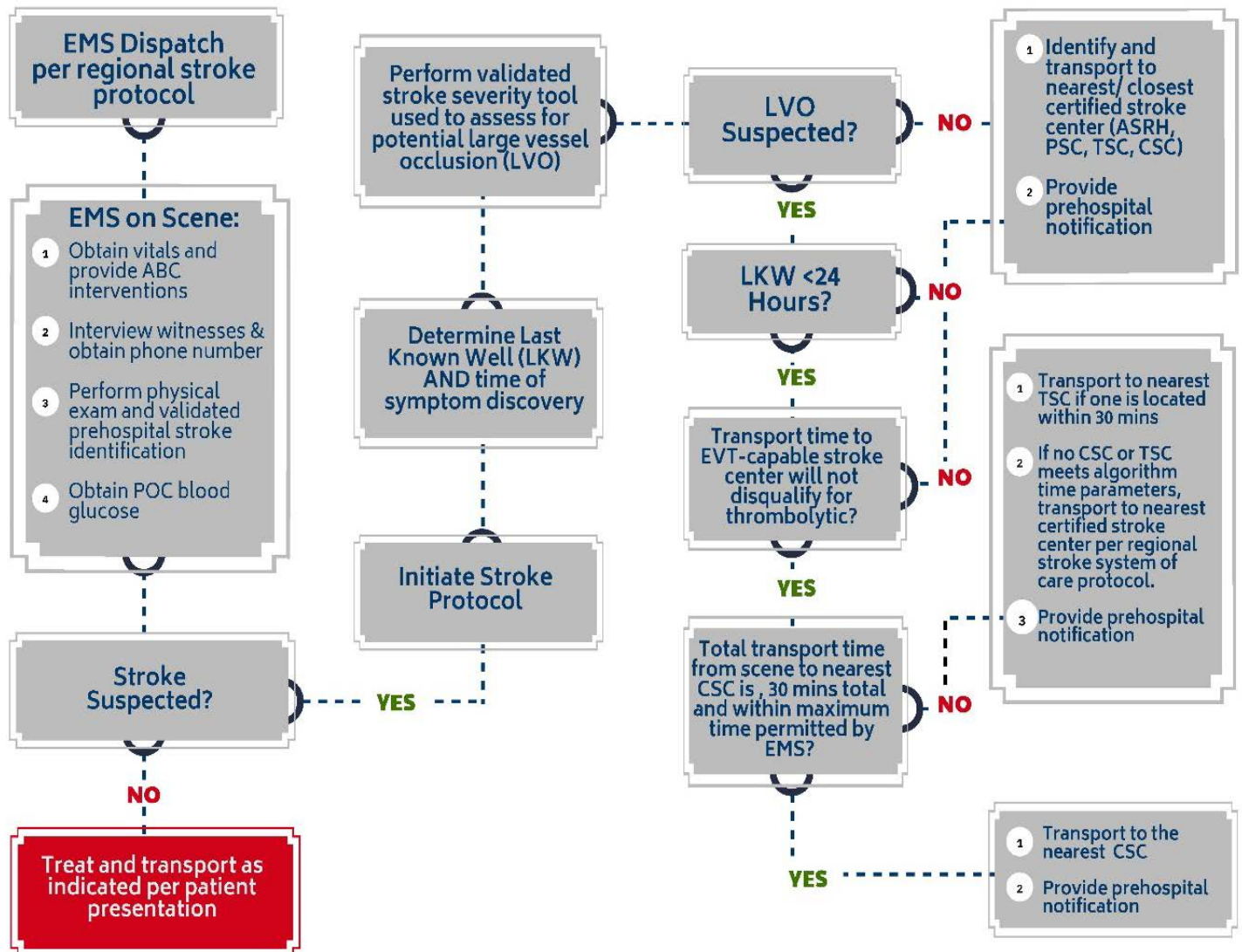
Signature on File

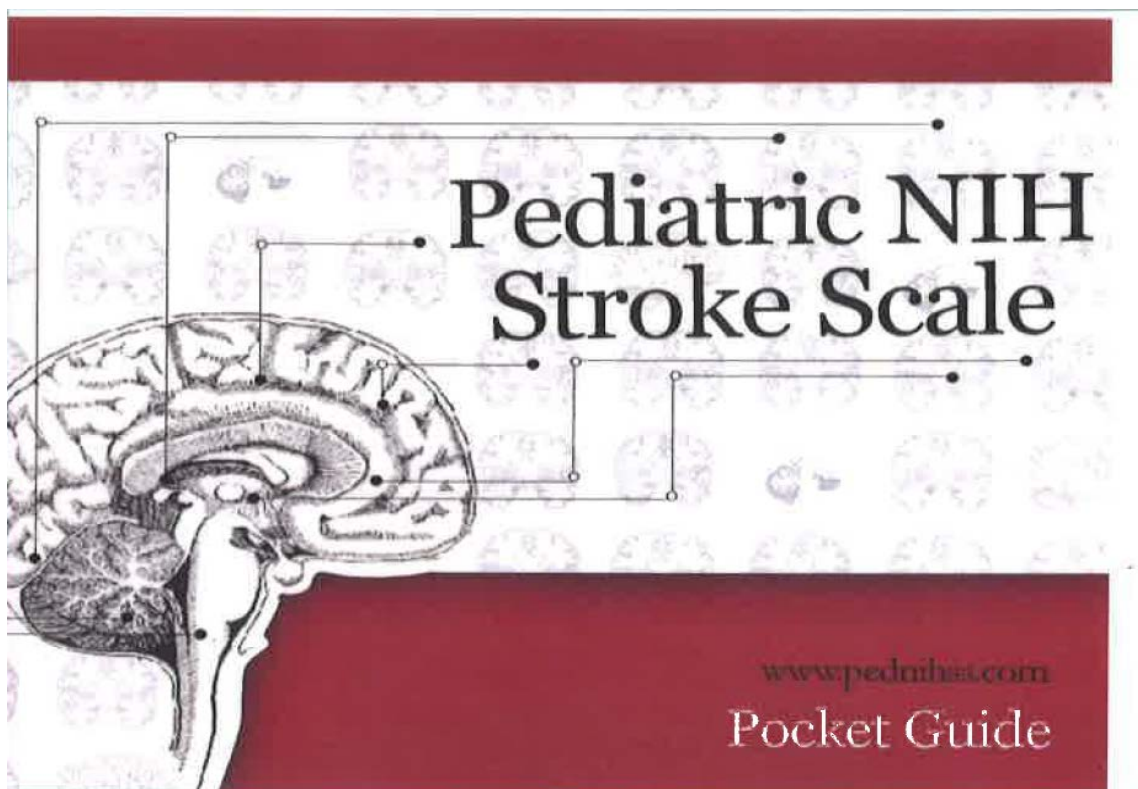
Nakia Rapier, Secretary

Attachment 1
Governance & Organization Chart

Governance Structure







Instructions

Administer stroke scale items in the order listed. Follow directions provided for each exam item. Scores should reflect what the patient does, not what the clinician thinks the patient can do. **MODIFICATIONS FOR CHILDREN:** Modifications to testing instructions from the adult version for use in children are shown in bold italic with each item where appropriate. Items with no modifications should be administered and scored with children in the same manner as for adults.

Case ID# _____


EXAMINER _____

Onset symptoms: Date _____


Time _____

1a Level of Consciousness


For children age 2 yrs and up, the investigator must choose a response, even if a full evaluation is prevented by such obstacles as an endotracheal tube, language barrier, orotracheal trauma/bandages. A 3 is scored only if the patient makes no movement (other than reflexive posturing) in response to noxious stimulation. For infants age 4 months up to age 2 years, multiply the score for this item by three, and omit scoring items 1b and 1c.



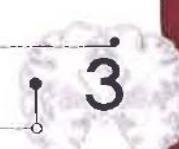
0
Alert; keenly responsive.



1
Not alert, but arousable by minor stimulation.




2
Not alert, requires repeated stimulation to attend.




3
Responds only with reflex motor or autonomic effects or unresponsive.


score



0
Answers both questions correctly.



1
Answers one question correctly.



2
Answers neither question correctly.

LOC Questions

The patient is asked the month and his/her age. The answer must be correct - there is no partial credit for being close. Aphasic and stuporous patients who do not comprehend the questions will score 2. Patients unable to speak because of endotracheal intubation, orotracheal trauma, severe dysarthria from any cause, language barrier or any other problem not secondary to aphasia are given a 1. It is important that only the initial answer be graded and that the examiner not "help" the patient with verbal or non-verbal cues. Modified for children, age 2 years and up. A familiar Family Member must be present for this item: Ask the child "how old are you?" Or "How many years old are you?" for question number one. Give credit if the child states the correct age, or shows the correct number of fingers for his/her age. For the second question, ask the child "where is XX?", XX referring to the name of the parent or other familiar family member present. Use the name for that person which the child typically uses, e.g. "mommy". Give credit if the child correctly points to or gazes purposefully in the direction of the family member. Omit this item for infants age 4 months up to age 2 years.

1b

score

1c LOC Commands

The patient is asked to open and close the eyes (For children > age 2 years, this command to open and close the eyes is suitable and can be scored as for adults.) and then to grip and release the non-paretic hand. For children > age 2 years, substitute the command to grip the hand with the command "show me your nose" or "touch your nose". Substitute another one step command if the hands cannot be used. Credit is given if an unequivocal attempt is made but not completed due to weakness. If the patient does not respond to command, the task should be demonstrated to them (pantomime) and score the result (i.e., follows none, one or two commands). Patients with trauma, amputation, or other physical impediments should be given suitable one-step commands. Only the first attempt is scored. Omit this item for infants age 4 months up to age 2 years. See comment under Item 1a.

Performs both tasks correctly.

0

Performs one task correctly.

1

Performs neither task correctly.

2

score

Normal.

0

Partial gaze palsy.

1

Forced deviation or total gaze paresis.

2


Best Gaze

Only horizontal eye movements will be tested. Voluntary or reflexive (oculocephalic) eye movements will be scored but caloric testing is not done. If the patient has a conjugate deviation of the eyes that can be overcome by voluntary or reflexive activity, the score will be 1. If a patient has an isolated peripheral nerve paresis (CN III, IV or VI) score a 1. Gaze is testable in all aphasic patients. Patients with ocular trauma, bandages, pre-existing blindness or other disorder of visual acuity or fields should be tested with reflexive movements and a choice made by the investigator. Establishing eye contact and then moving about the patient from side to side will occasionally clarify the presence of a partial gaze palsy.

score

3 Visual

Visual fields (upper and lower quadrants) are tested by confrontation, using finger counting (for children > 6 years) or visual threat (for children age 4 months to 6 years) as appropriate. Patient must be encouraged, but if they look at the side of the moving fingers appropriately, this can be scored as normal. If there is unilateral blindness or enucleation, visual fields in the remaining eye are scored. Score 1 only if a clear-cut asymmetry, including quadrantanopia is found. If patient is blind from any cause score 3. Double simultaneous stimulation is performed at this point. If there is extinction patient receives a 1 and the results are used to answer question 11.



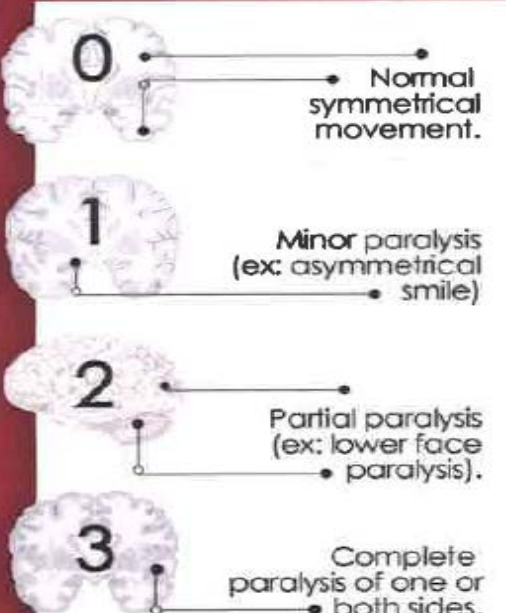
0 No visual loss.

1 Partial hemianopia.

2 Complete hemianopia.

3 Bilateral hemianopia (including cortical blindness).

score



0 Normal symmetrical movement.

1 Minor paralysis (ex: asymmetrical smile)

2 Partial paralysis (ex: lower face paralysis).

3 Complete paralysis of one or both sides.

4 Facial Palsy

Ask, or use pantomime to encourage the patient to show teeth or raise eyebrows and close eyes. Score symmetry of grimace in response to noxious stimuli in the poorly responsive or non-comprehending patient. If facial trauma/ bandages, orotracheal tube, tape or other physical barrier obscures the face, these should be removed to the extent possible.

score

5 Motor Arm and Leg

The limb is placed in the appropriate position; extend the arms (palms down) 90 degrees (if sitting) or 45 degrees (if supine) and the leg 30 degrees (always tested supine). Drift is scored if the arm falls before 10 seconds or the leg before 5 seconds. For children too immature to follow precise directions or uncooperative for any reason, power in each limb should be graded by observation of spontaneous or elicited movement according to the same grading scheme, excluding the time limits. The aphasic patient is encouraged using urgency in the voice and pantomime but not noxious stimulation. Each limb is tested in turn, beginning with the non-paretic arm. Only in the case of amputation or joint fusion at the shoulder or hip, or immobilization by an IV board, may the score be "9" and the examiner must clearly write the explanation for scoring as a "9".

5a. Left Arm
5b. Right Arm

No drift, limb holds for full 10 sec.	0
Drift, limb holds, but drifts down. Does not hit support.	1
Some effort against gravity, drifts down to support.	2
No effort against gravity, limb falls.	3
No Movement.	4
Amputation or joint fusion.	9

score

0	No drift, leg holds 30 degrees for full 5 sec.
1	Drift, leg falls, but does not hit bed.
2	Some effort against gravity, falls and hits bed.
3	No effort against gravity, leg falls immediately.
4	No Movement.
9	Amputation or joint fusion.

6 Motor Arm and Leg

The limb is placed in the appropriate position; extend the arms (palms down) 90 degrees (if sitting) or 45 degrees (if supine) and the leg 30 degrees (always tested supine). Drift is scored if the arm falls before 10 seconds or the leg before 5 seconds. For children too immature to follow precise directions or uncooperative for any reason, power in each limb should be graded by observation of spontaneous or elicited movement according to the same grading scheme, excluding the time limits. The aphasic patient is encouraged using urgency in the voice and pantomime but not noxious stimulation. Each limb is tested in turn, beginning with the non-paretic arm. Only in the case of amputation or joint fusion at the shoulder or hip, or immobilization by an IV board, may the score be "9" and the examiner must clearly write the explanation for scoring as a "9".

6a. Left Leg
6b. Right Leg


score

7

Limb Ataxia


This item is aimed at finding evidence of a unilateral cerebellar lesion. Test with eyes open. In case of visual defect, insure testing is done in intact visual field. The finger-nose-finger and heel-shin tests are performed on both sides, and ataxia is scored only if present out of proportion to weakness. In children, substitute this task with reaching for a toy for the upper extremity, and kicking a toy or the examiner's hand, in children too young (< 5 years) or otherwise uncooperative for the standard exam item. Ataxia is absent in the patient who cannot understand or is paralyzed. Only in the case of amputation or joint fusion may the item be scored "9", and the examiner must clearly write the explanation for not scoring. In case of blindness test by touching nose from extended arm position.

Absent.



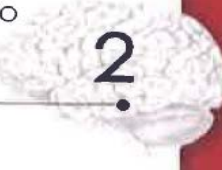
0

Present in one limb.



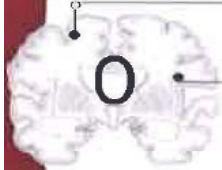
1

Present in two limbs.




2

score



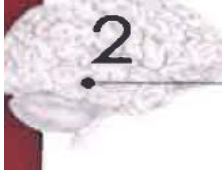
0

Normal, no sensory loss.



1

Mild to moderate sensory loss.



2

Severe to total sensory loss.

8

Sensory

Sensation or grimace to pin prick when tested, or withdrawal from noxious stimulus in the obtunded or aphasic patient. For children too young or otherwise uncooperative for reporting gradations of sensory loss, observe for any behavioral response to pin prick, and score it according to the same scoring scheme as a "normal" response, "mildly diminished" or "severely diminished" response. Only sensory loss attributed to stroke is scored as abnormal and the examiner should test as many body areas [arms (not hands), legs, trunk, face] as needed to accurately check for hemisensory loss. A score of 2, "severe or total," should only be given when a severe or total loss of sensation can be clearly demonstrated. Stuporous and aphasic patients will therefore probably score 1 or 0. The patient with brain stem stroke who has bilateral loss of sensation is scored 2. If the patient does not respond and is quadriplegic score 2. Patients in coma (item 1a=3) are arbitrarily given a 2 on this item.

score

9

Best Language

A great deal of information about comprehension will be obtained during the preceding sections of the examination. For children age 6 years and up with normal language development before onset of stroke: The patient is asked to describe what is happening in the attached, to name the items on the attached naming sheet (see pictures used in the STOP study, attached), and to read from the attached list of sentences (see the list of words/phrases from the STOP study; or who premorbid were known to be unable to read). Comprehension is judged from responses here as well as to all of the commands in the preceding general neurological exam. If visual loss interferes with the tests, ask the patient to identify objects placed in the hand, repeat, and produce speech. The intubated patient should be asked to write. The patient in coma (question 1a=3) will arbitrarily score 3 on this item. The examiner must choose a score in the patient with stupor or limited cooperation but a score of 3 should be used only if the patient is mute and follows no one step commands. For children age 2 yrs to 6 yrs (or older children with premorbid language disability), score this item based on observations of language comprehension and speech during the preceding examination. For infants age 4 months to 2 years, score for auditory alerting and orienting responses.

Children 2y and up:
Infants 4m to 2y:

No aphasia, normal.
Alerts to sound and orients visually.

0

Mild to moderate aphasia.

1

Severe aphasia. Alerts to sound, but without spacial orientation.

2

Mute, global aphasia. Does not alert to sound.

3

score

READING ITEMS

Stop

See the dog run

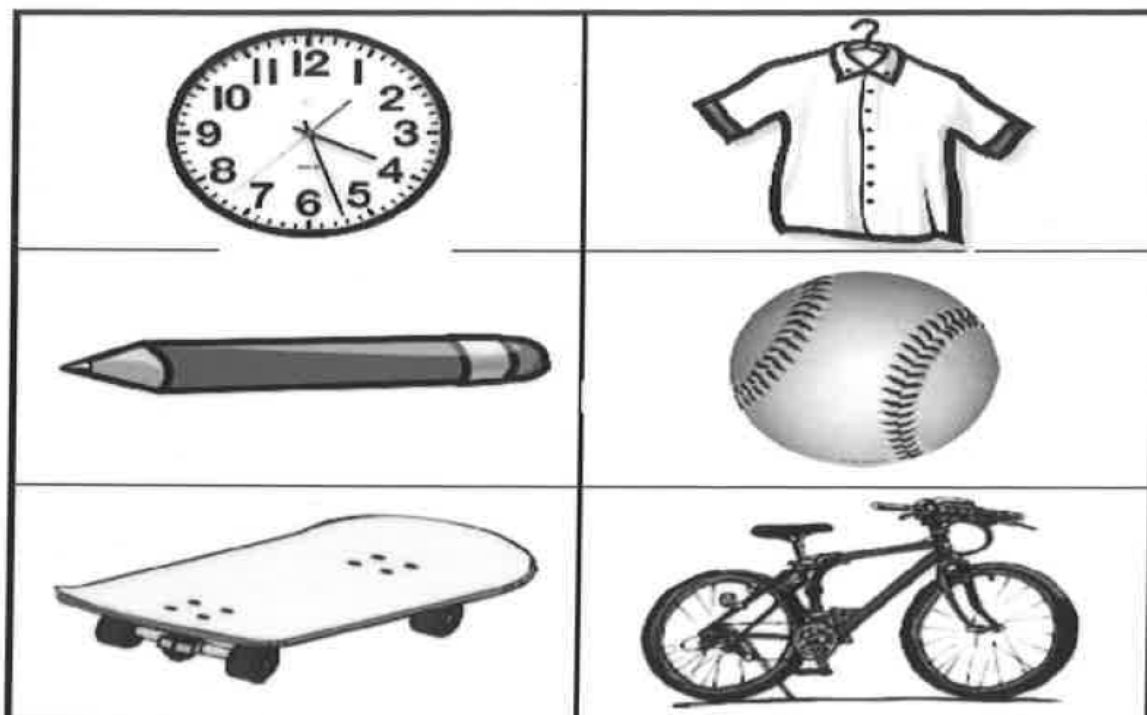
**Little children like to
play outdoors**


REPETITION ITEMS

**STOP
 STOP AND GO
 IF IT RAINS WE PLAY INSIDE
 LITTLE CHILDREN LIKE TO PLAY OUTDOORS**


**MAMA
 TIP-TOP
 FIFTY-FIFTY
 THANKS
 HUCKLEBERRY
 BASEBALL PLAYER**

NAMING ITEMS







0 Normal.



1 Mild to Moderate (some slurring).



2 Severe (unintelligible).



9 Intubated or other physical barrier.

Dysarthria

10


If patient is thought to be normal an adequate sample of speech must be obtained by asking patient to read or repeat words from the attached list. If the patient has severe aphasia, the clarity of articulation of spontaneous speech can be rated. Only if the patient is intubated or has other physical barrier to producing speech, may the item be scored "9", and the examiner must clearly write an explanation for not scoring. Do not tell the patient why he/she is being tested.

score


11

Extinction and Inattention

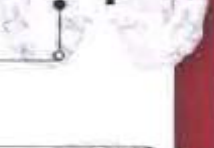
For children age 2 years and up: Sufficient information to identify neglect may be obtained during the prior testing. If the patient has a severe visual loss preventing visual double simultaneous stimulation, and the cutaneous stimuli are normal, the score is normal. If the patient has aphasia but does appear to attend to both sides, the score is normal. The presence of visual spatial neglect or anosagnosia may also be taken as evidence of abnormality. Since the abnormality is scored only if present, the item is never untestable. For children age 4 months to 2 years, score as "1" if there is either a sensory or motor deficit, score as a "2" if there are both sensory and motor deficits on the general neurological examination.



0 No abnormality.



1 Inattention or extinction to bilateral simultaneous stimulation in one of the sensory modalities.




2 Profound hemi-inattention or hemi-inattention to more than one modality.

score

PedNIHSS Scoring Guidelines for Coma or Death

	Item#	Give this score:
➤ <u>Coma due to illness</u> : Score as per the table, 9 means not testable, do not include in final total score	1a	3
	1b	2
	1c	2
➤ <u>Iatrogenic coma</u> due to sedatives: Perform and score the exam according to directions per item. Annotate the data to indicate the patient is comatose.	2	Evaluate and score
	3	3
	4	3
	5a	4
	5b	4
	6a	4
	6b	4
	7	0
	8	2
	9	3
➤ <u>Coma due to paralytics or pharmacologic-induced coma</u> to EEG burst suppression: Everything should be marked as not testable, and should not be marked as 0 (indicates a normal score)	10	9
	11	0
➤ <u>Death</u> : Impute the maximal score of 42.	Total	Btw 34-36 depending on best gaze

Children's Hospital of Philadelphia



Pediatric NIH Stroke Scale Study

PI: Rebecca N. Ichord, MD (ichord@email.chop.edu)
Co-PI: Abbas Jawad, PhD (jawad@email.chop.edu)
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Charlene Jones(jonesc1@email.chop.edu)
Sponsor: NINDS

Created by Erica Kane

1. Background

- 1.1 The North Central Texas Trauma Regional Advisory Council (NCTTRAC) is an organization designed to facilitate the development, implementation, and operation of a comprehensive trauma care system based on accepted standards of care to decrease morbidity and mortality. The Air Medical Committee for the North Central Texas Trauma Regional Advisory Council is a standing committee that provides recommendations and guidance for air medical operations in the Trauma Service Area - E (TSA-E). It is the mission of the Air Medical Committee to promote safe, ethical, and high-quality patient care during air medical transport for the citizens of Texas.
- 1.2 The purpose of a Regional Advisory Council (RAC) is to develop, implement, and monitor a regional emergency medical service trauma system plan within a TSA. A RAC is an organized group of healthcare entities and other concerned citizens who have an interest in improving and organizing trauma care within a specified Trauma Service Area. RAC membership may include hospitals, physicians, nurses, EMS providers, rehabilitation facilities, dispatchers, as well as other community groups. Regional Advisory Council objectives are to reduce the incidence of trauma through education, data collection and analysis and performance improvement. This is accomplished by providing educational programs and conducting performance improvement efforts that provide every provider guidance and motive to reduce the incidence of trauma as well as improve the outcome of trauma patients.

2. Purpose

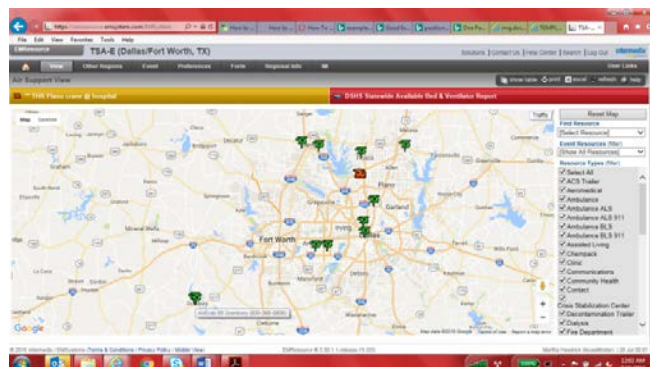
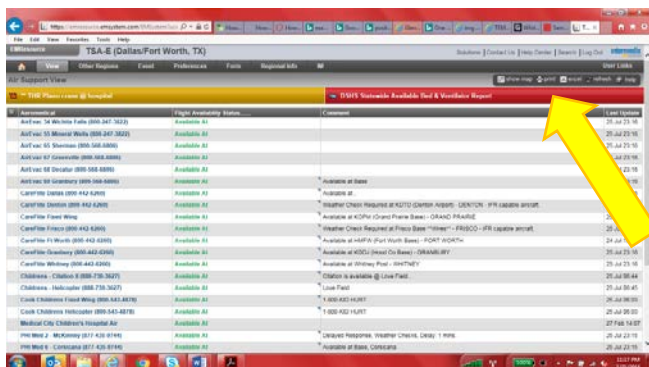
- 2.1 The purpose of this document is to:
 - 2.1.1 Define the system established by the TSA-E Air Medical programs to assist EMS ground providers and facilitate requesting the closest appropriate aircraft for the patient in need
 - 2.1.2 Describe the review request process and specific indicators for systems performance improvement
 - 2.1.3 Improve patient care, collaboration, and foster a community partnership for all stakeholders within the RAC

3. Desired Outcomes

- 3.1 The desired outcome is to request the closest appropriate aircraft and integrate air medical providers into the RAC System Performance Improvement (SPI) process. This provides a platform for concerns regarding air medical services to be identified, addressed, and provided a mechanism for loop closure within the Regional Advisory Council. This should occur when they are unsuccessful in being addressed among corporate entities. The intent is not to replace interworking collaboration among Air Medical and EMS services or care facilities.
 - 3.1.1 Concerns regarding the air medical service(s) may include: safety, patient care, dispatching, or membership services.
 - 3.1.2 The Air Medical Committee recommends that the evaluation of appropriate use of a helicopter rests with the requesting organization.
 - 3.1.3 Performance improvement may include, educational initiatives, process improvement plans and/or recommendations from the NCTTRAC and/or GETAC Air Medical Committees.

4. Process to Locate, Request, Communicate, And Improve Air Medical Services

- 4.1 EMResource is a software system that will publish all aircraft in TSA-E, their location, and availability. You can view this in a list or map view.
- 4.2 Obtain a facility or personal login by creating a support ticket with NCTTRAC
 - 4.2.1 Go to <https://www.ncttrac.org/>
 - 4.2.2 On the bottom right select [Create A Helpdesk Ticket](#)
 - 4.2.3 Start a Ticket
 - 4.2.4 Choose "Support – Other"
 - 4.2.5 Then fill in the needed fields and state that your agency needs a log in for EMResource
- 4.3 Once Log In is attained, go to <https://emresource.emsystem.com/login.htm>
- 4.4 You will see a list of area helicopters, hospitals, EMS and their status (set up a preferred view and notifications so the system is what you need).
- 4.5 Find the table view and list of helicopters (pictured below on the left). It will state in **GREEN** "Available at" if available for a call and the location (usually "at base") or **RED** "Unavailable" if on a flight or out of service for a Maintenance Event.
- 4.6 Change and set the helicopter map view as your preference (yellow arrow indicates where to change the view, the map view is pictured below on the right). It is a very quick view with the helicopters mapped in their locations (hovering over or clicking on the icon will identify the aircraft). They are colored for their availability:
 - **GREEN=Available**
 - **RED=Unavailable for a patient flight**



- 4.7 All aircraft in your area can be viewed and you will be able to identify the closest **available** aircraft to your location and call the appropriate provider.
- 4.8 Radio communication for Ground to Air, will occur utilizing the preferred contact method and channel as designated by the requesting ground agency, either at the time of the activation or through prearranged channel designation with the Air Provider. In the event of a disaster or MCI situation, the Texas Statewide Interoperability Channel Plan should be implemented. This plan states that radio communication from Ground to air, authorized by the Texas Government Code and regulated by the FCC, is to be performed on radio channel VMED 28. (see below)

Label	Receive	Transmit	Station Class	CTCSS RX /TX	Use
VMED28	155.3400	155.3400	FBT / MO	CSQ / 156.7	Tactical Channel (and for Air-to-Ground use)

- 4.9 Air Medical Indicators to be referred to SPI Committee if not met:
- 4.9.1 Air Medical Services will provide a launch location of the aircraft responding
 - 4.9.2 Air Medical Providers participating in the NCTTRAC are operating on EMResource tracking map, updating and refreshing the aircraft current positions at least every 3 minutes.
 - 4.9.3 ETE (flight time only) will not exceed 5 minutes past time given
 - 4.9.4 ETA (includes lift time) will not exceed 5 minutes past time given
 - 4.9.5 Air Medical Services scene times will not exceed 20 minutes (does not include specialty teams)
 - 4.9.6 Air Medical Services inter-facility transfer times will not exceed 40 minutes (does not include specialty teams)
 - 4.9.7 Provide air medical transport response for inter-facility trauma patients within 60 minutes of the time of the request
- 4.10 If an indicator falls outside of the above parameters, the event may be submitted to the NCTTRAC SPI Committee for review and it may be referred from SPI to the appropriate Committee and Individual Provider for action.
- 4.11 Process for requesting reviews and/or reporting concerns to the SPI Committee:
- 4.11.1 Go to <https://www.ncttrac.org/>
 - 4.11.2 On the bottom right select [Create A Helpdesk Ticket](#)
 - 4.11.3 Start a Ticket
 - 4.11.4 Choose "Member – SPI Referral Form Request"
 - 4.11.5 Then fill in the necessary fields. Be as specific as possible to allow for a sufficient review.

1. Introduction

1.1 Purpose

1.1.1 The TSA-E Regional EMResource Policies and Procedures document dictates EMResource use in Trauma Service Area E. It defines relevant terms, lays out how resources are organized, describes how the application is administered, defines the status types and their status options, and identifies system performance measures for both individual organizations and regional use.

1.2 Administrative Support

1.2.1 The TSA-E Regional EMResource Policies and Procedures document will be reviewed and updated annually. All revisions and review activities will be noted in the Record of Changes in the front of the document.

2. EMResource Overview

2.1 EMResource General Concept of Operations

2.1.1 EMResource serves as the primary day-to-day information sharing platform in the emergency healthcare system within Trauma Service Area E. It has 3 central functions:

- 2.1.1.1 Capabilities Database
- 2.1.1.2 Daily Status Updates
- 2.1.1.3 Event Notifications

2.2 Capabilities Database

2.2.1 EMResource allows healthcare facilities and EMS agencies to list their normal operating capabilities. For healthcare facilities, these typically involve clinical service provision – can this facility take burn patients, does it have inpatient psychiatric capabilities, etc. For EMS agencies, these typically involve response capabilities – can this EMS agency provide critical care transport services, can it perform swift water rescues, etc. Service capabilities are generally updated on an as-needed basis as opposed to on a regular schedule.

2.3 Daily Status Updates

2.3.1 EMResource allows hospitals to update certain statuses on a daily basis (or more frequently as needed). This ensures that EMS agencies transporting patients and other healthcare facilities looking to transfer patients can make well-informed patient destination decisions. Statuses with daily (or more frequent) update requirements are listed below.

- 2.3.1.1 Hospital Intake Status – hospitals report on the current status of their Emergency Department’s ability to take patients. An “Open” status should be updated every 24 hours; an “Advisory” or “Advisory – Surge” status should be updated every 4 hours; a “Closed” status should be updated every 2 hours.
- 2.3.1.2 NEDOCS – hospitals use the National Emergency Department Overcrowding Score to provide regional partners with a quantifiable ED saturation level. The higher the NEDOCS, the busier the ED, and generally the longer that EMS will have to wait to offload a patient. NEDOCS should be updated every 6 hours.
- 2.3.1.3 ED Psych Holds – hospitals report the number of psych holds in their Emergency Department. This allows emergency response units transporting

psychiatric patients to make informed patient destination decisions that ensure the psychiatric patient receives treatment in a timely manner. The more ED Psych Holds, the longer it will take for that psychiatric patient to receive proper treatment.

2.3.1.4 **Bed Availability Reporting** – hospitals report the number of available beds in their facility according to the DSHS WholeBed categories. These numbers should be updated at least once every 24 hours.

2.3.1.5 **Flight Availability Status** – air medical units report on their availability and location. Air Evac, PHI, and Careflite have linked their CAD systems with EMResource to ensure that these updates occur in real time.

2.4 Event Notifications

2.4.1 EMResource allows any user to publish an event notification that sends email and text alerts to other EMResource users. These are most commonly used for events that affect the emergency healthcare system in TSA-E (such as hospital construction requiring ambulance traffic to take an alternate route), but are also used in emergencies to notify the emergency healthcare system about mass casualty incidents, region wide or statewide bed reports, or severe weather.

2.5 EMResource Funding

2.5.1 EMResource is funded at the state level through the Hospital Preparedness Program (HPP) as managed by the Department of State Health Services (DSHS). DSHS charges HPP grantees in each Trauma Service Area (TSA) with regional EMResource administrative duties (NCTTRAC is the HPP grantee for TSA-E). Additional EMResource enhancements in TSA-E are funded on a case-by-case basis, but generally the HPP is the first funding stream considered for regional EMResource enhancements.

2.6 EMResource Administration

2.6.1 EMResource is administered regionally by NCTTRAC. NCTTRAC employs one primary EMResource Regional Administrator and multiple secondary EMResource Regional Administrators. Questions about regional EMResource administration should be directed to NCTTRAC_EMCC@ncttrac.org. Regional EMResource use is overseen by the NCTTRAC Board of Directors, who may create an EMResource Workgroup as needed to tackle specific tasks. Additional EMResource oversight is provided by the Regional Emergency Preparedness Committee (REPC) and all NCTTRAC clinical committees.

2.6.2 EMResource is administered at the statewide level by the Department of State Health Services (DSHS). DSHS maintains a team of multiple EMResource Statewide Administrators who help coordinate EMResource use throughout Texas.

2.6.3 EMResource is owned by the private company Juvare. Certain administrative actions are only available to Juvare employees. Juvare employs Client Success Managers to support the EMResource Statewide Administrators and the EMResource Regional Administrator.

2.7 EMResource Access

2.7.1 Any individual who is associated with an emergency healthcare facility or organization can access EMResource using a unique username and password. Individuals who need to have an EMResource account created should follow these steps:

- 2.7.1.1 Go to <http://support.ncttrac.org/Main/frmTickets.aspx>
- 2.7.1.2 Click "Start Ticket"
- 2.7.1.3 In the "Department" drop-down menu, select "Crisis Applications – New Account Request (TSA-E/DFW Region).
- 2.7.1.4 Fill in the required fields and click "Submit".
- 2.7.2 NCTTRAC staff will create user accounts based on the information provided in the support ticket. After an account is created, NCTTRAC staff will send an email to the individual containing their username, password, and links to basic training resources. Individuals must provide an email address that is associated with an emergency healthcare facility or organization - @gmail.com, @outlook.com, etc. will not be accepted.
- 2.7.3 All users must have a unique username and password and should not share that information with anyone else. The only exception to this policy is for EMS dispatch centers, who may have one generic log-in with view-only access. The password to such an account must be changed at least once per year. EMS agencies are still expected to have at least one user with permission to update statuses and create events on-staff at all times.

3. EMResource Regional Participation Standards

- 3.1 In order to improve EMResource utilization and ensure data validity, TSA-E has adopted the following participation standards:
- 3.2 Hospitals
 - 3.2.1 Healthcare facilities must ensure that at least one person with EMResource access is on-site 24/7.
 - 3.2.2 Hospitals must update their "Hospital Intake Status" at least once every 24 hours if the status is "Open", once every 4 hours if the status is "Advisory" or "Advisory – Surge", or and every 2 hours if the status is "Closed".
 - 3.2.3 Hospitals must update their "Psych ED Holds" number at least once every 6 hours.
 - 3.2.4 Hospitals must update their "NEDOCS" status at least once every 6 hours.
 - 3.2.5 Hospitals must update their Immediate Bed Availability numbers at least once every 24 hours.
 - 3.2.6 Hospitals must update specific service line status types as needed. If a hospital sets a service line status type to "Unavailable" (or any other equivalent indicating a temporary outage or issue), the hospital must update that service line status every 4 hours.
 - 3.2.7 Hospitals must update their EMResource point of contact information annually or as the contact information changes.
 - 3.2.8 Hospitals must review the list of EMResource users associated with their facility and contact NCTTRAC with information on any necessary changes. Hospitals must complete this process annually or as users change over.
- 3.3 EMS Agencies
 - 3.3.1 EMS Agencies must ensure that at least one person with EMResource access is on-shift 24/7.
 - 3.3.2 EMS Agencies must have a method to monitor EMResource for hospital status information. This can include active monitoring of EMResource via computer or

mobile application, or it can include relevant status change notifications being sent to EMS Agency staff.

3.3.2.1 EMS Agencies must review their service line statuses and make any necessary changes at least annually

3.3.3 EMS Agencies must update their EMResource point of contact information annually.

3.3.4 EMS Agencies must review the list of EMResource users associated with their agency and contact NCTTRAC with information on any necessary changes. EMS Agencies must complete this process annually.

3.4 Status Update Matrix

Every 2 Hours	Every 4 Hours	Every 6 Hours	Every 24 Hours	As Needed
Hospital Intake Status: Closed	Hospital Intake Status: Advisory - Capability	NEDOCS	Hospital Intake Status: Open	Service Line Statuses
	Hospital Intake Status: Advisory – Surge	Psych ED Holds	All Bed Availability Categories	
	Service Line Statuses marked “Unavailable”			

4. EMResource Organization & Views

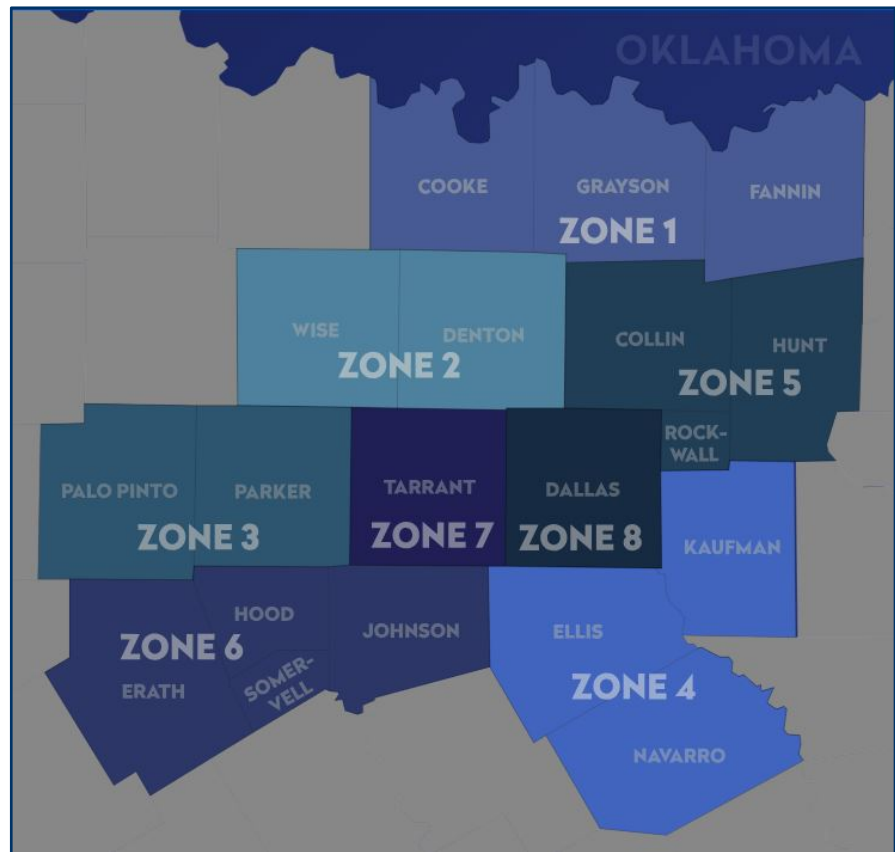
4.1 General Organization

4.1.1 All resources in EMResource are assigned a Resource Type. Resource Type is determined by a resource’s county of residence and by how a resource is licensed according to the Department of State Health Services (DSHS) Licensure Lists. DSHS Licensure Lists can be found at <https://www.dshs.texas.gov/facilities/find-a-licensee.aspx> for medical facilities and at <https://www.dshs.texas.gov/emstraumasystems/formsresources.shtm#OpenRecords> for EMS agencies/First Responder Organizations (FROs).

4.1.2 Resource Types use the following naming convention: Z# - Name County Provider Type. The # is the NCTTRAC zone that the county falls into, County is the resource’s county of residence, and the Provider Type is a resource’s provider type as licensed by DSHS.

4.1.3 For example, hospitals in Collin County are listed in Resource Type “Z5 – Collin County Hospitals”. NCTTRAC zones and their composite counties are listed on the following page.

- Zone 1
 - Cooke County
 - Fannin County
 - Grayson County
- Zone 2
 - Denton County
 - Wise County
- Zone 3
 - Palo Pinto County
 - Parker County
- Zone 4
 - Ellis County
 - Kaufman County
 - Navarro County
- Zone 5
 - Collin County
 - Hunt County
 - Rockwall County
- Zone 6
 - Erath County
 - Hood County
 - Johnson County
 - Somervell County
- Zone 7
 - Tarrant County
- Zone 8
 - Dallas County



4.1.4 Each county has five Resource Types. For example, Dallas County has the following Resource Types: “Z8 - Dallas County Hospitals”; “Z8 – Dallas County Special Facilities”; “Z8 – Dallas County LTC”; “Z8 – Dallas County EMS”; and “Z8 – Dallas County FROs”. An explanation of how resources are divided into their county-based Resource Type can be found below.

4.1.4.1 County Hospitals

4.1.4.1.1 The “County Hospitals” Resource Types is composed of facilities that appear in the DSHS “Directory of General and Specialty Hospitals” that have both “General Hospital” and “Emergency Department” in their “Designation/Services/Accreditation” column.

4.1.4.2 County Specialty Facilities

4.1.4.2.1 The “County Specialty Facilities” Resource Types is composed of facilities that meet one or more of the following criteria:

4.1.4.2.2 Facilities that appear in the DSHS “Directory of General and Specialty Hospitals” that have the following listed in their “Designation/Services/Accreditation column”:

4.1.4.2.3 “Special Hospital” and “Mental Health Services”

- 4.1.4.2.4 “Comprehensive Medical Rehabilitation”
- 4.1.4.2.5 “Comprehensive Rehab Services” WITHOUT “General Hospital” and “Emergency Department”
- 4.1.4.2.6 “Long-Term Acute Care”
- 4.1.4.2.7 “Pediatric” WITHOUT “General Hospital” and “Emergency Department”
- 4.1.4.2.8 “Special Hospital”
- 4.1.4.2.9 Facilities that appear in the DSHS “Directories of Ambulatory Surgical Centers”
- 4.1.4.2.10 Facilities that appear in the DSHS “Directory of Private Psychiatric Hospitals”
- 4.1.4.3 County Long-Term Care Facilities
 - 4.1.4.3.1 The “County Long-Term Care Facilities” is composed of Assisted Living Facilities (ALF), Skilled Nursing Facilities (SNF), and ICF/IID facilities.
- 4.1.4.4 County EMS Agencies
 - 4.1.4.4.1 The “County EMS Agencies” Resource Types is composed of agencies that appear in the DSHS “EMS Providers Agencies” list.
- 4.1.4.5 County FROs
 - 4.1.4.5.1 The “County FROs” Resource Types is composed of agencies that appear in the DSHS “EMS First Responder Organizations” list.
- 4.1.5 There are also Resource Types for individual vehicles or assets. These Resource Types are listed below:
 - 4.1.5.1 Aeromedical
 - 4.1.5.1.1 The “Aeromedical” Resource Type is composed of individual air medical units located within TSA-E. Air medical units that are based outside of TSA-E but provide services within TSA-E will also be included in the “Aeromedical” Resource Type whenever possible.
 - 4.1.5.2 AMBUS
 - 4.1.5.2.1 The “AMBUS” Resource Type is composed of individual AMBUS units located within TSA-E. AMBUSes are part of the Emergency Medical Task Force (EMTF) program, and AMBUS host agencies update EMResource with changes in AMBUS deployment status.
 - 4.1.5.3 Mass Fatality Trailers
 - 4.1.5.3.1 The “Mass Fatality Trailers” Resource Type is composed of individual Mass Fatality Trailers (MFTs) located within TSA-E that were purchased with Hospital Preparedness Program (HPP) funds. A Mass Fatality Trailer is a refrigerated trailer that can hold up to 20 deceased bodies during a Mass Fatality event.
 - 4.1.5.4 MERC Trailers
 - 4.1.5.4.1 The “MERC Trailers” Resource Type is composed of individual Mobile Emergency Response Communications (MERC) Trailers that were purchased with HPP funds. A MERC Trailer is a towable

trailer that contains a variety of communications equipment to be used during a communications failure.

- 4.1.6 Resources that do not fit any of the criteria above will be assigned the Resource Type that best fits. This will be determined by the EMResource Regional Administrator with input from the EMResource Workgroup (when meeting), the Regional Emergency Preparedness Committee (REPC), and the NCTTRAC Emergency Department Operations Committee.

4.2 Region Default View

- 4.2.1 The Region Default view is the standard view for EMResource in TSA-E. When new users log-in, the Region Default view is the first thing they see. The Region Default view Resource Type structure is listed below.

- Aeromedical
- Z8 – Dallas County Hospitals
- Z7 – Tarrant County Hospitals
- Z6 – Erath County Hospitals
- Z6 – Hood County Hospitals
- Z6 – Johnson County Hospitals
- Z6 – Somervell County Hospitals
- Z5 – Collin County Hospitals
- Z5 – Hunt County Hospitals
- Z5 – Rockwall County Hospitals
- Z4 – Ellis County Hospitals
- Z4 – Kaufman County Hospitals
- Z4 – Navarro County Hospitals
- Z3 – Palo Pinto County Hospitals
- Z3 – Parker County Hospitals
- Z2 – Denton County Hospitals
- Z2 – Wise County Hospitals
- Z1 – Cooke County Hospitals
- Z1 – Fannin County Hospitals
- Z1 – Grayson County Hospitals

- 4.2.2 The Region Default view Status Types structure is listed below.

- 4.2.2.1 The “Aeromedical” Resource Type shows the following Status Types as columns on the Region Default view:

- Flight Availability Status
- Comments
- Last Update Time

- 4.2.2.2 The “County Hospitals” Resource Types show the following Status Types as columns on the Region Default view:

- Facility Type
- Hospital Intake Status
- NEDOCs
- Psych ED Holds
- Transfer Line
- Status: Trauma

- DSHS Trauma Designation
- DSHS Stroke Designation
- Status: 24/7 STEMI
- Status: OB/L&D
- Status: SAFE-Ready
- Status: Bariatric CT/MRI
- Comment

4.3 Resource Detail View

4.3.1 The Resource Detail view shows each status associated with an individual resource. It also shows basic resource information (such as name, point of contact, and address), contains a map that shows the resource's location, and has a list of all users who are associated with that resource.

4.4 Map

4.4.1 The EMResource Map view shows each resource in the system plotted on a map. Events that have been created with addresses will also appear on the map. Users can filter out which resources they want to see using the "Standard Resource Type" filters on the right side of the screen. By default, the TSA-E EMResource Map view shows Aeromedical resources. After setting their own filters, users can then save their map so that those filters appear each time that user opens the map.

4.4.2 Resource icons on the Map change colors based on that resource's current status in their Default Status Type. For example, Aeromedical resource icons will appear green if the unit is "Available At", red if the unit is "Unavailable", and yellow if the unit is "Delayed At" or "Limited Availability".

4.5 Regional Assets View

4.5.1 The Regional Assets view shows the deployment status of each deployable resource that was purchased with HPP funds. The Resource Type and Status Type structures are detailed below.

4.5.1.1 AMBUS

- Deployment Status
- 24/7 Point of Contact
- Comments
- Last Update Time

4.5.1.2 Mass Fatality Trailers

- Deployment Status
- 24/7 Point of Contact
- Comments
- Last Update Time

4.5.1.3 MERC Trailers

- Deployment Status
- 24/7 Point of Contact
- Comments
- Last Update Time

4.6 Custom Views

4.6.1 Each EMResource user has the ability to create a custom view that only applies to their individual user account. Within this custom view, users can decide what

resources and what statuses they need to see and organize them in whichever way they see fit. Instructions on how to set up an individual custom view can be found in the “Basic Orientation – Custom Views” video found on the NCTTRAC website at the following link: <https://ncttrac.org/programs/healthcare-coalition-hpp/tsa-e/emcc/crisis-applications/>.

4.7 Additional Views

- 4.7.1 Details regarding additional EMResource views can be found in Section VIII, Additional Views, at the end of this document.

5. Status Types and Definitions

5.1 Healthcare Facilities Status Types

5.1.1 Hospital Intake Status

- 5.1.1.1 Reflects the current status of a hospital’s Emergency Department. Should be updated at least once every 24 hours if the status is “Open” and at least once every 4 hours if the status is “Advisory” or “Closed”. Is also used by facilities without Emergency Departments to indicate overall facility status.
- 5.1.1.2 Facilities can select from the following status options. Definitions for each status option are provided.
- 5.1.1.2.1 Open: The ED is open and accepting patients with no limitations.
- 5.1.1.2.2 Advisory - Capability: Hospital is advising EMS that a primary patient care service is temporarily unavailable and pre-hospital providers should consider patient needs prior to transporting to this facility. Comments are mandatory. This status option must be updated at least once every 4 hours.
- 5.1.1.2.3 Advisory – Surge: Hospital is advising EMS about a surge-related resource constraint so that EMS can make an informed decision regarding patient destinations. This is the status that hospitals should select if they are dealing with patient numbers that exceed their normal capability. Hospitals can still receive EMS patients. Comments are mandatory. This status option must be updated at least once every 4 hours.
- 5.1.1.2.4 Closed: The ED is suffering from an internal disaster/facility emergency that is preventing them from safely accepting patients. Examples may include fire, flooding, power outage, water shortage, structural damage, etc. This facility cannot accept EMS patients. This status option is not to be used for patient surge and should not be used to address internal staffing issues. Comments are mandatory. This status option must be updated at least once every 2 hours.

5.1.2 NEDOCS

- 5.1.2.1 The National Emergency Department Overcrowding Score (NEDOCS) is the global standard for measuring patient throughput, helping hospitals measure capacity and reduce overcrowding. This saturation score takes a variety of factors into account to calculate the final score. Update every 6 hours.

- 5.1.2.2 Hospitals enter the following factors to calculate their NEDOCS. These variables are defined by the NEDOCS Organization and can be found at the following link: <https://www.nedocs.org/News/Article/NEDOCS-Variables-and-Definitions>
- 5.1.2.2.1 Number of ED Patients: The total number of patients in the ED. Includes all patients who have walked in the door, but have not been discharged. Includes patients in the waiting rooms, and waiting admits in the ED.
- 5.1.2.2.2 Number of ED Admits: Count all admits waiting for a bed in the ED. Patients moved away from ED to inpatient holding areas should not be counted. Count all ED admits/rollovers/holdovers waiting in ED care for an inpatient bed.
- 5.1.2.2.3 Last Door-to-Bed Time (hours; ex 1.25): Door-to-bed time for the last patient to receive a bed. For example: if you're measuring at 1300 hrs. and the last patient to be placed in a bed was at 1255 hrs, count that patient's door – bed time. When measuring NEDOCS at 1400 hrs, count the person who received the bed last, between 1300 – 1400 hrs. If no one was placed in a bed during 1300 and 1400 hrs, count the patient who received bed at 1255 hrs. Always count the most recent patient's door-bed time. 15 minute increments; for example, enter 2.25 for 2 ¼ hours.
- 5.1.2.2.4 Number of Critical Care Patients in ED: Count the number of patients in 1:1 care. Includes ventilators, ICU admits, critical care patients, trauma patients, and sometimes includes psych holds. Typically a site specific variable, which should include all patients who require a one-to-one nurse care.
- 5.1.2.2.5 Longest ED Admit (hours; ex. 1.25): Count the longest holdover, admit waiting for an inpatient bed in the ED. If four patients are waiting for an inpatient bed, count the patient waiting longest. Time to admit starts upon decision to admit. Decision to admit typically a joint decision between ED and admitting physician. 15 minute increments; for example, enter 2.25 for 2 ¼ hours
- 5.1.2.2.6 Number of ED Beds: Total number of gurneys, chairs, and other treatment benches in use, or staffed. Includes hallways and chairs that are opened up. Do not include un-staffed beds, such as beds in closed areas at night, or un-staffed beds at slow times.
- 5.1.2.2.7 Number of Inpatient Beds (excluding PEDS and OB): Count all inpatient beds regularly staffed. Can differ from licensed IP beds, if some licensed beds virtually not staffed, or staffed in disaster. Count holding beds, including observation beds.
- 5.1.2.3 The final NEDOCS falls into one of 5 categories based on severity. These categories and their score ranges are listed below.
- Normal (0 – 50)
 - Busy (51 – 100)
 - Overcrowded (101 – 140)

- Severe (141 – 180)
- Disaster (181 or higher)
- 5.1.3 Phone: Emergency Department - the direct phone line to contact this facility's emergency department.
- 5.1.4 Phone: House Supervisor - the direct phone line to contact this facility's house supervisor.
- 5.1.5 Command Center Activation Status
 - 5.1.5.1 Reflects the current activation status of a facility's command center. All activations must list a command center point of contact in the comments. Should be updated as needed.
 - 5.1.5.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.5.2.1 Activated: This facility's command center is currently activated. You must list a command center point of contact in the comments. This status option must be updated once every 24 hours.
 - 5.1.5.2.2 Partially Activated: This facility's command center is currently partially activated. You must list a command center point of contact in the comments. This status option must be updated once every 24 hours.
 - 5.1.5.2.3 Not Activated: This facility's command center is currently not activated.
- 5.1.6 Critical Utilities Availability
 - 5.1.6.1 Reflects the current status of a facility's critical utilities. If a utility failure occurs, specific details must be noted in the comments. Should be updated as needed.
 - 5.1.6.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.6.2.1 Available: This facility has all critical utilities fully available and has no needs.
 - 5.1.6.2.2 Partial Failure: This facility is experiencing a partial utilities failure. Specifics should be noted in the comments. This status option must be updated at least once every 24 hours.
 - 5.1.6.2.3 Total Failure: This facility is experiencing a total utilities failure. Specifics should be noted in the comments. This status option must be updated at least once every 24 hours.
- 5.1.7 DSHS Maternal Designation
 - 5.1.7.1 Reflects the facility's current DSHS Maternal Level of Care Designation as shown on the DSHS Level of Care Designation list. This status can only be changed by an EMResource Regional Administrator. The EMResource Regional Administrator will validate this status for all facilities on a monthly basis. Facilities should contact support@ncttrac.org if they think that their current designation status is in error.
 - 5.1.7.2 The following status options are available:
 - I: Basic
 - II: Specialty

- III: Subspecialty
- IV: Comprehensive
- 5.1.8 DSHS Neonatal Designation
 - 5.1.8.1 Reflects the facility's current DSHS Neonatal Designation as shown on the DSHS Neonatal Designation list. This status can only be changed by an EMResource Regional Administrator. The EMResource Regional Administrator will validate this status for all facilities on a monthly basis. Facilities should contact support@ncttrac.org if they think that their current designation status is in error.
 - 5.1.8.2 The following status options are available:
 - I: Well Nursery
 - II: Special Care Nursery
 - III: Intensive Care
 - IV: Adv. Intensive Care
- 5.1.9 DSHS Stroke Designation
 - 5.1.9.1 Reflects the facility's current DSHS Stroke Designation as shown on the DSHS Stroke Designation list. This status can only be changed by an EMResource Regional Administrator. The EMResource Regional Administrator will validate this status for all facilities on a monthly basis. Facilities should contact support@ncttrac.org if they think that their current designation status is in error.
 - 5.1.9.2 The following status options are available:
 - I: Comprehensive
 - II: Primary
 - III: Support
- 5.1.10 DSHS Trauma Designation
 - 5.1.10.1 Reflects the facility's current DSHS Trauma Designation as shown on the DSHS Trauma Designation list. This status can only be changed by an EMResource Regional Administrator. The EMResource Regional Administrator will validate this status for all facilities on a monthly basis. Facilities should contact support@ncttrac.org if they think that their current designation status is in error.
 - 5.1.10.2 The following status options are available:
 - I: Comprehensive
 - II: Major
 - III: Advanced
 - IV: Basic
- 5.1.11 Facility Type
 - 5.1.11.1 Shows the type of facility for each resource. Can only be updated by the EMResource Regional Administrator.
 - 5.1.11.2 The following status options are available:
 - General Hospital
 - Free-Standing ED
 - Psychiatric Facility
 - ASC

- Long-Term Acute Care
 - Rehab Facility
 - Specialty Facility
 - Nursing Home
 - Assisted Living Facility
 - ICF/IID
 - Specialty – Pediatric
 - Specialty – Cardiac
 - Specialty – Orthopedics
- 5.1.12 Immediate Bed Availability Categories
- 5.1.12.1 Immediate bed availability categories indicate the current number of available beds of a particular type. In other words, “This is the number of this type of patient that my facility can currently take.”
- 5.1.12.2 Immediate Bed Availability statuses fall into four categories.
- 5.1.12.3 Immediate Bed Availability
- 5.1.12.3.1 IBA: MedSurg Monitored - The number of currently available beds to provide monitored acute care to inpatients.
- 5.1.12.3.2 IBA: MedSurg Non Monitored - The number of currently available beds to provide non-monitored acute care to inpatients.
- 5.1.12.3.3 IBA: Pedi Monitored - The number of currently available beds to provide monitored pediatric care to children.
- 5.1.12.3.4 IBA: Pedi Non Monitored - The number of currently available beds to provide non-monitored pediatric care to children.
- 5.1.12.3.5 IBA: Adult ICU Monitored - The number of currently available beds to provide monitored care, including ventilator support, for critically injured or ill patients. Specialized support or treatment equipment is available for patients with life-threatening conditions that require intensified comprehensive observation and care.
- 5.1.12.3.6 IBA: Adult ICU Non Monitored - The number of currently available beds to provide non-monitored care, including ventilator support, for critically injured or ill patients. Specialized support or treatment equipment is available for patients with life-threatening conditions that require intensified comprehensive observation and care.
- 5.1.12.3.7 IBA: PICU Monitored - The number of currently available beds to provide monitored care, including ventilator support, for critically injured patients under the age of 18 years. Specialized support or treatment equipment is available for patients with life-threatening conditions that require intensified comprehensive observation and care.
- 5.1.12.3.8 IBA: PICU Non Monitored - The number of currently available beds to provide non-monitored care, including ventilator support, for critically injured patients under the age of 18

years. Specialized support or treatment equipment is available for patients with life-threatening conditions that require intensified comprehensive observation and care.

- 5.1.12.3.9 IBA: NICU Monitored - The number of currently available beds to provide monitored care for infants requiring sustained life support, conventional ventilation, minor surgical procedures, and severe and complex illnesses.
- 5.1.12.3.10 IBA: NICU Non Monitored - The number of currently available beds to provide non-monitored care for infants requiring sustained life support, conventional ventilation, minor surgical procedures, and severe and complex illnesses.
- 5.1.12.3.11 IBA: Burn Monitored - The number of currently available beds to provide monitored care for severely burned patients.
- 5.1.12.3.12 IBA: Burn Non Monitored - The number of currently available beds to provide non-monitored care for severely burned patients.
- 5.1.12.3.13 IBA: Neg Pressure ER Beds - Number of currently available beds in the emergency room to provide care for patients where environmental factors (such as air exchanges) are controlled in an effort to minimize the transmission of infectious agents.
- 5.1.12.3.14 IBA: Neg Pressure Inpatient Beds - Number of currently available beds to provide inpatient care for patients where environmental factors (such as air exchanges) are controlled in an effort to minimize the transmission of infectious agents.
- 5.1.12.3.15 IBA: Emergency Dept. - Number of currently available beds for the provision of unscheduled outpatient services to patients in need of immediate care. Hospital emergency diagnosis and treatment of illness or injury is provided.
- 5.1.12.3.16 IBA: Operating Rooms - The number of currently available beds to provide care for patients in equipped and staffed operating rooms. These beds can be made available for patient care in a short period of time.
- 5.1.12.3.17 IBA: OB Antepartum - The number of currently available beds to provide care to antepartum patients.
- 5.1.12.3.18 IBA: OB L&D - The number of currently available beds to provide care through all stages of labor and delivery during childbirth.
- 5.1.12.3.19 IBA: OB Recovery and Postpartum - The number of currently available beds to provide care following childbirth.
- 5.1.12.4 Immediate Psych Bed Availability
 - 5.1.12.4.1 Psych: Child Male (≤ 12) - The number of currently available beds to provide inpatient psychiatric services to male patients age 12 and under with acute mental health issues.

- 5.1.12.4.2 Psych: Child Female (≤ 12) - The number of currently available beds to provide inpatient psychiatric services to female patients age 12 and under with acute mental health issues.
- 5.1.12.4.3 Psych: Ado Male (13-17) - The number of currently available beds to provide inpatient psychiatric services to male patients between age 13 and 17 with acute mental health issues.
- 5.1.12.4.4 Psych: Ado Female (13-17) - The number of currently available beds to provide inpatient psychiatric services to female patients between age 13 and 17 with acute mental health issues.
- 5.1.12.4.5 Psych: Adult Male (≥ 18) - The number of currently available beds to provide inpatient psychiatric services to male patients age 18 and older with acute mental health issues.
- 5.1.12.4.6 Psych: Adult Female (≥ 18) - The number of currently available beds to provide inpatient psychiatric services to female patients age 18 and over with acute mental health issues.
- 5.1.12.4.7 Psych: Chem Dep Male - The number of currently available beds to provide inpatient psychiatric services to male patients with chemical dependencies.
- 5.1.12.4.8 Psych: Chem Dep Female - The number of currently available beds to provide inpatient psychiatric services to female patients with chemical dependencies.
- 5.1.12.4.9 Psych: Older Adult Male - The number of currently available beds to provide inpatient psychiatric services to older adult male patients with acute mental health issues.
- 5.1.12.4.10 Psych: Older Adult Female - The number of currently available beds to provide inpatient psychiatric services to older adult female patients with acute mental health issues.
- 5.1.12.4.11 Psych: Total Beds - The total number of currently available beds to provide inpatient psychiatric services to all patient demographics.
- 5.1.12.5 MCI Bed Availability
 - 5.1.12.5.1 MCI Green - The facility's capacity for additional victims with minor needs.
 - 5.1.12.5.2 MCI Yellow - The facility's capacity for additional victims with delayed needs.
 - 5.1.12.5.3 MCI Red - The facility's capacity for additional victims with immediate needs.
 - 5.1.12.5.4 MCI Gray - The facility's capacity for additional MCI Gray victims with urgent needs.
 - 5.1.12.5.5 MCI Black - The facility's capacity for additional deceased victims.
- 5.1.12.6 Ventilator Availability

- 5.1.12.6.1 Adult & Pedi Vents - The number of ventilators that may be used for adult OR pediatric patients that are present in the institution but are currently not in use and could be supported by currently available staff.
- 5.1.12.6.2 Adult Only Vents - The number of ventilators that may be used for adult patients ONLY that are present in this institution but are currently not in use and could be supported by currently available staff.
- 5.1.12.6.3 Pedi Only Vents - The number of ventilators that may be used for pediatric patients ONLY that are present in the institution but are currently not in use and could be supported by currently available staff.
- 5.1.13 NICU Transfer Line
 - 5.1.13.1 Shows the phone number to call if you need to transfer a NICU patient to this facility.
 - 5.1.13.2 This is a text-entry field.
- 5.1.14 OB Transfer Line
 - 5.1.14.1 Shows the phone number to call if you need to transfer an OB patient to this facility.
 - 5.1.14.2 This is a text-entry field.
- 5.1.15 Psych ED Holds
 - 5.1.15.1 Reflects the current number of psych holds in a facility's emergency department. Psych holds are defined as patients who have undergone a medical screening exam and mental health evaluation and are awaiting transfer or admission for inpatient psychiatric care.
 - 5.1.15.2 This status is a numeric entry field.
 - 5.1.15.3 The "Psych ED Holds" status should be updated at least once every 24 hours. It will be marked "Overdue" after 24 hours without an update.
- 5.1.16 Psych: Adult
 - 5.1.16.1 Reflects the current status of a facility's ability to provide inpatient adult psychiatric services. Should be updated as needed.
 - 5.1.16.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.16.2.1 Available: This facility currently has inpatient adult psychiatric availability.
 - 5.1.16.2.2 Unavailable: This facility temporarily has no inpatient adult psychiatric availability. Comments are mandatory. This status option must be updated every 4 hours.
 - 5.1.16.2.3 Not Provided: This facility does not provide inpatient adult psychiatric services.
- 5.1.17 Psych: Adolescent
 - 5.1.17.1 Reflects the current status of a facility's ability to provide inpatient adolescent psychiatric services. Should be updated as needed.
 - 5.1.17.2 Facilities can select from the following status options. Definitions for each status option are provided.

- 5.1.17.2.1 Available: This facility currently has inpatient adolescent psychiatric availability.
- 5.1.17.2.2 Unavailable: This facility temporarily has no inpatient adolescent psychiatric availability. Comments are mandatory. This status option must be updated every 4 hours.
- 5.1.17.2.3 Not Provided: This facility does not provide inpatient adolescent psychiatric services.
- 5.1.18 Psych: Pediatric
 - 5.1.18.1 Reflects the current status of a facility's ability to provide inpatient pediatric psychiatric services. Should be updated as needed.
 - 5.1.18.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.18.2.1 Available: This facility currently has inpatient pediatric psychiatric availability.
 - 5.1.18.2.2 Unavailable: This facility temporarily has no inpatient pediatric psychiatric availability. Comments are mandatory. This status option must be updated every 4 hours.
 - 5.1.18.2.3 Not Provided: This facility does not provide inpatient pediatric psychiatric services.
- 5.1.19 Psych: Adult Chem. Dep.
 - 5.1.19.1 Reflects the current status of a facility's ability to provide inpatient adult chemical dependency psychiatric services. Should be updated as needed.
 - 5.1.19.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.19.2.1 Available: This facility currently has inpatient adult chemical dependency psychiatric availability.
 - 5.1.19.2.2 Unavailable: This facility temporarily has no inpatient adult chemical dependency psychiatric availability. Comments are mandatory. This status option must be updated every 4 hours.
 - 5.1.19.2.3 Not Provided: This facility does not provide inpatient adult chemical dependency psychiatric services.
- 5.1.20 Psych: Adolescent Chem. Dep.
 - 5.1.20.1 Reflects the current status of a facility's ability to provide inpatient adolescent chemical dependency psychiatric services. Should be updated as needed.
 - 5.1.20.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.20.2.1 Available: This facility currently has inpatient adolescent chemical dependency psychiatric availability.
 - 5.1.20.2.2 Unavailable: This facility temporarily has no inpatient adolescent chemical dependency psychiatric availability. Comments are mandatory. This status option must be updated every 4 hours.
 - 5.1.20.2.3 Not Provided: This facility does not provide inpatient adolescent chemical dependency psychiatric services.

- 5.1.21 Service: Neonatal Transport
 - 5.1.21.1 Reflects the current status of a facility's ability to provide Neonatal Transport services. Should be updated as needed.
 - 5.1.21.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.21.2.1 Available: This facility can currently provide Neonatal Transport services.
 - 5.1.21.2.2 Unavailable: This facility is temporarily unable to provide Neonatal Transport services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.21.2.3 Not Provided: This facility does not provide Neonatal Transport services.
- 5.1.22 Service: OB Transport
 - 5.1.22.1 Reflects the current status of a facility's ability to provide OB Transport services. Should be updated as needed.
 - 5.1.22.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.22.2.1 Available: This facility can currently provide OB Transport services.
 - 5.1.22.2.2 Unavailable: This facility is temporarily unable to provide OB Transport services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.22.2.3 Not Provided: This facility does not provide OB Transport services.
- 5.1.23 Status: 24/7 STEMI
 - 5.1.23.1 Reflects the current status of a facility's ability to provide 24/7 STEMI services. Does not show any accreditations. Should be updated as needed.
 - 5.1.23.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.23.2.1 Available: This facility can currently provide 24/7 STEMI services.
 - 5.1.23.2.2 Unavailable: This facility is temporarily unable to provide 24/7 STEMI services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.23.2.3 Not Provided: This facility does not provide 24/7 STEMI services.
- 5.1.24 Status: Anti-Venom
 - 5.1.24.1 Reflects the current status of a facility's ability to provide Anti-Venom services. Should be updated as needed.
 - 5.1.24.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.24.2.1 Available: This facility can currently provide Anti-Venom services.

- 5.1.24.2.2 Unavailable: This facility is temporarily unable to provide Anti-Venom services. Comments are mandatory. This status option must be updated at least once every 4 hours.
- 5.1.24.2.3 Not Provided: This facility does not provide Anti-Venom services.
- 5.1.25 Status: Bariatric CT/MRI
 - 5.1.25.1 Reflects the current status of a facility's ability to provide Bariatric CT/MRI services. Should be updated as needed.
 - 5.1.25.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.25.2.1 Available: This facility can currently provide Bariatric CT/MRI services.
 - 5.1.25.2.2 Unavailable: This facility is temporarily unable to provide Bariatric CT/MRI services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.25.2.3 Not Provided: This facility does not provide Bariatric CT/MRI services.
- 5.1.26 Status: Burn
 - 5.1.26.1 Reflects the current status of a facility's ability to provide burn services. Should be updated as needed.
 - 5.1.26.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.26.2.1 Available: This facility can currently provide Burn services.
 - 5.1.26.2.2 Unavailable: This facility is temporarily unable to provide Burn services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.26.2.3 Not Provided: This facility does not provide Burn services.
- 5.1.27 Status: ECMO
 - 5.1.27.1 Reflects the current status of a facility's ability to provide Extracorporeal Membrane Oxygenation (ECMO) services. Should be updated as needed.
 - 5.1.27.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.27.2.1 Available - Adult: This facility can currently provide Adult ECMO services.
 - 5.1.27.2.2 Available – Pedi/NICU: This facility can currently provide Pediatric and Neonatal ECMO services.
 - 5.1.27.2.3 Available – All Ages: This facility can currently provide Adult, Pediatric, and Neonatal ECMO services.
 - 5.1.27.2.4 Unavailable: This facility is temporarily unable to provide ECMO services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.27.2.5 Not Provided: This facility does not provide ECMO services.
- 5.1.28 Status: Hand

- 5.1.28.1 Reflects the current status of a facility's ability to provide Hand services. Should be updated as needed.
- 5.1.28.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.28.2.1 Available: This facility can currently provide Hand services.
 - 5.1.28.2.2 Unavailable: This facility is temporarily unable to provide Hand services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.28.2.3 Not Provided: This facility does not provide Hand services.
- 5.1.29 Status: Hyperbaric Chamber
 - 5.1.29.1 Reflects the current status of a facility's ability to provide Hyperbaric Chamber services. Should be updated as needed.
 - 5.1.29.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.29.2.1 Available: This facility can currently provide Hyperbaric Chamber services.
 - 5.1.29.2.2 Unavailable: This facility is temporarily unable to provide Hyperbaric Chamber services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.29.2.3 Not Provided: This facility does not provide Hyperbaric Chamber services.
- 5.1.30 Status: ICU
 - 5.1.30.1 Reflects the current status of a facility's Intensive Care Unit. Should be updated as needed.
 - 5.1.30.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.30.2.1 Available: This facility's ICU is currently fully operational.
 - 5.1.30.2.2 Unavailable: This facility's ICU is temporarily unavailable. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.30.2.3 Not Provided: This facility does not provide ICU services.
- 5.1.31 Status: MedSurg
 - 5.1.31.1 Reflects the current status of a facility's ability to provide Medical/Surgical beds. .
 - 5.1.31.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.31.2.1 Available: This facility can currently provide Med/Surg beds.
 - 5.1.31.2.2 Unavailable: This facility is temporarily unable to provide Med/Stroke beds.
 - 5.1.31.2.3 Not Provided: This facility does not provide Med/Surg beds.
- 5.1.32 Status: NICU
 - 5.1.32.1 Reflects the current status of a facility's Neonatal Intensive Care Unit. Should be updated as needed.

- 5.1.32.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.32.2.1 Available: This facility's NICU is currently fully operational.
 - 5.1.32.2.2 Unavailable: This facility's NICU is temporarily unavailable.
Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.32.2.3 Not Provided: This facility does not provide NICU services.
- 5.1.33 Status: OB/L&D
 - 5.1.33.1 Reflects the current status of a facility's ability to provide OB/L&D services. Should be updated as needed.
 - 5.1.33.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.33.2.1 Available: This facility can currently provide OB/L&D services.
 - 5.1.33.2.2 Unavailable: This facility is temporarily unable to provide OB/L&D services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.33.2.3 Not Provided: This facility does not provide OB/L&D services.
- 5.1.34 Status: OR
 - 5.1.34.1 Reflects the current status of a facility's operating rooms. Should be updated as needed.
 - 5.1.34.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.34.2.1 Available: This facility's OR(s) are currently fully operational.
 - 5.1.34.2.2 Unavailable: This facility's OR(s) are temporarily unavailable. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.34.2.3 Not Provided: This facility does not provide OR services.
- 5.1.35 Status: Oral/Maxillofacial
 - 5.1.35.1 Reflects the current status of a facility's ability to provide Oral/Maxillofacial services. Should be updated as needed.
 - 5.1.35.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.35.2.1 Available: This facility can currently provide Oral/Maxillofacial services.
 - 5.1.35.2.2 Unavailable: This facility is temporarily unable to provide Oral/Maxillofacial services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.35.2.3 Not Provided: This facility does not provide Oral/Maxillofacial services.
- 5.1.36 Status: PICU
 - 5.1.36.1 Reflects the current status of a facility's Pediatric Intensive Care Unit. Should be updated as needed.
 - 5.1.36.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.36.2.1 Available: This facility's PICU is currently fully operational.

- 5.1.36.2.2 Unavailable: This facility's PICU is temporarily unavailable. Comments are mandatory. This status option must be updated at least once every 4 hours.
- 5.1.36.2.3 Not Provided: This facility does not provide PICU services.
- 5.1.37 Status: Replant
 - 5.1.37.1 Reflects the current status of a facility's ability to provide Replant services. Should be updated as needed.
 - 5.1.37.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.37.2.1 Available: This facility can currently provide Replant services.
 - 5.1.37.2.2 Unavailable: This facility is temporarily unable to provide Replant services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.37.2.3 Not Provided: This facility does not provide Replant services
- 5.1.38 Status: SAFE-Ready
 - 5.1.38.1 Reflects the current status of a facility's ability to provide Sexual Assault Forensic Evidence collection services. DSHS defines a SAFE-Ready facility as "A SAFE-Ready facility uses a certified sexual assault nurse examiner or a physician with specialized training to conduct a forensic medical examination of a sexual assault survivor, or uses telemedicine to consult with a system of sexual assault forensic examiners, regardless of whether a report to law enforcement is made." Should be updated as needed.
 - 5.1.38.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.38.2.1 Available: This facility can currently provide SAFE-Ready services.
 - 5.1.38.2.2 Unavailable: This facility is temporarily unable to provide SAFE-Ready services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.38.2.3 Not Provided: This facility does not provide SAFE-Ready services.
- 5.1.39 Status: Stroke General Service
 - 5.1.39.1 Reflects the current status of a facility's ability to provide general stroke services. Should be updated as needed. Does not reflect DSHS designation status.
 - 5.1.39.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.39.2.1 Available: This facility can currently provide general stroke services.
 - 5.1.39.2.2 Unavailable: This facility is temporarily unable to provide general stroke services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.39.2.3 Not Provided: This facility does not provide general stroke services.

- 5.1.40 Status: Stroke NeuroIR
 - 5.1.40.1 Reflects the current status of a facility's ability to provide NeuroIR services. Can only be updated by Level I (Comprehensive) designated facilities. Should be updated as needed.
 - 5.1.40.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.40.2.1 Available: This facility can currently provide NeuroIR services.
 - 5.1.40.2.2 Unavailable: This facility is temporarily unable to provide NeuroIR services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.40.2.3 Not Provided: This facility does not provide NeuroIR services.
- 5.1.41 Status: Stroke NeuroSurg
 - 5.1.41.1 Reflects the current status of a facility's ability to provide NeuroSurg services. Can only be updated by Level I (Comprehensive), Level II (Primary), or Level III (Support) designated facilities. Should be updated as needed.
 - 5.1.41.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.41.2.1 Available: This facility can currently provide NeuroSurg services.
 - 5.1.41.2.2 Unavailable: This facility is temporarily unable to provide NeuroSurg services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.41.2.3 Not Provided: This facility does not provide NeuroSurg services.
- 5.1.42 Status: Trauma
 - 5.1.42.1 Reflects the current status of a facility's ability to provide Trauma Surgery services.
 - 5.1.42.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.42.2.1 Available: This facility can currently provide Trauma Surgery services.
 - 5.1.42.2.2 Unavailable: This facility is temporarily unable to provide Trauma Surgery services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - 5.1.42.2.3 Not Provided: This facility does not provide Trauma Surgery services.
- 5.1.43 Status: Therapeutic Hypothermia
 - 5.1.43.1 Reflects the current status of a facility's ability to provide Therapeutic Hypothermia services. Should be updated as needed.
 - 5.1.43.2 Facilities can select from the following status options. Definitions for each status option are provided.
 - 5.1.43.2.1 Available - Adult: This facility can currently provide Adult Therapeutic Hypothermia services.

- 5.1.43.2.2 Available – NICU: This facility can currently provide Neonatal Therapeutic Hypothermia services.
- 5.1.43.2.3 Available – Adult/NICU: This facility can currently provide Adult and Neonatal Therapeutic Hypothermia services.
- 5.1.43.2.4 Unavailable: This facility is temporarily unable to provide Therapeutic Hypothermia services. Comments are mandatory. This status option must be updated at least once every 4 hours.
- 5.1.43.2.5 Not Provided: This facility does not provide Therapeutic Hypothermia services.
- 5.1.44 Transfer Line
 - 5.1.44.1 Shows the phone number to call if you need to transfer a patient to this facility.
 - 5.1.44.2 This is a text-entry field.
- 5.2 EMS/FRO Status Types
 - 5.2.1 Agency Type
 - 5.2.1.1 Shows the type of agency for each resource. Can only be updated by the EMResource Regional Administrator. Agencies should contact support@ncttrac.org if their agency type is in error.
 - 5.2.1.2 The following status options are available.
 - 5.2.1.2.1 FD EMS
 - 5.2.1.2.2 VFD
 - 5.2.1.2.3 Private EMS
 - 5.2.1.2.4 Hospital EMS
 - 5.2.1.2.5 Public EMS
 - 5.2.1.2.6 Other
 - 5.2.2 Dispatch Number
 - 5.2.2.1 Shows the non-emergency phone number to contact this agency's dispatch center. Should be updated as needed.
 - 5.2.2.2 This status is updated using a text entry field.
 - 5.2.3 EMS Medical Director
 - 5.2.3.1 Shows the current EMS Medical Director for the agency. Please list a contact phone number in the comments. Should be updated as needed
 - 5.2.3.2 This status is updated using a text entry field.
 - 5.2.4 Service: 911 EMS Response
 - 5.2.4.1 Reflects the current status of an agency's ability to perform 911 EMS response. Should be updated as needed.
 - 5.2.4.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.4.2.1 Available: This agency can currently perform 911 EMS response.
 - 5.2.4.2.2 Unavailable: This agency is temporarily unable to perform 911 EMS response. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.4.2.3 Not Provided: This agency does not perform 911 EMS response.
 - 5.2.5 Service: Critical Care Transport

- 5.2.5.1 Reflects the current status of an agency's ability to perform Critical Care Transport services. Should be updated as needed.
- 5.2.5.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.5.2.1 Available: This agency can currently perform Critical Care Transport services.
 - 5.2.5.2.2 Unavailable: This agency is temporarily unable to perform Critical Care Transport services. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.5.2.3 Not Provided: This agency does not provide Critical Care Transport services.
- 5.2.6 Service: HazMat Response
 - 5.2.6.1 Reflects the current status of an agency's ability to perform Hazardous Materials Response operations. Should be updated as needed.
 - 5.2.6.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.6.2.1 Available: This agency can currently perform Hazardous Materials Response operations.
 - 5.2.6.2.2 Unavailable: This agency is temporarily unable to perform Hazardous Materials Response operations. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.6.2.3 Not Provided: This agency does not have the capability to perform Hazardous Materials Response operations.
- 5.2.7 Service: HCID Response
 - 5.2.7.1 Reflects the current status of an agency's ability to perform High Consequence Infections Disease (HCID) Response operations. Should be updated as needed.
 - 5.2.7.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.7.2.1 Available: This agency can currently perform HCID response operations.
 - 5.2.7.2.2 Unavailable: This agency is temporarily unable to perform HCID response operations. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.7.2.3 Not Provided: This agency does not have the capability to perform HCID response operations.
- 5.2.8 Service: High Angle Rescue
 - 5.2.8.1 Reflects the current status of an agency's ability to perform High Angle Rescue operations. Should be updated as needed.
 - 5.2.8.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.8.2.1 Available: This agency can currently perform High Angle Rescue operations.

- 5.2.8.2.2 Unavailable: This agency is temporarily unable to perform High Angle Rescue operations. This status option must be updated at least once every 4 hours. Comments are mandatory.
- 5.2.8.2.3 Not Provided: This agency does not have the capability to perform High Angle Rescue operations.
- 5.2.9 Service: Hospital Patient Transfers
 - 5.2.9.1 Reflects the current status of an agency's ability to perform hospital patient transfers. Should be updated as needed.
 - 5.2.9.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.9.2.1 Available: This agency can currently perform hospital patient transfers.
 - 5.2.9.2.2 Unavailable: This agency is temporarily unable to perform hospital patient transfers. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.9.2.3 Not Provided: This agency does not perform hospital patient transfers.
- 5.2.10 Service: Swift Water Rescue
 - 5.2.10.1 Reflects the current status of an agency's ability to perform Swift Water Rescue operations. Should be updated as needed.
 - 5.2.10.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.10.2.1 Available: This agency can currently perform Swift Water Rescue operations.
 - 5.2.10.2.2 Unavailable: This agency is temporarily unable to perform Swift Water Rescue operations. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.10.2.3 Not Provided: This agency does not have the capability to perform Swift Water Rescue operations.
- 5.2.11 Service: Trench Rescue/Recovery
 - 5.2.11.1 Reflects the current status of an agency's ability to perform Trench Rescue/Recovery operations. Should be updated as needed.
 - 5.2.11.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.11.2.1 Available: This agency can currently perform Trench Rescue/Recovery operations.
 - 5.2.11.2.2 Unavailable: This agency is temporarily unable to perform Trench Rescue/Recovery operations. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.11.2.3 Not Provided: This agency does not have the capability to perform Trench Rescue/Response operations.
- 5.2.12 Vehicle: Bariatric

- 5.2.12.1 Reflects the current status of an agency's ability to provide specialty bariatric vehicles. Non-emergency contact information for these vehicles should be listed in the comments.
- 5.2.12.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.12.2.1 Available: This agency has a currently available specialty bariatric vehicle. Please list non-emergency contact information for this vehicle in the comments.
 - 5.2.12.2.2 Unavailable: This agency's specialty bariatric vehicle is temporarily unavailable. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.12.2.3 Not Provided: This agency does not have a specialty bariatric vehicle.
- 5.2.13 Vehicle: Mobile Command Center
 - 5.2.13.1 Reflects the current status of an agency's ability to provide a mobile command center. Non-emergency contact information for this asset should be listed in the comments.
 - 5.2.13.2 Agencies can select from the following status options. Definitions for each status option are provided.
 - 5.2.13.2.1 Available: This agency has a currently available mobile command center. Please list non-emergency contact information for this vehicle in the comments.
 - 5.2.13.2.2 Unavailable: This agency's mobile command center is temporarily unavailable. This status option must be updated at least once every 4 hours. Comments are mandatory.
 - 5.2.13.2.3 Not Provided: This agency does not have a mobile command center.
- 5.2.14 Vehicle: Other
 - 5.2.14.1 Lists any other specialty vehicles that an agency might have. The agency should list both the specialty vehicle and the non-emergency contact information for that vehicle.
 - 5.2.14.2 This status is updated by a text entry field.
- 5.3 Other Status Types
 - 5.3.1 24/7 Point of Contact
 - 5.3.1.1 Shows the 24/7 Point of Contact for a deployable asset. Should be updated as needed.
 - 5.3.1.2 This status is updated using a text entry field.
 - 5.3.2 Deployment Status
 - 5.3.2.1 Reflects the current deployment status of a regional deployable asset. Should be updated as needed.
 - 5.3.2.2 Asset hosts can select from the following status options. Definitions for each status option are provided.
 - 5.3.2.2.1 Demobilized: This asset has been demobilized from a deployment.
 - 5.3.2.2.2 Deployed: This asset is currently deployed. Comments are mandatory.

- 5.3.2.2.3 In Rehab: This asset is currently in rehab from a deployment.
- 5.3.2.2.4 Mission Capable: This asset is currently capable of deployment.
- 5.3.2.2.5 On Alert: This asset is currently on alert in anticipation of a potential deployment.
- 5.3.2.2.6 Out of Service: This asset is currently out of service. Comments are mandatory.
- 5.3.2.2.7 Partially Capable: This asset is currently partially capable of deployment. Comments are mandatory.
- 5.3.3 Flight Availability Status
 - 5.3.3.1 Reflects the current status of an air medical unit's availability to respond to calls. For most air medical providers, this status is automatically updated using an API from the air medical provider's CAD system into EMResource.
 - 5.3.3.2 Air medical units can select from the following status options. Definitions for each status option are provided.
 - 5.3.3.2.1 Delayed At: This aircraft is delayed. Enter location/time/weather in comments.
 - 5.3.3.2.2 Unavailable: This aircraft is unavailable. Enter location/maintenance in comments.
 - 5.3.3.2.3 Available At: This aircraft is available. Enter location in comments.
 - 5.3.3.2.4 Limited Availability: This aircraft's availability is limited.
- 5.3.4 Point of Contact Verified
 - 5.3.4.1 Shows the date that a facility/organization last verified that its Point of Contact in EMResource was correct.
 - 5.3.4.2 This is a text entry field.

6. System Performance Improvement Metrics and Indicators

6.1 Regional

- 6.1.1 TSA-E uses the following Performance Metrics and Indicators to measure overall EMResource utilization success.
 - 6.1.1.1 At least 75% of hospitals update their Hospital Intake Status at least once every 24 hours 80% of the time. Tracked monthly using EMResource reports. Report will be sent to ED Operations Committee, Trauma Committee, and NCTTRAC Zones.
 - 6.1.1.2 At least 75% of hospitals update their NEDOCS at least once every 6 hours. Tracked monthly using EMResource reports. Report will be sent to ED Operations Committee, Trauma Committee, and NCTTRAC Zones.
 - 6.1.1.3 At least 75% of hospitals update their Psych ED Holds at least once every 6 hours. Tracked monthly using EMResource reports. Report will be sent to ED Operations Committee, Mental Health Workgroup, and NCTTRAC Zones.
 - 6.1.1.4 At least 75% of hospitals and special facilities update their available bed numbers at least once every 24 hours. Tracked monthly. Report will be sent to ED Operations Committee, REPC, and NCTTRAC Zones.
 - 6.1.1.5 At least 75% of hospitals, special facilities, and EMS agencies update their EMResource point of contact at least once per year. Tracked annually using Status Type "Point of Contact Verified".

- 6.1.1.6 At least 75% of hospitals, special facilities, and EMS agencies review their associated users list and send necessary changes to NCTTRAC at least once per year. Tracked annually using NCTTRAC email records.
- 6.1.1.7 At least 75% of EMS agencies monitor EMResource for status changes via active monitoring or status change notifications. Tracked annually via regional survey.

6.2 Hospitals

- 6.2.1 TSA-E uses the following Performance Metrics and Indicators to measure individual healthcare facility EMResource utilization success.
 - 6.2.1.1 Hospital updates its Hospital Intake Status at least once every 24 hours 80% of the time. Tracked monthly using EMResource reports.
 - 6.2.1.2 Hospital updates its NEDOCs at least once every 6 hours. Tracked monthly using EMResource reports.
 - 6.2.1.3 Hospital updates its Psych ED Holds status at least once every 6 hours. Tracked monthly using EMResource reports.
 - 6.2.1.4 Facility updates its available bed numbers at least once every 24 hours. Tracked monthly using EMResource reports.
 - 6.2.1.5 Facility has at least one person with EMResource access on-site 80% of the time. Tracked annually via regional survey.
- 6.2.2 EMS
 - 6.2.2.1 TSA-E uses the following Performance Metrics and Indicators to measure individual EMS Agency EMResource utilization success.
 - 6.2.2.1.1 EMS Agency monitors EMResource for status changes via active monitoring or status change notifications. Tracked annually via regional survey.
 - 6.2.2.1.2 EMS Agency has at least one person with EMResource access on-shift 80% of the time. Tracked annually using regional survey.

7. Accountability

- 7.1. NCTTRAC staff will run monthly reports on update frequency and make available to NCTTRAC Committees. Frequent non-compliance will prompt informal follow-up by NCTTRAC staff; continued non-compliance will prompt review by SPI/related committee. Further actions against non-compliant organizations to be determined by SPI/related committee and pushed to NCTTRAC Board of Directors for action.

8. Additional Views

8.1 Clinical Views

- 8.1.1 TSA-E: Pediatric
 - 8.1.1.1 Shows all County – Hospitals and County – Special Facilities Resource Types
 - 8.1.1.2 Shows the following status types:
 - Hospital Intake Status
 - Transfer Line
 - IBA: Pedi Monitored
 - IBA: Pedi Non Monitored
 - IBA: PICU Monitored

- IBA: PICU Non Monitored
- Pedi Only Vents
- 8.1.2 TSA-E: Perinatal
 - 8.1.2.1 Shows all County – Hospitals and County – Special Facilities Resource Types.
 - 8.1.2.2 Shows the following status types:
 - Hospital Intake Status
 - DSHS Maternal Designation
 - OB Transfer Line
 - Service: OB Transport
 - Status: OB/L&D
 - IBA: OB Antepartum
 - IBA: OB L&D
 - IBA: OB Recovery and Postpartum
 - DSHS Neonatal Designation
 - NICU Transfer Line
 - Service: Neonatal Transport
 - Status: NICU
 - Status: ECMO
 - Status: Therapeutic Hypothermia
 - IBA: NICU Monitored
 - IBA: NICU Non Monitored
- 8.1.3 TSA-E: Psych
 - 8.1.3.1 Shows all County – Hospitals and County – Special Facilities Resource Types with licensed psych beds.
 - 8.1.3.2 Shows the following status types:
 - Hospital Intake Status
 - Psych ED Holds
 - Psych: Pediatric
 - Psych: Adolescent
 - Psych: Adult
 - Psych: Adolescent Chem. Dep.
 - Psych: Adult Chem. Dep.
 - Psych: Child Male (<=12)
 - Psych: Child Female (<=12)
 - Psych: Ado Male (13-17)
 - Psych: Ado Female (13-17)
 - Psych: Adult Male (>=18)
 - Psych: Adult Female (>=18)
 - Psych: Older Adult Male
 - Psych: Older Adult Female
 - Psych: Chem Dep Male
 - Psych: Chem Dep Female
 - Psych: Total Beds
- 8.1.4 TSA-E: Stroke

8.1.4.1 Shows all County – Hospitals and County – Special Facilities Resource Types.

8.1.4.2 Shows the following status types:

- Hospital Intake Status
- NEDOCS
- DSHS Stroke Designation
- Status: Stroke General Service
- Status: Stroke NeuroIR
- Status: Stroke NeuroSurg

8.1.5 TSA-E: Trauma

8.1.5.1 Shows all County – Hospitals and County – Special Facilities Resource Types.

8.1.5.2 Shows the following status types:

- Hospital Intake Status
- NEDOCS
- DSHS Trauma Designation
- Transfer Line
- Status: Anti-Venom
- Status: Burn
- Status: Hyperbaric Chamber
- Status: ICU
- Status: OR
- Status: Oral/Maxillofacial
- Status: Replant
- Status: Hand
- Status: ECMO
- Status: SAFE-Ready
- Status: Therapeutic Hypothermia

8.2 Zone Views

- Z8 – Dallas
- Z7 – Tarrant
- Z6 – Erath Hood Johnson S-vell
- Z5 – Collin, Hunt, Rockwall
- Z4 – Ellis, Kaufman, Navarro
- Z3 – Parker, Palo Pinto
- Z2 – Denton, Wise
- Z1 – Cooke, Fannin, Grayson

8.2.1 All zone views will contain the County – Hospitals, County – Special Facilities, County – EMS Agencies, and County – FROs located within the identified zone.

8.2.2 Individual zones will eventually have the opportunity to customize their specific zone view. Currently, all zone views have the same status types:

- Facility Type
- Hospital Intake Status
- NEDOCS
- IBA: Emergency Dept

- Psych ED Holds
- Psych: Total Beds
- Transfer Line
- MCI Green
- MCI Red
- MCI Yellow

8.3 Disaster Views

8.3.1 TSA-E: Bed Availability

8.3.1.1 Shows all County – Hospitals and County – Special Facilities Resource Types

8.3.1.2 Shows the following status types:

- IBA: MedSurg Monitored
- IBA: MedSurg Non Monitored
- IBA: Pedi Monitored
- IBA: Pedi Non Monitored
- IBA: Adult ICU Monitored
- IBA: Adult ICU Non Monitored
- IBA: PICU Monitored
- IBA: PICU Non Monitored
- IBA: NICU Monitored
- IBA: NICU Non Monitored
- IBA: Burn Monitored
- IBA: Burn Non Monitored
- IBA: Neg Pressure ER Beds
- IBA: Neg Pressure Inpatient Beds
- IBA: Emergency Dept
- IBA: Operating Rooms
- IBA: OB Antepartum
- IBA: OB L&D
- IBA: OB Recovery and Postpartum
- Adult & Pedi Vents
- Adult Only Vents
- Pedi Only Vents

8.3.2 TSA-E: Facility EM

8.3.2.1 Shows all County – Hospitals and County – Special Facilities Resource Types

8.3.2.2 Shows the following status types:

- Hospital Intake Status
- Command Center Activation Status
- Critical Utilities Availability

8.3.3 TSA-E: MCI Beds

8.3.3.1 Shows all County – Hospitals and County – Special Facilities Resource Types

8.3.3.2 Shows the following status types:

- MCI Green
- MCI Yellow
- MCI Red
- MCI Gray

- MCI Black
- DSHS Trauma Designation
- Hospital Intake Status

8.4 Resource Type Views

- TSA-E: EMS Agencies
- TSA-E: FROs
- TSA-E: LTC Facilities
- TSA-E: Specialty Facilities

8.5 Position-Specific Views

8.5.1 EMS/ED (Default View for ED Staff and EMS users)

- Hospital Intake Status
- NEDOCS
- Psych ED Holds
- Status: Trauma
- DSHS Trauma Designation
- DSHS Stroke Designation
- Status: 24/7 STEMI
- Status: OB/L&D
- Status: SAFE-Ready
- MCI: Green, Yellow, Red, Black
- Helipad

8.5.2 Transfer Centers (Default View for Transfer Center users)

8.5.2.1 Statuses to be determined

2019 ASA Recommendation: Options to Treat Arterial Hypertension in Patients with AIS Who Are Candidates for Acute Reperfusion Therapy²

Class IIb, LOE C-EO				
Patient eligible for acute reperfusion therapy except that BP > 185/110 mm Hg If BP is not maintained \leq185/110 mm Hg, do not administer thrombolysis	Drug	Starting dose	Titration	Maximum dose
	Labetalol	10-20 mg IV over 1-2 minute	may repeat 1 time	
	Nicardipine	5 mg/hour IV	titrate up by 2.5 mg/hour every 5-15 minute	15 mg/hour
	Clevidipine	1-2 mg/hour IV	titrate by doubling the dose every 2-5 minutes	21 mg/hour
	Other drugs (eg hydralazine, enalaprilat) may also be considered			
If systolic BP >180-230 mm Hg or diastolic BP >105-120 mm Hg	Labetalol	10 mg IV followed by continuous infusion	2-8 mg/minutes	
	Nicardipine	5 mg/hour IV	titrate up by 2.5 mg/hour every 5-15 minute	15 mg/hour
	Clevidipine	1-2 mg/hour IV	titrate by doubling the dose every 2-5 minutes	21 mg/hour
	If BP not controlled or diastolic BP >140 mm Hg, consider IV sodium nitroprusside			
Management of BP during and after thrombolysis or other acute reperfusion therapy to maintain BP \leq180/105 mmHg				
Monitor BP every 15 minutes for 2 hours from the start of thrombolysis therapy, then every 30 minutes for 6 hours, and then every hour for 16 hours.				

2019 ASA Recommendation: Management of Orolingual Angioedema Associated With IV thrombolysis Administration for AIS²

Class IIb, LOE C-EO	
1. Maintain airway	Endotracheal intubation may not be necessary if edema is limited anterior tongue and lips.
	Edema involving larynx, palate, floor of mouth, or oropharynx with rapid progression (within 30 minutes) poses higher risk of requiring intubation.
	Awake fiberoptic intubation is optimal. Nasal-tracheal intubation may be required but poses risk of epistaxis post-IV thrombolysis. Cricothyroidotomy is rarely needed and also problematic after IV thrombolysis.
2. Discontinue IV thrombolysis infusion and hold ACE inhibitors	
3. Administer IV methylprednisolone 125 mg	
4. Administer IV diphenhydramine 50 mg	
5. Administer ranitidine 50 mg IV or famotidine 20 mg IV	
6. If there is further increase in angioedema, administer epinephrine (0.1%) 0.3 mL subcutaneously or by nebulizer 0.5 mL	
7. Icatibant, a selective bradykinin B₂ receptor antagonist, 3 mL (30 mg) subcutaneously in abdominal area; additional injection of 30 mg may be administered at intervals of 6 hours not to exceed total of 3 injections in 24 hours; and plasma-derived C1 esterase inhibitor (20 IU/kg) has been successfully used in hereditary angioedema and ACE inhibitor-related angioedema	
8. Supportive care	



**NORTH CENTRAL TEXAS
TRAUMA REGIONAL ADVISORY COUNCIL**

202~~21~~ Regional Stroke System Plan

Endorsed by NCTTRAC Board of Directors

Date: ~~Pending March 9, 2021~~

Approved by NCTTRAC General Membership

Date: ~~April 13, 2021~~ Pending

Supersedes Regional Stroke System Plan

Date: ~~September 20, 2018~~ April 13, 2021

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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.

NCTTRAC - Regional Stroke System Plan

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

Stroke Committee Chair 600
Six Flags Drive, Suite 160
Arlington, TX 76011

817.608.0390
Admin@NCTTRAC.org

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.

Secretary

Date

RECORD OF CHANGES

The North Central Texas Trauma Regional Advisory Council ensures that necessary changes and revisions to The Regional Stroke 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 Stroke 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.

NCTTRAC - Regional Stroke System Plan

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 Change	Summary of Changes	Change Made by (Print Name)
All Section I	3/1/2021 7/7/2021	Changed dates to reflect FY22 approvalUpdated Mission and Vision to	Corrine CooperDr. Novakovic
Section IX	7/7/2021	Reformatted sentence structure	Corrine Cooper
Section IXI	7/7/20213/1/2021	Stroke Systems of Care- Encouraging regional participation in providing quality stroke care and seeking to improve public	Dr. NovakovicCorrine Cooper
Section XIIII	3/1/20217/7/2021	Goal- encourage and promote stroke centers within the region to work in an integrated fashion, providing and sharing best	Dr. NovakovicCorrine Cooper
Section III	3/1/2021	Objective- Included change of designations as anticipated by the rule change of 157.133	Dr. Novakovic
Section IV	3/1/2021	Community Education- updated goal is to increase public, physician, hospital and EMS personnel awareness of the signs and symptoms of stroke	Dr. Novakovic
Section V	3/1/2021	System Access- Encouraging call takers to include stroke education in their yearly training	Dr. Novakovic
Section VI	3/1/2021	Encouraging EMS to make sure stroke management education is provided at least yearly and is integrated as a "core care competency"	Dr. Novakovic
Section VIII	3/1/2021	Included requirements of relinquishing a stroke designation and who needs to be notified if that happens	Dr. Novakovic
Section IX	3/1/2021	Standardizing an approach to rapidly identify, assess, treat, and triage a stroke patient to increase patient outcomes	Dr. Novakovic
Section IX	3/1/2021	Included section for Stroke System of Care Modification for Urban, Suburban and Rural Communities	Dr. Novakovic

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Section IX	3/1/2021	Prehospital Triage-Assessment-Included to obtain a phone number for next of kin or witness, along with documenting last known well. System Triage-included to encourage family to go directly to ED and have EMS call for a code stroke on route so that appropriate resources can be mobilized before patient arrival.	
Section X	3/1/2021	Pediatric-Included pediatric verbiage for goals, presentation, symptoms, vital signs and to transport to appropriate pediatric facilities in TSA-E if stroke is suspected. Encourage EMS to call for code stroke when on route	
Section XI	3/1/2021	Helicopter Activation-if taking longer than 30	
Section XII	3/1/2021	Facility Diversion-included EMResource status verbiage and explanations on when to use those statuses. Included requirements of facilities to alert DSHS, NCTTRAC, and EMS if it relinquishes a designation	
Section XIII	3/1/2021	Inter-Facility Transfers-Patients with LVO in need of transfer should have DIDO set to meet current ASA guidelines	
Section XIII	3/1/2021	Inter-Facility Transfers-Objectives-changed DIDO with LVO to 90 min and Picture to Door with LVO to 90 min. Included interfacility stroke terminology to have a common language across all levels of healthcare	
Section XIV	3/1/2021	System Performance Improvement-This group will review and monitor stroke care	
Section XIV	3/1/2021	Objectives-established regional quality Measures to include: EMS Prenotification	
Appendixes	3/1/2021	Updated Appendixes to include: AHA-EMS Acute Stroke Routing, NIH Stroke Scale, and	

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

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Introduction

I. Scope

A. Mission

The mission of the North Central Texas Trauma Regional Advisory Council (NCTTRAC) Stroke Committee is to develop a cohesive and aligned patient-centered regional stroke system of care (SSOC) that identifies and engages all potential key stakeholders with the purpose to improve the knowledge of the public, encourage primordial and primary prevention, advance and facilitate stroke therapy, improve secondary prevention and recovery from stroke; as well as reduce disparities in stroke care within the region. Such efforts will provide the infrastructure to facilitate achieving the primary goal of the Regional Stroke Plan, to mitigate the effects of stroke within the region.

Vision

NCTTRAC Stroke Committee will provide leadership in stroke treatment by creating a broad stakeholder coalition with the responsibility and resources to develop, operate, evaluate and integrate a regional SSOC based on relevant guideline recommendations.^{1, 2} Stakeholders should draw from key constituents, including: healthcare providers, patients, caregivers, hospitals, home health companies, regulatory agencies and payers.

Organization

One of the NCTTRAC Stroke Committee's goals is to provide the infrastructure and leadership necessary to sustain an exemplary and concerted regional SSOC within the designated nineteen county region known as Trauma Service Area E (TSA-E), which strives to improve the level of care provided to persons living or traveling through this region. NCTTRAC standing committees and member organizations (hospitals, first responder organizations, emergency medical services (EMS) providers, air medical providers, emergency management and public health) work collaboratively to ensure that quality care is provided to stroke patients throughout the continuum of stroke care. The continuum of the eight domains of a SSOC include community education, primordial prevention, primary prevention, EMS response, acute stroke treatment, secondary prevention, stroke rehabilitation and continuous quality improvement (QI).¹

Regional Plan

The Regional Stroke Plan has been developed in accordance with generally accepted stroke guidelines, as well as procedures for implementation of a comprehensive EMS and regional SSOC. This plan does not establish a legal standard of care, but rather is intended as an aid to decision-making in care of stroke patients. The Regional Stroke Plan is not intended to supersede the physician's prerogative to order treatment.

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II. STROKE SYSTEMS OF CARE GOALS

The purpose of the Stroke Committee shall be to facilitate the collaboration and advancement of a regional SSOC that is based on accepted standards of care and guideline statements. The NCTTRAC Stroke Committee will solicit participation from key stakeholders comprised of: broadly healthcare providers, patients, caregivers, hospitals, home health companies, regulatory agencies, professional societies involved in health care and payers. NCTTRAC Stroke Committee will encourage regional participation in providing and outlining quality stroke care that is patient-focused, complies with state and national guidelines and seeks to improve public health in the 8 domains of a SSOC: community education, primordial prevention, primary prevention, EMS response, acute stroke treatment, secondary prevention, stroke rehabilitation and continuous QI.¹ Policies that standardize the organization of stroke care throughout the continuum should be enacted and indorsed. Such policies should aim to lower barriers to seeking emergency care for stroke, to ensure that stroke patients receive care at appropriate facilities in a timely manner, and to facilitate access to secondary prevention, rehabilitation and recovery resources after stroke.¹ Adopted from current guidelines, NCTTRAC Stroke Committee shall develop a plan for a regional SSOC that addresses these key domains.¹

III. RECOGNITION AND RESPONSIBILITIES OF STROKE FACILITIES

Goals

The goals of the NCTTRAC Stroke Committee and Regional Stroke Plan are to ensure that patients seeking emergency care for stroke receive care at the appropriate facilities in a timely manner, and to facilitate access to secondary prevention, rehabilitation and recovery resources after stroke. The NCTTRAC Stroke Committee promotes collaboration and commitment among the stroke facilities to develop uniform stroke systems standards that address stroke patient needs throughout the continuum of care; addressing the eight domains of a SSOC: community education, primordial prevention, primary prevention, EMS response, acute stroke treatment, secondary prevention, stroke rehabilitation and continuous QI.¹

The NCTTRAC Stroke Committee encourages and promotes stroke centers within the region to work in an integrated fashion, providing and sharing best practices. Additionally, the collaboration seeks to establish recommendations for system coordination and inter-facility transfers; assuring that high acuity stroke patients receive appropriate consideration for thrombectomy, thrombolysis, neurosurgical and neurocritical care.

Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

Committees Charged

Responsibilities charged to the NCTTRAC Stroke, Medical Directors and EMS Committees.

Objectives

NCTTRAC - Regional Stroke System Plan

The NCTTRAC Stroke Committee will utilize the Texas Department of State Health Services (DSHS) recognized designation for stroke facilities, that provides the framework for stroke care within the region; Comprehensive Stroke Facility/Level 1, Primary Stroke Facility/Level 2 and Support Stroke Facility/Level 3. The stroke facility names will change to reflect the new stroke facility designation, the anticipated new names will be outlined in the 2021 Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation. The anticipated new names will be: Comprehensive Stroke Centers (CSC/Level 1), Advanced or non-Comprehensive Thrombectomy Stroke Centers (Level II/TSC), Primary Stroke Centers (PSC/Level III) and Acute Stroke-Ready (Level IV/ASRH).

Stroke Center accreditation remains the cornerstone process to ensure healthcare facilities remain committed to meeting overall high patient-safety standards. The DSHS shall determine the designation level for each facility by physical location, based on, but not limited to, national stroke standards, the location's own resources and level of care capabilities; as well as compliance with the requirements outlined by the Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation. Designated stroke facilities in the NCTTRAC SSOC, including children's facilities capable of caring for pediatric strokes, shall meet the current department recognized national stroke standards of care for the stroke designation; actively participate in the RAC Stroke Committee and transport plan; and submit data to the DSHS department as requested. Stroke facilities are required to receive and maintain stroke facility designation as outlined by the Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation. Additional goals, considerations and responsibilities for NCTTRAC stroke facilities as outlined by guideline statements¹ and Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation:

- The Joint Commission and other certification programs offer four advanced levels of stroke certification for accredited facilities. All levels of certification utilize a standard method of delivering care centered on evidence-based guidelines for stroke care. Each level builds on the capabilities of the previous certification.
- The CSC, TSC, PSC, and ASRH framework provides an appropriate platform for the data-driven development of hospital-based processes of care and outcome metrics.
- Stroke facility treatment processes, technical outcomes (reperfusion rates), complications, and patient clinical outcomes should be tracked. All certified stroke facilities should meet or exceed the standards as outlined by the DSHS approved stroke facility certifying agency.
- All levels of stroke centers should work within the region in an integrated fashion, providing and sharing best practices.
- The TCS is a new level of care recently identified to address the need for greater access to thrombectomy in the community. TSC certification is intended for regions of the country that do not have ready access to CSCs; CSC are the preferred destination for patients with suspected LVO when they are within acceptable transport times. If no CSC is available, a TSC should be the preferred destination for these patients from among all nearby PSCs.^{1,3}
- Stroke centers should adopt approaches to secondary prevention that address all major modifiable risk factors and that are consistent with the national guidelines for all patients with a history or a suspected history of stroke or TIA.
- Stroke centers should provide education and training for patients and family members. Clear, comprehensive, and timely communication across the inpatient and outpatient

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post-stroke continuum of care is essential to ensure appropriate medical and rehabilitation care.

- To standardize the post-acute care after stroke discharge, stroke centers should comprehensively screen for post-acute complications, provide individualized care plans for patients during the transition of care, provide referrals to community services, and reinforce secondary prevention and self-management of stroke risk factors and lifestyle changes to decrease the risk of recurrent stroke. Trained stroke nurses, nurse practitioners, social workers, community health workers, and others should play a pivotal role.
- Stroke care centers should ensure that all stroke survivors receive a standardized screening evaluation during the initial hospitalization to determine whether rehabilitation services are needed and the type, timing, location, and duration of such therapy.
- Long-term primary care and specialist (physiatrist or neurology) follow-up should be arranged to identify patients with residual impairments so that these patients receive appropriate continued rehabilitation.
- Efforts should be made to advance the use of technology and patient-reported outcomes and to facilitate improved care transitions in stroke care. These interventions should be refined on the basis of continuous QI measurement and methods. Such efforts not only will bolster overall stroke prevention, treatment, and recovery but also may reduce the persistent disparities observed in stroke care. Before implementation, new policies should be evaluated for potential adverse impact on access to care and disparities in care.
- A healthcare facility may not use the terms "stroke facility," "stroke hospital," "stroke center," "comprehensive stroke center," "enhanced stroke center," "primary stroke center," "acute stroke ready hospital," "acute stroke ready center" or similar terminology in its signs or advertisements or in the printed materials and information it provides to the public, unless the healthcare facility is currently designated as that level of stroke facility according to the process described by the Texas Administrative Code, 157.133 Requirements for Stroke Facility Designation.
- EMResource is the official means of notification of these capabilities and their availability. A facility relinquishing stroke designation shall provide 30 days advance notice to the DSHS Department, NCTTRAC, EMS providers and facilities which customarily transfer-out and/or transfer-in stroke patients.
- A designated facility must provide written notification of a temporary event or decision impacting the ability of a stroke facility to comply with designation requirements to maintain the current designation status, or to increase the stroke facilities capabilities that affect the region. The notice shall be provided as soon as possible within 24 hours to the EMS providers, healthcare facilities to which it customarily transfers-out and/or transfers-in stroke patients, NCTTRAC and the DSHS Department.

NCTTRAC will not designate stroke facilities at any level, but may set minimum standards for what is considered active participation for the purposes of a Letter of Participation:

- Stroke facility needs to maintain a valid DSHS designation as a Stroke Center.
- NCTTRAC minimum participation requirements as defined in the NCTTRAC Bylaws (See [Annex G: NCTTRAC Bylaws](#)) or Standard Operating Procedures.

IV. COMMUNITY EDUCATION AND STROKE PREVENTION

Goals

Through a collaboration between NCTTRAC key stroke stakeholders, the SSOC will seek to address risk factors and behavior modifications aimed at community education, primordial prevention, primary prevention and secondary prevention of stroke. An additional goal is to increase public, physician, hospital and EMS personnel awareness of the signs and symptoms of stroke, stroke treatment options, and best practices as outlined by the NCTTRAC Stroke Committee and current guidelines. Public education programs should be sustainable over time and designed to reach racially/ethnically, age and gender diverse populations.

Committee Charged

Responsibilities charged to the NCTTRAC Stroke Committee.

Objectives

The NCTTRAC stroke system key stakeholders will partner to achieve the following objectives either in collaboration or independently as a pillar in the stroke care system¹:

- Support local and regional educational initiatives to increase stroke awareness (including stroke warning signs, risk factors, primary and secondary prevention, and recovery), aimed at the general and pediatric population with enriched targeting of populations at increased risk for stroke and poor outcomes after stroke.¹
- Adopt innovative behavioral interventions and encourage research in tools that support sustainable improvements addressing barriers to healthy behaviors, prevention adherence, and behavioral responses to warning symptoms.¹
- Public health leaders and medical professionals shall plan and implement public education programs focused on stroke systems and the need to seek emergency care (by calling 9-1-1) in a rapid manner. These programs shall be designed to reach diverse populations. Such educational programs should be aimed to increase use of the 9-1-1 EMS system, to reduce stroke onset to ED arrival times, increase EMS prehospital notification and to increase timely use of stroke treatments.¹
- Adopt approaches to secondary prevention that address all major modifiable risk factors and that are consistent with the national guidelines for all patients with a history or a suspected history of stroke or TIA.¹
- Support education and training for patients and family members. Clear, comprehensive, and timely communication across the inpatient and outpatient post-stroke continuum of care is essential to ensure appropriate medical and rehabilitation care.¹

V. SYSTEM ACCESS

Goal

The goal for system access within TSA-E is two-fold: 1) access to emergency stroke care within the region must be rapidly available; 2) EMS must be available to provide quality health care to patients in TSA-E. In portions of this region, First Responder Organizations (FRO) may provide initial treatment pending EMS arrival.

Committees Charged

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Responsibilities charged to the NCTTRAC EMS and Stroke Committees.

Objectives

In consultation with EMS leaders, local, regional, and state agencies, as well as medical authorities and local experts, NCTTRAC will develop triage ~~guidelines, paradigms and protocols~~ that ensure that all patients with a known or suspected stroke are rapidly identified, assessed and triaged as outlined in this document. Standardized approaches to prehospital stroke assessment, triage, management and inter-facility documentation as outlined by the NCTTRAC Regional Stroke Plan is encouraged for 9-1-1 call centers and EMS dispatchers.

One of the primary elements of an EMS/Stroke system is to provide access to EMS and subsequent mobilization of a medical response to the scene. Every call for emergency services should universally and automatically be accompanied by location identifying information. A regional system providing dedicated lines that allow direct routing of emergency calls is ideal. Routing is based on telephone exchange areas, not municipal boundaries. Automatic Number Identification (ANI) and Automatic Location Identification (ALI) should be available. Alternative Routing allowing 9-1-1 calls to be routed to a designated alternative location is in effect. Most areas route their calls to the county 9-1-1 in case of overload or failure.

When calls come into a 9-1-1 center, the communication system ensures that the call taker has the appropriate written protocols as well as proper training. The caller should not have to talk to more than two telecommunications personnel. The call transfer equipment used in transferring these calls should take no longer than ten seconds and the equipment must have a history of being 95% reliable.

The 9-1-1 center should utilize specific screening protocols for potential stroke patients and prioritize EMS dispatch at the appropriate level for patients screening positive for acute stroke.⁴⁻⁶ The 9-1-1 centers should utilize QI processes to review screening and dispatch for patients transported by EMS who are suspected of having a stroke, and whenever possible review the actual final clinical hospital diagnoses. Call takers should have annual stroke education training requirements to maintain knowledge and proficiency.

VI. EMS AND COMMUNICATIONS

Goals

EMS communications systems must provide the means by which emergency resources can be accessed, mobilized, managed and coordinated. An emergency assistance request and the coordination of the response require communication linkages for: 1) access to EMS from the scene of the incident, 2) dispatch and coordination of EMS resources, 3) coordination with medical facilities and 4) coordination with other public safety and emergency personnel. It is imperative that EMS personnel provide prehospital notification to the receiving stroke facility that a suspected stroke patient is in route, this allows the receiving stroke facility to mobilize the appropriate resources prior to patient arrival and expedite care.

Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that

NCTTRAC - Regional Stroke System Plan

meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

Committees Charged

Responsibilities charged to the NCTTRAC EMS and Stroke Committees.

Objectives

The system of communication is an integral part of a regional plan for the care of stroke patients. Networks should be geographically integrated and based on the functional need to enable routine and special large-scale operations for communications among EMS and other public safety agencies. Utilization of system status management technology should be considered for both areas with high demand of mobile resources and for those areas where resources may not be readily available on a routine ~~basis, but~~ basis but would benefit from shifting resources from one geographic area to another.

EMS communication center(s) should be staffed with fully trained tele--communicators. The ideal tele--communicator should have completed an Emergency Dispatch course, such as the Emergency Medical Dispatch: National Standard Curriculum as offered from the National Highway Traffic Safety Administration and the U.S. Department of Transportation.

NCTTRAC encourages 100% participation from all EMS agencies within the nineteen counties that comprise TSA-E. By enhancing participation, NCTTRAC can identify quality issues related to response times. NCTTRAC can then move toward the resolution of these issues through assessment, education, ~~intervention~~ intervention, and evaluation through system process improvement (SPI) procedures.

EMS agencies should ensure that stroke management education is provided at least yearly and is integrated as a "core care competency" for EMS providers. It is recommended that a total of 4 hours of continuing credit be obtained from the 144 hours that are required during the 4-year recertification cycle with ~~the~~ DSHS. This education should be developed and delivered in conjunction with regional stroke facilities and local/regional EMS partners. Stroke management education should include:

- Adopt and train EMS providers to a single stroke screening tool and severity scale for identifying suspected acute stroke due to LVO.^{7, 8}
- Train EMS providers to destination plans based on stroke facility locations and capability, anticipated transport times, and patient acuity.⁹ The local algorithm should include consideration of air medical transport for longer transport distances.
- Regional inter-facility transport agencies should be trained for the safe and rapid transport of stroke patients, including patients who received thrombolytic therapy or who require consideration for EVT.
- EMS agencies should develop and train providers on prehospital stroke notification protocols with receiving stroke facilities. Pre-arrival notification enables activation of stroke teams facilitating direct transport of the patient to the CT scanner on ED arrival and rapid evaluation of the patient by the ED physician and stroke team.

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All participating prehospital agencies should engage in QI programs coordinated with the SSOC, with an emphasis on dispatch, response, field triage, and transitions of care. Agencies should assess their adherence to recommended targets for prehospital performance in acute stroke care.²

VII. MEDICAL OVERSIGHT

Goal

The development of a regional SSOC requires the active participation of qualified physician providers. Physicians should be clinically qualified in their area of practice and have expertise and competence in the treatment of stroke patients. The regional SSOC will be developed under the direction of representatives of NCTTRAC medical staff throughout the region.

Committee Charged

Responsibilities are charged to the NCTTRAC Medical Directors Committee.

Objective

Provide consistent medical oversight to ensure regional guidelines align with national standards.

VIII. REGIONAL PREHOSPITAL MEDICAL CONTROL

Goals

The Regional Stroke Plan will assist with identification and education of regional medical control resources, standardize guidelines and analyze accessibility of medical control resources. Additionally, it will identify and educate NCTTRAC EMS Providers and serve as a source for medical direction.

Committees Charged

Responsibilities are charged to the NCTTRAC EMS, Medical Directors and Stroke Committees.

Objectives

All EMS Providers have a Medical Director for their service. The Medical Directors have signed a form verifying that they are following the NCTTRAC guidelines for the treatment of patients within their area. These forms are updated and maintained by the NCTTRAC administrative office.

NCTTRAC encourages coordinated medical control in our region and to that end has organized a Medical Directors Committee which meets periodically to review the protocols and guidelines for EMS Providers within TSA-E. Several medical directors have multiple EMS Providers working with them to help consolidate and control the prehospital care of the stroke patients, but this is not a mandatory requirement at this time. Through the efforts of the Medical Directors Committee, NCTTRAC will continue to work towards developing consistency and standardization of the guidelines used within our region.

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Physician Involvement in Regional Plan Development – The Medical Directors Committee meets quarterly to conduct its usual business and to review and approve regional planning components, policies and guidelines related to medical care. Each EMS Medical Director and at least one physician from each NCTTRAC hospital has the opportunity for representation on this standing working group. All physicians within TSA-E are invited to attend these meetings.

Medical Direction of Prehospital Care Providers – In accordance with DSHS guidelines, all NCTTRAC prehospital care providers function under medical control through a delegated physician practice. Regional EMS guidelines are available online to all EMS Providers for incorporation into local protocols. ~~Annual~~Periodic reviews and updates are completed and ~~distributed upon upon~~ approval ~~are distributed as necessary. These guidelines serve as a EMS baseline and individual~~ Medical Directors may ~~choose to adopt these guidelines with their emergency healthcare systems~~ adapt for their local community.

Regional Quality Improvement – The Medical Directors Committee meets quarterly to conduct business and to carry out regional QI activities. (Please see System PI section for more details).

EMResource – EMResource is the official means by which hospitals can update EMS Providers as to their DSHS stroke designation level. It is the responsibility of the DSHS stroke facilities to maintain an accurate status reflecting the level of designation by law. Additionally, it is the responsibility of the EMS Providers to use EMResource to verify a hospital's DSHS designation and to monitor if the facility is experiencing any issues that could affect the hospital's ability to provide appropriate stroke care.

- A facility relinquishing stroke designation shall provide 30 days advance notice to the DSHS Department, NCTTRAC, EMS providers and facilities which customarily transfer-out and/or transfer-in stroke patients.
- A designated facility must provide written notification of a temporary event or decision impacting the ability of a stroke facility to comply with designation requirements to maintain the current designation status, or to increase the stroke facilities capabilities that affect the region. The notice shall be provided as soon as possible within 24 hours to the EMS providers, healthcare facilities to which it customarily transfers-out and/or transfers-in stroke patients, NCTTRAC and the DSHS Department.

Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

IX. Prehospital Stroke Triage and Management

Goals

The NCTTRAC SSOC ~~provides will develop~~ triage ~~guideline paradigms and protocols~~ to assist ~~pre-hospital providers with the rapid identification, assessment, and triage of all suspected stroke patients that ensure that all patients with a known or suspected stroke are rapidly identified, assessed and triaged~~ with the aim to lower barriers to seeking emergency care for stroke and to ensure that stroke patients receive care at appropriate facilities in a timely

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manner. Pediatric Stroke patients (0<18 yo) will be transported to the nearest Pediatric Stroke Center: Children's Health or Cook Children's Medical Center.

Committees Charged

Responsibilities are charged to the NCTTRAC EMS, Stroke, Medical Directors and Emergency Department Operations Committees.

Purpose

In consultation with EMS leaders, local, regional, and state agencies, as well as medical authorities, current national guideline statements and local experts; NCTTRAC will develop triage ~~guidelines, paradigms and protocols~~ that ensure that all patients with a known or suspected stroke are rapidly identified, assessed and triaged as outlined below.¹⁻³ Standardized approaches to prehospital stroke assessment, triage, management and inter-facility documentation as outlined by the NCTTRAC Regional Stroke Plan is encouraged for 9-1-1 call centers and EMS dispatchers.

The prehospital acute stroke triage and transport recommendations serve to direct ~~the regional~~ triage of adult patients ~~(greater than or equal to 18 years of age) with acute stroke (greater than or equal to 18 years of age)~~ to the ~~facility~~ most appropriate ~~facility~~, based ~~upon the duration and severity of symptoms of stroke symptoms~~. In the event EMS encounters an acute stroke patient under the age of 18, contact the closest pediatric facility or Medical Control for guidance. Multi-society endorsed guideline statements and recommendations¹⁻³ as well as consensus of expert opinion (Pediatric Neurologist, Vascular Neurologists, Neuroendovascular Surgeons and Neurosurgeons) based on clinical experience and in conferment with NCTTRAC Medical Directors and Stroke Committee members are outlined in these recommendations. See [Annex A: NCTTRAC Acute Stroke Triage Algorithm](#), from the American Heart Association Mission: Lifeline Stroke Algorithm.³

Regional stakeholders must collaborate to consider local prehospital and health care resources, individual stroke center performance and geographic considerations to create an optimal SSOC and destination protocol to ensure effective and efficient stroke care.¹ Ideal destination plans need to factor in all available data sources including traffic patterns, site-specific performance data and associated clinical outcomes.¹ EMS agencies should implement destination plans based upon both time and severity for patients with suspected LVO within 24 hours of last known well that prioritize a nearby CSC over other centers of lower capability when available within acceptable transport times ([Annex A: NCTTRAC Acute Stroke Triage Algorithm](#)).

In response to the perceived need for greater access to thrombectomy, several of the accrediting agencies for stroke centers introduced a fourth level of certification for facilities that can effectively perform EVT but do not meet all the criteria of a CSC, the Thrombectomy Capable Stroke Center (TSC). The American Stroke Association 2019 SSOC Recommendations and the American Heart Association Mission: Lifeline Stroke outline that the TSC certification is intended for regions of the country that are not readily accessible to CSCs; CSC are the preferred destination for patients with suspected LVO when they are within

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acceptable transport times.¹ If no CSC is available, a TSC should be the preferred destination for these patients from among all nearby PSCs.¹⁻³

In the absence of new data, it is reasonable to adapt the Mission: Lifeline algorithm to the needs of the community.¹⁻³ When several stroke center options exist within similar travel times, EMS should seek care at the facility capable of offering the highest level of stroke care.¹⁻³ No randomized trial data exist to support a definitive recommendation on the acceptable additional time when considering triaging a patient with suspected LVO to a CSC. Therefore, the Mission: Lifeline Stroke Committee felt it was best to err on the side of caution and initially set the total transport time from scene to CSC at 30 minutes. However, patients eligible for IV thrombolysis (0-3 hours from last known well) should be routed to the nearest ASRN or PSC if transport to the nearest CSC or TSC would make them ineligible on arrival due to additional transport time. In suburban and rural setting, prehospital destination plans and inter-facility transport policies should prioritize transport of suspected LVO patients to a facility with well-defined evaluation and stabilization protocols to minimize Door-In-Door-Out (DIDO) times for patients requiring transfer to a higher level of care.³ In rural communities or those where large distances separate stroke centers, additional transport time, including air medical transport, of up to 30 additional minutes may be reasonable.^{1, 3}

Stroke System of Care Modification for MetropolitanUrban, Non-MetropolitanSuburban and FrontierRural Communities

The following is adapted from the American Heart Association Mission: Lifeline Stroke recommendation for Emergency Medical Services for acute stroke triage and routing.¹⁻³ These modifications to transport time thresholds are suggested to help EMS agencies adjust their regional stroke triage protocols according to local resources in collaboration with key stakeholders.³

- A Metropolitanurban SSOC modification is appropriate for a metro region (RUCA code 1)¹⁰ These areas have high population density ($\geq 50,000$ inhabitantsresidents) and abundant healthcare resources, with access to one or more TSC/CSC within 30 min transport time by EMS ground.
- A Non-Metropolitansuburban SSOC modification is appropriate for large residential communities adjacent to an urban core (RUCA codes 2-3). These areas generally have a population density closer to the urban threshold and may have access to both nearby community hospitals as well as suburban or urban advanced stroke centers within a 30–60-minute transport time by EMS air or ground. Patients with suspected LVO should be routed directly to a CSC if the additional transport time past the nearest TSC does not exceed 30 minutes, and the maximum total transport time from scene to CSC does not exceed 45 minutes. If no CSC is within 45 minutes, then EMS should go directly to a TSC if the additional transport time past the nearest PSC or ASRH does not exceed 30 minutes, and the maximum total transport time from scene to TSC does not exceed 45 minutes. If no TSC or CSC exists within 45 minutes total travel time, then EMS should go to the nearest ASRH or PSC.
- A ruralFrontier SSOC modification as appropriate for a very small or nonmetropolitan region (RUCA codes 4-10). These areas generally have low population density ($<50,000$ inhabitantsresidents), limited local general healthcare resources, few nearby ASRH or PSC, and often no TSC/CSC within 60 minutes transport time by EMS ground, although there may be one within 60 minutes by air.

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Patients with suspected LVO should be routed directly to a CSC if the additional transport time past the nearest TSC does not exceed 30 minutes, and the maximum total transport time from scene to CSC does not exceed 60 minutes. If no CSC is within 60 minutes, then EMS should go directly to a TSC if the additional transport time past the nearest PSC or ASRH does not exceed 30 minutes, and the maximum total transport time from scene to TSC does not exceed 60 minutes.

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The COVID-19 pandemic further emphasizes the need for flexible adaptation of prehospital triage and inter-facility transport in response to local and regional factors. Preferential routing of suspected LVO patients to centers with thrombectomy capability may be of even greater importance when in-hospital and inter-facility delays are amplified in conditions such as the COVID-19 pandemic.

Prehospital Triage of Stroke Patients

Basic Level

1. Assess and support ABCs according to UNIVERSAL CARE – ADULT:
 - **A (Airway)**: Airway support and ventilator assistance are recommended for patients with acute stroke who have decreased consciousness or who have compromised airway. Ensure airway patency with suctioning and OPA or NPA, as needed.
 - **B (Breathing)**: Supplemental oxygen should be provided to maintain oxygen saturation > 94% (continuous monitoring).
 - **C (Circulation)**: Evaluate, document, and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines (CPG).
 - **D (Disability)**: Assess and document GCS, pupillary size and reactivity.
 - **E (Exposure/Environmental)**: Assess for evidence of traumatic injury, especially head injury.
2. Positioning/stabilization:
 - Place the patient in a supine position, head of the bed elevated 30 degrees.
 - Cardiac monitoring during transport is recommended. If there is evidence of **shock**, treat according to the **Shock CPG**.
 - If there is **hypoglycemia** (POC glucose < 60 mg/dL), treat according to **Diabetic Emergencies CPG**.
 - If there is **Seizure** activity, treat according to the **Seizure CPG**.

Assessment

History

1. Interview patient, family members and other witnesses to determine symptoms, **time of symptom discovery** and **last known well**, or last time patient without symptoms:
 - Obtain mobile number of next of kin and witnesses.
 - NOTE: For “wake up strokes” the time documented is the time last known well not the time the patient was found.
 - NOTE: **Sudden** onset of **any** of the following suggests the possibility of acute stroke:
 - Numbness or weakness of face, arm and/or leg (especially on one side of the body)
 - Confusion

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- Trouble speaking or understanding language
- Trouble seeing in one or both eyes or double vision
- Trouble walking
- Dizziness
- Loss of balance or coordination
- Sudden onset of severe headache with no known cause (suggests hemorrhagic stroke)
- Any asymmetry of the neurological exam

2. Additional History:

- Obtain patient history including co-morbid conditions.
- **Items to Report:** seizure at onset, head trauma, history of recent surgeries, history of bleeding problems, signs of possible brain hemorrhage [severe headache of sudden onset, nausea/vomiting with headache or loss of consciousness (LOC)].
- Additional history: Past medical history, allergies (iodinated contrast).
- Be alert to common stroke mimics*.
- Determine if patient has pre-existing substantial disability (e.g. need for nursing home care or unable to walk independently).
- Medications – obtain a list of all medications including blood thinners such as direct thrombin inhibitors, factor Xa inhibitors, low molecular weight heparin and unfractionated heparin [i.e. warfarin (Coumadin), rivaroxaban (Xarelto), dabigatran (Pradaxa), apixaban (Eliquis), edoxaban (Savaysa), enoxaparin (Lovenox)].
 - If possible, record when last dose was taken.
- Device/implant history (i.e. left ventricular assist device, pacemaker, valve replacement).

Examination

- Assess and record blood pressure, rate, rhythm, respiratory rate and oxygen saturation.
- Apply a validated and standardized instrument for stroke screening such as FAST (Face, Arm, Speech, Time), Los Angeles Prehospital Stroke Screen, or Cincinnati Prehospital Stroke Scale
- In prehospital patients who screen positive for suspected stroke, apply a standard prehospital stroke severity assessment tool Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE) or Vision, Aphasia, Neglect (VAN) Assessment.

Management

- EMS personnel should begin the initial management of stroke in the field as outlined in this document.
- Prevent aspiration, HOB > 30. Ensure airway patency with suctioning and OPA or NPA, as needed.
- Provide supplemental oxygen if needed to keep oxygen saturation > 94%
- Treatment of hypertension is NOT recommended unless blood pressure \geq 220/120 mmHg.
- Treat hypotension. Evaluate, document and treat signs/symptoms of shock according to the Shock CPG. If possible, obtain EKG during workup, as long as it does not delay transport to appropriate stroke facility.
- Avoid dextrose containing fluids in non-hypoglycemic patients.

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- Perform and document a POC Glucose analysis and treat according to the ASA 2019 Guidelines for Management of Acute Ischemic Stroke.²
 - Hypoglycemia (blood glucose < 60 mg/dL) should be treated in patients suspected of acute ischemic stroke.
- To facilitate expedited stroke workup in the ED, place at least one 18 or 20 gauge IV in the antecubital fossa or forearm (right preferable).
- To facilitate fastest Door-to-Needle and stroke care, if possible collect blood sample to provide receiving facility, however, as long as it does not delay transfer.

System Triage

- Goal for on-scene time, 10-15 minutes or less. Encourage family to go directly to the ED if not transported with the patient.
- See [Annex A: NCTTRAC Acute Stroke Triage Algorithm](#) for the Acute Stroke Triage and Transport Algorithm.
- Call stroke alert, pre-notify receiving facility that a suspected stroke patient is in route so that the appropriate resources may be mobilized before patient arrival.
 - Goal to provide: LKW, stroke severity score, next of kin phone number
- Goal: 30 seconds for EMS to ED triage nurse hand-off.
- Bypass Exclusions:
 - If severe or life-threatening trauma is suspected in addition to stroke, transfer to the appropriate level trauma center.
 - Patients under hospice care or with Medical Orders for Scope of Treatment (MOST) that outlines no emergency measures should go to the nearest appropriate hospital.

**Common ischemic stroke mimics: alcoholic intoxication, cerebral infections, drug overdose, hemorrhagic stroke, hypoglycemia, hyperglycemia, metabolic disorders, atypical migraines, neuropathies (e.g. Bell's palsy), seizure, post-ictal state and tumors.*

X. Pediatric Stroke Triage and Management

Goals

To increase awareness and identification of strokes in the pediatric population (infants and children less than 18 years of age), as well as increase rapid triage and transport to the nearest appropriate pediatric facility.

Committees Charged

Responsibilities are charged to the NCTTRAC EMS, Stroke, Pediatric, Medical Directors and Emergency Department Operations Committees.

Purpose

In consultation with EMS leaders, local, regional, and state agencies, as well as medical authorities, current national guideline statements and local pediatric neurology experts; NCTTRAC will develop triage [guidelines, paradigms and protocols](#) that ensure that all pediatric patients with a known or suspected stroke are rapidly identified, assessed and triaged as outlined below. 1-3,11 The prehospital acute stroke triage and transport recommendations serve to direct the regional triage of pediatric patients with acute stroke to the most appropriate

facility. In the event EMS encounters an acute stroke in a pediatric patient (0 to < 18 years), contact Cook Children's Medical Center or Children's Health Dallas for guidance. ~~These~~**Both regional** pediatric hospitals have a stroke program that meets subspecialty and imaging capability to manage strokes in patients under age 18 years.

Prehospital Triage of Stroke Patients

Basic Level

1. Assess and support ABCs according to UNIVERSAL – PEDIATRIC:
 - **A (Airway):** Airway support and ventilator assistance are recommended for patients with acute stroke who have decreased consciousness or who have compromised airway. Ensure airway patency with suctioning and OPA or NPA, as needed.
 - **B (Breathing):** Supplemental oxygen should be provided to maintain oxygen saturation > 94% (continuous monitoring).
 - **C (Circulation):** Evaluate, document and treat signs/symptoms of shock according to the Shock Clinical Practice Guidelines (CPG).
 - **D (Disability):** Assess and document GCS, pupillary size and reactivity.
 - **E (Exposure/Environmental):** Assess for evidence of traumatic injury, especially head injury.
2. Positioning/stabilization:
 - Place the patient in a supine position, head of the bed elevated 30 degrees.
 - Cardiac monitoring during transport is recommended.
 - If there is evidence of **shock**, treat according to the **Shock CPG**.
 - If there is **hypoglycemia** (POC glucose < 60 mg/dL), treat according to **Diabetic Emergencies CPG**.
 - If there is **Seizures**, treat according to the **Seizure CPG**.

Assessment

History

1. Consider stroke in any pediatric patient with new onset headache and/or sudden new-onset focal neurological symptoms.
 - Causes include:
 - Congenital heart conditions/surgery
 - Sickle Cell Disease and other hematologic conditions, such as those causing abnormal blood clotting
 - Infectious/inflammatory (vasculitis) and non-inflammatory blood vessel conditions
 - Metabolic conditions
 - Drug ingestion like cocaine or methamphetamine
2. Presentation: Seizures at presentation are more common than in the adult population and more common in children under age 2 years.
 - Infants may present with focal weakness, altered level of consciousness and seizures.
 - Children may present with new onset headache, focal neurologic deficit, altered level of consciousness, slurred speech or refusal to speak and seizures.
 - Possible stroke related focal neurologic deficits:
 - Hemiparesis

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- Speech disturbance: aphasia/confusion, dysarthria, slurring of speech
 - Visual disturbance
 - Cranial neuropathies
 - Hemisensory loss
 - Ataxia-loss of balance
 - New onset seizure: < 2 years old have increased risk of stroke presenting as new onset seizure
 - Lateralized tonic-clonic activity
 - Seizure with post-ictal focal deficit that does not resolve quickly
3. Head and eye deviation indicates focal lesion. Interview patient, family members and other witnesses to determine symptoms, **time of symptom discovery** and **last known well (LKW)**, or last time patient without symptoms:
- Obtain mobile number of next of kin and witnesses.
 - NOTE: For “wake up strokes” the time documented is the time last known well not the time the patient was found.
 - NOTE: **Sudden** onset of **any** of the following suggests the possibility of acute stroke:
 - Numbness or weakness of face, arm and/or leg (especially on one side of the body)
 - Confusion
 - Trouble speaking or understanding language
 - Trouble seeing in one or both eyes or double vision
 - Trouble walking
 - Dizziness
 - Loss of balance or coordination
 - Sudden onset of severe headache with no known cause (suggests hemorrhagic stroke)
 - Any asymmetry of the neurological exam
4. Additional History:
- Obtain patient history including co-morbid conditions.
 - **Items to Report:** seizure at onset, head trauma, history of recent surgeries, history of bleeding problems, signs of possible brain hemorrhage [severe headache of sudden onset, nausea/vomiting with headache or loss of consciousness (LOC)].
 - Additional history: Past medical history, allergies (iodinated contrast).
 - Be alert to common stroke mimics*.
 - Determine if patient has pre-existing substantial disability (e.g. unable to walk independently).
 - Medications – obtain a list of all medications including blood thinners such as direct thrombin inhibitors, factor Xa inhibitors, low molecular weight heparin and unfractionated heparin [i.e. warfarin (Coumadin), rivaroxaban (Xarelto), dabigatran (Pradaxa), apixaban (Eliquis), edoxaban (Savaysa), enoxaparin (Lovenox)].
 - If possible, record when last dose was taken.
 - Device/implant history (i.e. left ventricular assist device, pacemaker, valve replacement).

Examination

- Assess and record blood pressure, rate, rhythm, respiratory rate and oxygen saturation.

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- Apply a validated and standardized instrument for stroke screening such as FAST (Face, Arm, Speech, Time), Los Angeles Prehospital Stroke Screen, or Cincinnati Prehospital Stroke Scale.
- In prehospital patients who screen positive for suspected stroke, apply a standard prehospital stroke severity assessment tool Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE) or Vision, Aphasia, Neglect (VAN) Assessment.
- Alternatively, the Pediatric Committee recommends use of the Pediatric NIHSS ([Annex E: Pediatric NIHSS](#)) in the pediatric population.

Management

- EMS personnel should begin the initial management of stroke in the field as outlined in this document.
- Prevent aspiration, HOB > 30. Ensure airway patency with suctioning and OPA or NPA, as needed.
- Provide supplemental oxygen if needed to keep oxygen saturation > 94%.
- Normotension target systolic blood pressure, between 50th and 90th percentile for age.
- **Pediatric Systolic Blood Pressure Parameters:** (chart follows on next page)

Systolic Blood Pressure Parameters- Female

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	111	128	133
5 years	94	113	130	145
6-10 years	96	121	139	145
11-18 years	105	131	151	157
>18 years	110	140	161	168

Systolic Blood Pressure Parameters- Male

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	112	129	134
5 years	95	113	130	136
6-10 years	96	121	139	145
11-18 years	105	140	161	168
>18 years	110	140	161	168

- Treat hypotension. Evaluate, document and treat signs/symptoms of shock according to the Shock CPG. If possible, obtain EKG during workup, as long as it does not delay transport to the appropriate facility.
- Avoid dextrose containing fluids in non-hypoglycemic patients.
- Perform and document a POC Glucose analysis and treat according to the ASA 2019 Guidelines for Management of Acute Ischemic Stroke.
 - Hypoglycemia (blood glucose < 60 mg/dL) should be treated in patients suspected of acute ischemic stroke.
- To facilitate expedited stroke workup in the ED, place 2 peripheral IVs.

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- To facilitate fastest Door-to-Needle and stroke care, if possible collect blood sample to provide receiving facility, however, as long as it does not delay transfer.

System Triage

- Goal for on scene time, 10-15 minutes or less. Encourage family to go directly to the ED if not transported with the patient.
- **Destination decision-making for pediatric patients less than 18 years of age with possible stroke:**
- Transport to or contact Cook Children's Medical Center or Children's Health Dallas for guidance. Call stroke alert, pre-notify receiving facility that a suspected stroke patient is in route so that the appropriate resources may be mobilized before patient arrival.
 - Pre-notification should include: patient's name, phone number for next of kin, LKW, stroke screening tool score and stroke severity screening tool score.
- Goal: 30 seconds for EMS to ED triage nurse hand-off.

**Common ischemic stroke mimics: alcoholic intoxication, cerebral infections, drug overdose, hemorrhagic stroke, hypoglycemia, hyperglycemia, metabolic disorders, atypical migraines, neuropathies (e.g. Bell's palsy), seizure, post-ictal state and tumors.*

XI. Helicopter Activation

Goal

Regional air transport resources may be appropriately utilized in order to reduce delays in providing optimal stroke care.

Committees Charged

Responsibilities are charged to the NCTTRAC Air Medical Committee with input from the EMS and Stroke Committees and guidance from the Medical Directors Committee.

Decision Criteria

Consider Air Medical Transport when;

- Helicopter activation/scene response may be considered when it can reduce transportation time or provide advanced life support.
- ~~WIn rural communities or those where large distances separate stroke centers here,~~ ground transportation ~~may will~~ take greater than 30 minutes, consider air medical transport.

- Patients meeting criteria for helicopter dispatch should be transported to the most ~~appropriate~~ appropriate designated stroke facility.

Pediatric patients should be transported to Cook Children's Medical Center or Children's Health Dallas.

- Refer to [Annex D: Aircraft Utilization and Systems Performance Review](#)

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XII. Facility Diversion

Goal

NCTTRAC stroke facilities will communicate the availability of acute stroke patient care capability status promptly and clearly to the regional EMS and other facilities through EMResource ~~in order~~ to ensure that stroke patients are transported to the closest appropriate stroke facility. Pediatric patients should be transported to Cook Children's Medical Center or Children's Health Dallas.

Committees Charged

Responsibilities charged to the NCTTRAC EMS, Medical Directors and Stroke Committees.

System Objective

- The system objective is to ensure that stroke patients will be transported to the closest appropriate facility.

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- ~~As the result of a cooperative effort between NCTTRAC and the Dallas Fort Worth Hospital Council (DFWHC),~~ there is no longer an official category of "divert" in Trauma Service Area (TSA) E. 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. 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, and facility bed availability.
- NCTTRAC has integrated the use of National Emergency Department Over Crowding Study (NEDOCS) scoring within EMResource for hospitals to help determine emergency department saturation and reporting.
- In addition to their ED saturation, facilities report on the general status of their Emergency Department using the "Open / Advisory-Capability / Advisory-ED Surge / Closed" status in EMResource. Facilities may choose from the following status options:

- Open: The ED is open and accepting patients with no limitations.
- Advisory – Capability: Hospital is advising EMS about a clinical service closure so that EMS can make an informed decision regarding patient destinations. Hospitals can still receive EMS patients. EXAMPLE: "Advisory – Trauma; Stroke; STEMI; Other – see comments".
- Advisory – ED Surge: Hospital is advising EMS about high patient census in the ED that may affect EMS wait times. Hospital can still receive EMS patients. EMS should try to route patients to a different appropriate facility as allowed by their agency protocols.
- Closed: The ED is suffering from an internal disaster/facility emergency that is preventing them from accepting patients. Examples may include fire, flooding,

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power outage, water shortage, structural damage, etc. This facility cannot accept EMS patients. This status option is not to be used for patient surge and should not be used to address internal staffing issues. Comments are mandatory. This status option must be updated once every 4 hours.

- ~~**Advisory:** Hospital is advising EMS about a resource constraint so that EMS can make an informed decision regarding patient destinations. Hospitals can still receive EMS patients. Explanatory comments are mandatory. This status option must be updated once every 4 hours.~~
- ~~**Advisory – Surge:** Hospital is advising EMS about high patient census in the ED that may affect EMS wait times. Hospitals can still receive EMS patients. This status option must be updated once every 4 hours.~~
- ~~**Closed:** The ED is suffering from an internal disaster/facility emergency that is preventing them from accepting patients. Examples may include fire, flooding, power outage, water shortage, structural damage, etc. This facility cannot accept EMS patients. This status option is not to be used for patient surge and should not be used to address internal staffing issues. Comments are mandatory. This status option must be updated once every 2 hours.~~

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- In addition to the statuses outlined above, there are three stroke-specific hospital statuses in EMResource. These statuses and their status options are detailed below.
 - Status: Stroke General Service
 - Reflects the current status of a facility's ability to provide general stroke services. Should be updated as needed. Does not reflect DSHS designation status.
 - Facilities can select from the following status options. Definitions for each status option are provided.
 - Available: This facility can currently provide general stroke services.
 - Unavailable: This facility is temporarily unable to provide general stroke services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - Not Provided: This facility does not provide general stroke services.
 - Status: Stroke NeuroIR
 - Reflects the current status of a facility's ability to provide NeuroIR services. Can only be updated by Level I (Comprehensive) designated facilities. Should be updated as needed.
 - Facilities can select from the following status options. Definitions for each status option are provided.
 - Available: This facility can currently provide NeuroIR services.
 - Unavailable: This facility is temporarily unable to provide NeuroIR services. Comments are mandatory. This status option must be updated at least once every 4 hours.
 - Not Provided: This facility does not provide NeuroIR services.
 - Status: Stroke NeuroSurg
 - Reflects the current status of a facility's ability to provide NeuroSurg services. Can only be updated by Level I (Comprehensive), Level II (Primary), or Level III (Support) designated facilities. Should be updated as needed.
 - Facilities can select from the following status options. Definitions for each status option are provided.
 - Available: This facility can currently provide NeuroSurg services.

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- Unavailable: This facility is temporarily unable to provide NeuroSurg services. Comments are mandatory. This status option must be updated at least once every 4 hours.
- Not Provided: This facility does not provide NeuroSurg services.
- All hospitals and EMS providers have the ability to 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.
- 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.
- A full listing of EMResource status types, policies, and procedures in TSA-E can be found in [Annex F, TSA-E EMResource Policies & Procedures](#).
- A facility relinquishing stroke designation shall provide 30 days advance notice to the DSHS Department, NCTTRAC, EMS providers and facilities which customarily transfer-out and/or transfer-in stroke patients.
- A designated facility must provide written notification of a temporary event or decision impacting the ability of a stroke facility to comply with designation requirements to maintain the current designation status, or to increase the stroke facilities capabilities that affect the region. The notice shall be provided as soon as possible within 24 hours to the EMS providers, healthcare facilities to which it customarily transfers-out and/or transfers-in stroke patients, NCTTRAC and the DSHS Department.
- Designated stroke facilities failing to meet and /or maintain critically essential criteria, as outlined by the State of Texas and the accrediting agency (TJC, DNV-GL, etc.) shall provide notification about such failings within five days to the NCTTRAC, the DSHS office, regional EMS and other healthcare facilities (from which it receives and to which it transfers stroke patients) through EMResource.
- Currently, there is no certification for pediatric stroke facilities. Cook Children's Medical Center and Children's Health Dallas are both regional pediatric hospitals with a stroke program that meets subspecialty and imaging capability to manage strokes in patients under the age of 18 years old.

XIII. INTER-FACILITY TRANSFERS

Goal

The goal for establishing and implementing inter-facility transfer criteria in NCTTRAC is to ensure that stroke patients requiring additional or specialized care and treatment beyond a facility's capability are identified and transferred to the most appropriate facility as quickly as possible. Regional facilities transferring stroke patients to a higher level of care, for the purposes of endovascular revascularization therapy (EVT), an urgent neurosurgical procedure or other urgent treatment, should establish goal Door-In Door-Out (DIDO) time for patients arriving to the emergency department. For patients with LVO in need of transfer for mechanical thrombectomy goal DIDO should be set to meet current ASA guidelines.

Committees Charged

Responsibilities charged to the NCTTRAC Stroke Committee with input from Air Medical, Emergency Department Operations, EMS and Medical Directors Committees.

Purpose

The inter-facility transfer recommendation encourages identification and expedited transfer of stroke patients requiring additional or specialized care and treatment beyond a facility's capability serves to outline best practices that will facilitate the rapid transfer of stroke patients requiring a higher level of care. In the absence of high-quality evidence or guideline statements, consensus of expert opinion based on clinical experience and conferment with vascular neurologists, neurosurgeons and emergency department physicians was obtained. Refer to the latest NCTTRAC Stroke Committee source documents; Inter-Facility Transfer Guideline and Inter-Facility EMS Transport Documentation.

Objectives

- To ensure that all regional facilities caring for stroke patients within the NCTTRAC SSOC develop, adopt and adhere to care protocols that reflect current care guidelines as established by national and international professional organizations along with state/ ~~and~~ federal agencies and laws.
 - Patients identified to have an acute ischemic stroke from a large vessel occlusion (LVO) and are less than 24 hours from last known well should be considered for transfer to a Comprehensive Stroke Center (Level 1) if eligible for EVT.
 - Patients < 18 years identified to have an acute ischemic stroke from a large vessel occlusion (LVO) and are less than 24 hours from last known well consider transfer to Cook Children's Medical Center or Children's Health Dallas.
- To establish well delineated guidelines~~protocols~~ for triage and transportation.
- To outline a goal transfer times for TSA-From NCTTRAC regional facility emergency service:
 - DIDO of 90 minutes for patients with LVO (Emergency)
 - To outline goal transfer times from NCTTRAC regional facility inpatient service:
 - Picture to Door-Out of 90 minutes for patients with LVO (Inpatient)

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Facility Triage from Emergency Department and Inpatient Service

- Prehospital triage as outlined in [Annex A: NCTTRAC Acute Stroke Triage Algorithm](#)
- All facilities caring for stroke patients within the SSOC should develop, adopt and adhere to care protocols that reflect current care guidelines as established by national and international professional organizations and state and federal agencies and laws. Refer to the latest NCTTRAC Stroke Committee source document Inter-Facility Transfer Guideline for further detail.

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- Use of telestroke and teleradiology networks in the evaluation of AIS patients can be effective for correct IV thrombolysis eligibility decision making and may be reasonable for triaging patients with AIS who may be eligible for inter-facility transfer in order to be considered for mechanical thrombectomy.
- Regional facilities that may transfer patients for higher level of care, should establish hand-off, transfer protocols and procedures that ensure safe and efficient patient care within and between facilities.
- Protocols for inter-facility transfer of patients should be established and approved beforehand so that efficient patient transfers can be accomplished at all hours of the day and night.
- Regional facilities that may transfer patients for higher level of care, should establish transfer protocols, terminology (code stroke), agreements and procedures that ensure safe and efficient patient care with EMS agencies that are capable of transportation via ground and air.
- Use of the NCTTRAC Stroke Committee endorsed inter-facility stroke terminology to convey level of stroke emergency is recommended:
 - **Level 1 Stroke** – Patient with an ischemic or hemorrhagic stroke in need of an emergent intervention.
 - **Level 2 Stroke** – Patient with an ischemic or hemorrhagic stroke in need of an urgent transfer for higher level of care but without emergent need of an intervention.
 - **Level 3 Stroke** – Patient with an ischemic or hemorrhagic stroke in need of transfer but without emergent or urgent needs.
 - **Level 1 and level 2 Strokes**, time from **agency notification** to transportation **arrival at the transferring hospital** ≤ 30 minutes. Consider option of lights and sirens.
- **Level 1 stroke**, if ground transportation will take > 30 minutes to reach the receiving facility consider air transport.
- In all patients within 24 hours from last known well that are suspected of having an acute ischemic stroke early identification of possible LVO is recommended.
 - Consider utilizing a stroke severity scale or NIHSS upon arrival to the emergency room to identify possible LVOs or the Pediatric NIHSS in the pediatric population ([Annex E: Pediatric NIHSS](#))
 - Recommended stroke severity scale: Cincinnati Stroke Triage Assessment Tool (CSTAT), Field Assessment Stroke Triage for Emergency Destination (FAST-ED), Rapid Arterial Occlusion Evaluation Scale (RACE) or Vision, Aphasia, Neglect (VAN) Assessment.
- Early Notification of CSC (Level 1) and activation of EMS transport team.
 - Notify CSC (Level 1) on arrival and dispatch EMS transport team (should be on standby for transfer prior to imaging), if LVO screen is positive and patient meets established criteria for transfer.
- It may be useful for primary stroke centers and other healthcare facilities that provide initial emergency care, including administration of IV thrombolysis, to develop the capability of performing emergency noninvasive intracranial vascular imaging to most appropriately select patients for transfer for endovascular intervention and to reduce the time to mechanical thrombectomy.
 - **0-6 hours** from last known well: EVT eligibility will be based in part on NIHSS, CT ASPECT score and demonstration of a LVO on CT angiogram of the head and neck.

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- **6-24 hours** from last known well: EVT eligibility will be based in part on NIHSS, CT ASPECT score, demonstration of LVO on CT angiogram of head and neck and target mismatch profile on CT perfusion, DW-MRI or MRI perfusion (performed either at transferring or receiving facility).
- **0-24 hours** from last known well in a **pediatric patient**: MRI is ideally used. MRI RAPID and MRI with arterial spin labeling are just a few of the tools considered for EVT eligibility. EVT in pediatric patients (0-<18 years) should only be considered at a pediatric center with an established stroke program such as Cook Children's Medical Center or Children's Health Dallas.
- Regional facilities triaging stroke patients suspected of having an intracranial LVO (positive stroke severity screen) should consider concurrent vascular imaging with noncontrast head CT or MRI/MRA in patients < 18 years of age (contact Cook Children's Medical Center or Children's Health Dallas for guidance).
 - **6-24 hours** from last known well consider CT perfusion, DW-MRI or MRI perfusion if capable.
- In patients with AIS who awake with stroke symptoms or have unclear time of onset > 4.5 hours from last known well or at baseline state, MRI to identify diffusion-positive FLAIR-negative lesions can be useful for selecting those who can benefit from IV alteplase administration within 4.5 hours of stroke symptom recognition.
- For patients who otherwise meet criteria for EVT, a noninvasive intracranial vascular study is recommended during the initial imaging evaluation of the acute stroke patient, but should not delay IV thrombolysis if indicated.
 - For patients who qualify for IV thrombolysis according to guidelines from professional medical societies, initiating IV thrombolysis before noninvasive vascular imaging is recommended for patients who have not had noninvasive vascular imaging as part of their initial imaging assessment for stroke. Noninvasive intracranial vascular imaging should then be obtained as quickly as possible or at the receiving facility if intracranial vascular imaging will add delay to transfer.
 - For pediatric patients (0 to < 18 years) giving IV alteplase prior to noninvasive vascular imaging is not recommended. Contact Cook Children's Medical Center or Children's Health Dallas for guidance.
- Per ASA guidelines: for patients who otherwise meet criteria for EVT, it is reasonable to proceed with CTA if indicated in patients with suspected LVO before obtaining a serum creatinine concentration in patients without a history of renal impairment.
 - Not applicable for pediatric patients.
- If **LVO is identified** on imaging: immediate transfer with goal metrics as outlined above.
- If **no LVO is identified** on imaging: notify receiving facility and transportation crew if transfer is cancelled.
- Patients with large territorial cerebral and cerebellar infarctions are at high risk for developing brain swelling and herniation. Consideration should be given to transfer to a higher level of care if neurocritical care and neurosurgical needs cannot be met at the transferring facility.
- All related documents should accompany all stroke patient transfers:
 - Diagnostics scans and reports if available
 - Hospital records
 - Medication Administration Record
- Untimely transfers may be reported to the NCTTRAC SPI Committee for review.

EMS Transportation for Inter-Facility Care

- Use of the NCTTRAC Stroke Committee endorsed inter-facility stroke terminology to convey level of stroke emergency is recommended:
 - **Level 1 Stroke** – Patient with an ischemic or hemorrhagic stroke in need of an emergent intervention.
 - **Level 2 Stroke** – Patient with an ischemic or hemorrhagic stroke in need of an urgent transfer for higher level of care but without emergent need of an intervention.
 - **Level 3 Stroke** – Patient with an ischemic or hemorrhagic stroke in need of transfer but without emergent or urgent needs.
 - **Level 1 and level 2 Strokes**, time from **agency notification** to transportation **arrival at the transferring hospital** ≤ 30 minutes. Consider option of lights and sirens.
- **Level 1 stroke**, if ground transportation will take > 30 minutes to reach the receiving facility consider air transport.
- NCTTRAC Pediatric Committee recommends that a pediatric stroke patient or patient with findings that meet NCTTRAC stroke guidelines (age less than 18) is an emergent transfer despite Level terminology and should be discussed with tertiary pediatric medical center and transferred, as such.
- Refer to the latest NCTTRAC Stroke Committee endorsed Inter-Facility EMS Transport Documentation.
- Stroke Patient Transport: Stroke patients in NCTTRAC are transported according to patient need, availability of air transport resources, and environmental conditions.
 - Pediatric patients < 18 years old, contact Cook Children's Medical Center or Children's Health Dallas for guidance.
- Ground transport capable of providing appropriate level of care should be utilized based on patient needs. For instance, transportation via ALS or MICU ground ambulance should be considered for patients receiving IV thrombolysis.
- All related documents should accompany all stroke patient transfers:
 - Diagnostics scans and reports, if available
 - Hospital records
 - Medication Administration Record
- Transport teams should follow established transfer protocols and procedures to ensure safe and efficient patient care with the mindset that "time is brain". **Because time from onset of symptoms to treatment has such a powerful impact on outcomes, there should be the same level of urgency during inter-facility transfers as there in the prehospital setting.**

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Management

- Prevent aspiration, HOB ≥ 30 . Ensure airway patency with suctioning and OPA or NPA, as needed.
- Transportation team will monitor vitals and perform neuro assessments, such as an NIHSS/Neuro Assessment, at a minimum of every 15 minutes.
- Supplemental oxygen to keep oxygen saturation $> 94\%$, maintain continuous monitoring.

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- Monitor and treat blood pressure using appropriate parameters (post IV thrombolysis, ICH or SAH). See [Annex B: 2019 ASA Blood Pressure Recommendation](#).
 - Adult patients (≥ 18 years-old) blood pressure goal:** patients receiving IV thrombolysis infusion BP $<180/105$; patients not eligible for IV thrombolysis BP $<220/120$ mmHg may be reasonable.
 - Pediatric patients (0- < 18 years-old) systolic blood pressure parameters:**

Systolic Blood Pressure Parameters- Female

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	111	128	133
5 years	94	113	130	145
6-10 years	96	121	139	145
11-18 years	105	131	151	157
>18 years	110	140	161	168

Systolic Blood Pressure Parameters- Male

Age	50%	95%	>15% above 95%	>20% above 95%
1-4 years	90	112	129	134
5 years	95	113	130	136
6-10 years	96	121	139	145
11-18 years	105	140	161	168
>18 years	110	140	161	168

- Treat hypotension. Evaluate, document, and treat signs/symptoms of shock according to the Shock CPG.
- Avoid dextrose containing fluids in non-hypoglycemic patients.
- If IV thrombolysis infusion completes during transport, the remaining drug within the tubing should be infused using an infusion of normal saline at the same rate as the thrombolysis infusion. Do not change the original set volume to be infused (VTBI) on the pump. When the VTBI alarms as complete, this will be the IV thrombolysis infusion completion time.
- Monitor for signs of orolingual angioedema. Contact Medical Control should any signs or symptoms develop. See [Annex C: 2019 ASA Angioedema Recommendation](#) for management of orolingual angioedema associated with IV thrombolysis.
- Monitor for signs and symptoms of neurological deterioration. Worsening of neurological exam (NIHSS worsening of ≥ 4 points) could represent hemorrhagic conversion of the stroke or worsening ischemia. Contact Medical Control for guidance and send prenotification to the receiving facility.
 - Pediatric patients < 18 years old, contact Cook Children's Medical Center or Children's Health Dallas for guidance.

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XIV. SYSTEM PERFORMANCE IMPROVEMENT

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In adherence to the ASA 2019 Update to AIS Guidelines, NCTTRAC participating organizations must have multicomponent QI initiatives, which include ED education and multidisciplinary teams with input from neurological experts, aimed at improving stroke care.

The NCTTRAC Stroke Committee will organize a multidisciplinary QI Work Group to review and monitor stroke care quality benchmarks, indicators, evidence-based practices, and outcomes within the region. Stroke facility participation in a stroke data registry is recommended to promote consistent adherence to current treatment guidelines, to allow continuous QI, and to improve patient outcomes. Additionally, integration of prehospital records including National EMS Information System (NEMISIS) data elements into stroke registries should occur to enhance total system performance. It is recognized that continuous QI processes, implemented by each component of a SSOC and the NCTTRAC system as a whole, can be useful in improving patient care and outcomes.

The NCTTRAC Stroke Committee strongly encourages standardized data collection and reporting from healthcare entities and data sharing between them consistent with the exceptions to privacy laws governing routine healthcare operations and QI.¹²⁻¹⁴ These systems should include elements from the provision of stroke care from stroke detection and 911 activation through hospital discharge.³ Outcomes should be used to assess effectiveness of the systems of care.

Goals

As outlined by the ASA 2019 Update to AIS Guidelines, multicomponent QI programs to improve stroke care demonstrate clear utility in safely increasing thrombolysis use in the community hospital setting. Establishing and monitoring target time goals can be beneficial to monitor and enhance system performance. As such, the NCTTRAC Stroke Committee established the goal to monitor and evaluate the performance of the NCTTRAC stroke system and the impact of the system development. NCTTRAC regional facilities participating in the stroke system of care must have a separate performance improvement system for stroke patients. Continuous QI processes, implemented by the stroke system as a whole will provide a means of improving patient care and outcomes.

Committees Charged

Responsibilities are charged to the NCTTRAC Stroke Committee.

Objectives

- To provide a multidisciplinary forum for stroke care providers to evaluate stroke patient outcomes from a system perspective and to assure the optimal delivery of stroke care.
- To facilitate the sharing of information, knowledge and scientific data.
- To provide a process for medical oversight of regional stroke operations.
- Establish regional quality measures:
 - **EMS Prenotification Triage Time**
 - **Use of Prehospital Stroke Screening and Stroke Severity Tools**
 - **Door-to-Needle**
 - **DIDO**
 - **Door-to-Device**

Discussion

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~~In order to~~To assess the impact of regional stroke development, system performance must be monitored and evaluated from an outcomes perspective. A plan for the evaluation of operations is needed to determine if system developments are meeting the stated goals.

Directions – The direction for the development of a NCTTRAC Regional QI program is derived from the Texas EMS Rules: 25 TAC: Rule §157.123 (c)(II)(H), Regional EMS Trauma Systems (effective September 1, 2000) requires “a regional performance improvement (PI) program is developed and implemented.” Additional support and direction for regional performance improvement program development specific to stroke facility designation can be found in 25 TAC: Rule §157.133 (t)(3)(M), Requirements for Stroke Facility Designation (effective August 30, 2009).

Authority - The authority and responsibility for regional QI rests with the Regional Advisory Council. This will be accomplished in a comprehensive, integrated manner through the work of the Medical Directors Committee as well as the Stroke and EMS Committees.

- Scope & Process – The Stroke Committee, Stroke Committee System Performance Improvement (SPI) subgroup (within the Stroke Committee) and the Medical Directors Committee serve as the oversight committee for regional performance improvement. Referrals for follow-up and feedback to and from the EMS Committee and Providers ensure system-wide multidisciplinary performance improvement.
- The Stroke Committee SPI subgroup will comprise the Stroke Committee Chair, Chair Elect, Medical Director and two elected or appointed members of the Stroke Committee to review SPI referrals, issues or requests in a closed session.
- Specific SPI activities may include the review of SPI events that fall outside the Stroke Committee’s approved SPI indicators.
- The Stroke Committee SPI subgroup, in consultation with the Stroke Committee, will determine the type of data and manner of collection, set the agenda for the PI process within the regularly-scheduled meetings of the committee, and identify the events and indicators to be evaluated and monitored. Indicator identification will be based on high risk, high volume and problem prone parameters. Indicators will be objective, measurable markers that reflect stroke resources, procedural/patient care techniques and/or systems/process outcomes.
- Occurrences will be evaluated from a system outcomes perspective and sentinel events will be evaluated on a case by case basis. Activities and educational offerings will be presented to address knowledge deficits and case presentations or other appropriate mediums will be designed to address systems and behavioral problems. All actions will focus on the opportunity to improve patient care and systems operation. The results from committee activities will be summarized and communicated to the RAC membership. Problems identified that require further action will be shared with the persons and entities involved for follow-up and loop closure. Committee follow-up and outcome reports will be communicated on a standard format.
- The functions and effectiveness of NCTTRAC QI process will be evaluated on an annual basis in conjunction with the annual evaluation of the NCTTRAC Bylaws. All PI activities and committee proceedings are strictly confidential. Individuals involved in performance management activities will not be asked to review cases involving their facility or affiliated healthcare system.
- Stroke Centers will provide individual follow-up on acute stroke transports directly to the EMS agency transporting the patient.

Data Collection

- Participation in the RDC is recommended to promote consistent adherence to current treatment guidelines, to allow continuous regional QI and to improve patient outcomes.
- Data will be shared with EMS by each certified/designated facility. Data sharing may occur within NCTTRAC.
- Summary reports are submitted for each NCTTRAC facility and EMS provider.
- Sentinel events will be used to focus attention on specific situations/occurrences of major significance to patient care outcomes and be reviewed by the Stroke Committee SPI subgroup.
- Performance Improvement data is reviewed and updated annually.

Confidentiality - All information and materials provided and/or presented during closed SPI meetings are strictly confidential. Closed Stroke Committee SPI subgroup meeting participants will sign a *NCTTRAC SPI Confidentiality Agreement* prior to the start of each closed meeting.

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XV.

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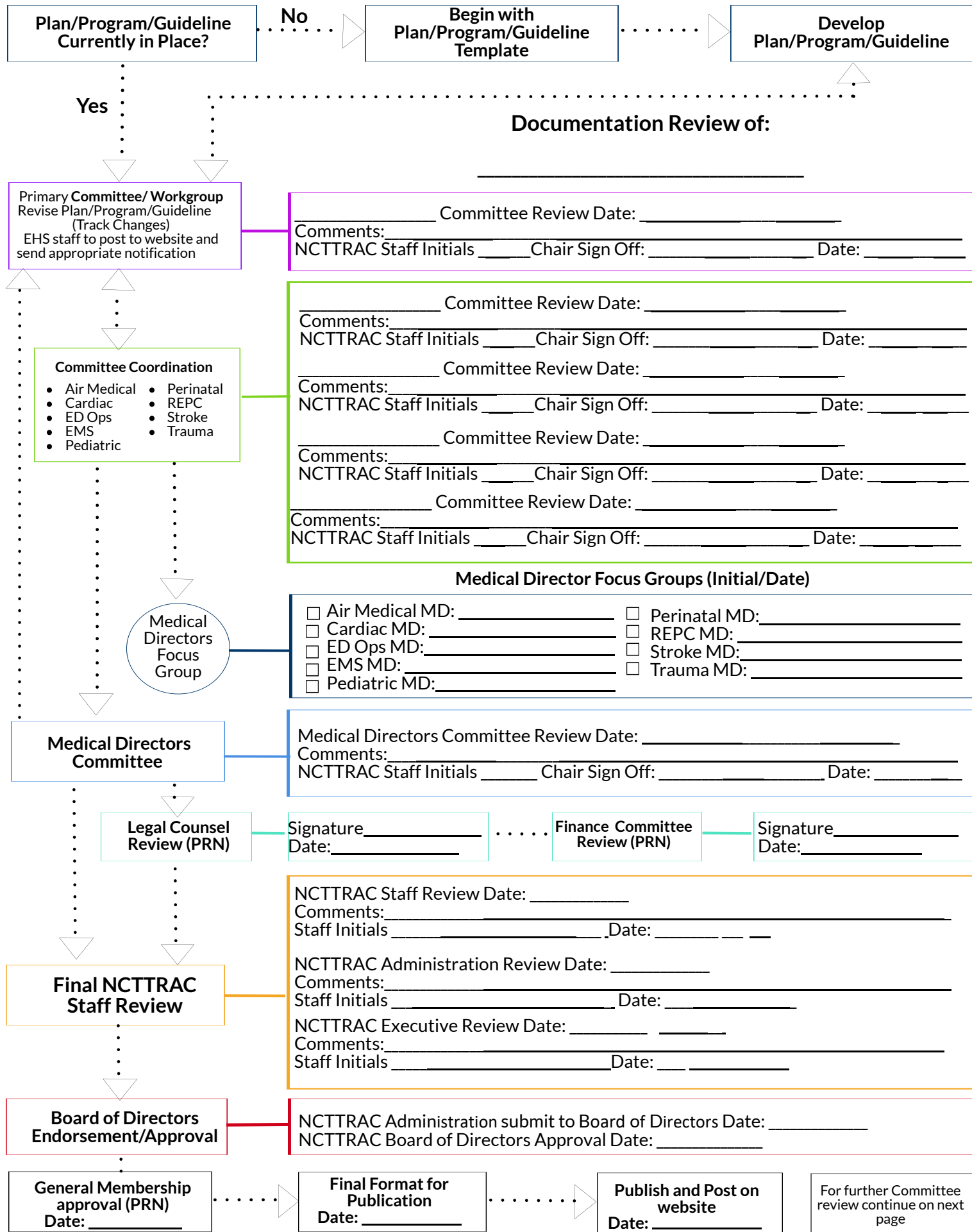
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NORTH CENTRAL TEXAS
TRAUMA REGIONAL ADVISORY COUNCIL

Coordination Flowchart



Committees Continued

_____ Committee Review Date: _____

Comments: _____

NCTTRAC Staff Initials _____ Chair Sign Off: _____ Date: _____

_____ Committee Review Date: _____

Comments: _____

NCTTRAC Staff Initials _____ Chair Sign Off: _____ Date: _____

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