NORTH CENTRAL TEXAS
TRAUMA REGIONAL ADVISORY COUNCIL

# 2011 Regional Acute Coronary Syndrome (ACS) Plan

**Effective Date**
**6/30/11**
**General Membership Approval:**

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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.

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# 2011 REGIONAL ACS PLAN

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# I. INTRODUCTION

## Mission

The mission of the North Central Texas Trauma Regional Advisory Council (NCTTRAC) Acute Coronary Syndrome (ACS) Plan is to create a system that reduces the burden of heart attack care within the community through an organizational effort of prevention and acute care. Reduction in heart disease morbidity and mortality will be achieved by developing and maintaining integrated quality processes in patient care and education.

## Vision

NCTTRAC will provide leadership in regionalized Acute Coronary Syndrome treatment by creating a broad stakeholder coalition with the responsibility and resources to develop, operate, evaluate and integrate a cardiac system of care.

## Organization

One of the North Central Texas Regional Advisory Council (NCTTRAC) goals is to provide the infrastructure and leadership necessary to sustain an ACS treatment and transfer system within the designated nineteen county regions and to improve the level of care provided to persons living or traveling through this region. For Map See Appendix A. Together, through the work of its standing committees, NCTTRAC member organizations (hospitals, first responder organizations, EMS providers, air medical providers, emergency management, and public health) work cooperatively to ensure that quality care is provided to ACS victims by pre-hospital and hospital professionals. The NCTTRAC will provide cardiac public awareness and education to health care providers in each of the nineteen counties.

## Regional Plan

This plan has been developed in accordance with generally accepted ACS guidelines and procedures for implementation of a comprehensive Emergency Medical Services (EMS) and ACS System plan. This plan does not establish a legal standard of care, but rather is intended as an aid to decision-making in ACS patient care scenarios. It is not intended to supersede the physician's prerogative to order treatment.

# II.ACS SYSTEM OF CARE GOALS

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The purpose of NCTTRAC Cardiac Subcommittee shall be to facilitate the development, implementation, and operation of a comprehensive ACS system based on accepted standards of care to decrease morbidity and mortality related to ACS. NCTTRAC will solicit participation from health care facilities, organizations, entities and professional societies involved in health care. NCTTRAC will encourage multi-community participation in providing cardiac care, work to promote improvement of facilities and services, and cooperate with all member entities, agencies and organizations in the establishment of an efficient system of ACS care. NCTTRAC shall develop a plan for a regional comprehensive ACS system that meets the requirements of the Texas Department of State Health Services (DSHS).

- Identify and integrate resources to foster commitment and cooperation in developing a cardiac system of care.
- Identify leverage tactics to promote EMS and hospital provider participation.
- Establish system coordination relating to access, protocols/procedures and referrals. These structures will establish continuity and uniformity of care among the providers of cardiac care.
- Promote internal communication as the mechanism for system coordination which will include the EMS providers, hospitals and members of the NCTTRAC Cardiac Subcommittee.
- Create uniform cardiac system standards and implement continuous quality improvement programs that address patients' needs, outcomes and opportunities for improvement.
- Identify each facility's capability to treat cardiac patients within NCTTRAC standards.

## III. RECOGNITION OF FACILITES

### Goal

Cardiac Sub Committee with a list of their capabilities in the care of the ACS patient. This information will include the following:

***Defined NCTTRAC Capabilities:***

- ***Level I Cardiac Center-***the primary distinction of a Level I cardiac center is the ability to provide primary percutaneous coronary intervention (PCI) 24 hours/day, 7 days per week, cardiovascular surgery, and therapeutic hypothermia.

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- ***Level II Cardiac Center-*** the primary distinction of a Level II cardiac center is the ability to provide primary percutaneous coronary intervention (PCI) 24 hours/day, 7 days per week
- ***Level III Cardiac Center-***the primary distinction of a Level III cardiac center is the ability to provide rapid assessment and treatment of acute coronary symptoms. Patients may be transferred to a Level I or II center for PCI or treated with fibrinolytics, depending on transport times and transfer agreements.

| **Participation Criteria** | **Level I Cardiac Center** | **Level II Cardiac Center** | **Level III Cardiac Center** |
|---|---|---|---|
| **Organization and Infrastructure** | | | |
| Cardiac Service Director-Cardiologist | X | | |
| Cardiac Service Director-Cardiologist, Physician, or Mid-level | | X | X |
| Cardiac Care Coordinator as defined by the hospital | X | X | X |
| Cardiac Cath Lab Team as defined by the hospital | X | X | |
| Cardiac Cath Lab Team activation policy including pre-hospital activation | X | X | |
| Cardiac arrest protocols including initiation of therapeutic hypothermia in post-arrest patients | X | | |
| Cardiac management protocols including ED triage for walk ins | X | X | X |
| Transfer agreements and criteria for transfer for those patients require a higher level of care (including air vs. ground transport) | X | X | X |
| Cardiovascular injury prevention/public education | X | X | X |

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| | | | |
|---|---|---|---|
| programs | | | |
| Participation in relevant local, state or national data base | X | X | X |
| Cardiac data collection | X | X | X |
| Hospital Cardiac QI activities | X | X | X |
| Participate in NCTTRAC QI programs including EMS and all levels of cardiac centers | X | X | X |
| Collaborates with local EMS providers in process development and cardiac education. | X | X | X |
| No divert policy (unless internal disaster) and a backup plan in place for situations when the hospital's cardiac care capabilities are temporarily unavailable | X | X | X |
| **Staffing** | | | |
| Physicians in the Emergency Department are board certified or board eligible, or have demonstrated competencies in cardiac care | X | X | X |
| | | | |
| Emergency Department nurses have current ACLS training | X | X | X |
| Interventional Cardiologist available within 30 minutes of Cardiac Cath Lab activation | X | X | |
| Cardiac Cath Lab team available within 30 minutes of Cardiac Cath Lab activation | X | X | |

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| **Resources and capabilities (including equipment and staffing) to provide the following services** | | | |
|---|---|---|---|
| Cardiac monitoring capability | X | X | X |
| Intensive Care Unit | X | X | X (unless drip and ship) |
| Cardiac surgery capability | X | | |
| Cardiac surgery or transfer agreement to facility with CV surgery | | X | |
| Diagnostic and Interventional Cardiac Cath Lab 24/7 | X | X | |
| Able to provide fibrinolytic therapy 24/7 | X | X | X |
| Resuscitation and stabilization of cardiac patients before transfer to higher level of care | X | X | X |
| Referral to Cardiac Rehabilitation program | X | X | X |
| **Performance/Quality Measures** | | | |
| Door to balloon within 90 minutes | X | X | |
| Fibrinolytic therapy within 30 minutes | X | X | X |

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## Notification Requirements

NCTTRAC Leveled Cardiac Centers failing to meet and/or maintain critical essential criteria outlined in the above chart shall provide notification within five days to NCTTRAC, EMS providers and the healthcare facilities from which it receives cardiac transfers.

If the facility changes its Cardiac Center level, it shall provide at least 30 days notice to the NCTTRAC offices.

# IV. Community Awareness and Prevention

## Goal

For NCTTRAC participating hospitals to collaborate with EMS providers to educate the public on heart disease risk factors and behavior modifications, including the importance of activation of local 911 services. Education will serve to increase the awareness of the role EMS plays in early recognition and treatment of the ACS patient, including pre-hospital activation of the Cardiac Cath Lab.

NCTTRAC participating hospitals are encouraged to assist EMS with ongoing education as it relates to the care of the ACS patient.

## Committee Charge

Responsibilities charged to the NCTTRAC Public Education/Injury Prevention Committee. (Pending S.D. Committee)

# V. SYSTEM ACCESS

## Goal

The Goal for System Access within TSA-E is two-fold. First, rapid access to notification of the need for emergency Cardiac care at any location within TSA-E must be available to all persons in the Region. Second, Emergency Medical Services (EMS) must be rapidly available to provide quality health care to injured or ill persons in each NCTRAC Community. In portions of this Region, First Responder Organizations (FRO) may provide initial treatment pending EMS arrival.

## Committee Charge

Responsibilities charged to the NCTTRAC Emergency Medical Services Committee.

## Objective

One of the primary elements of an EMS/Cardiac system is to provide easy and rapid 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.

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Routing is based on telephone exchange area, not municipal boundaries. Automatic Number Identification (ANI) and Automatic Location Identification (ALI) should be available. Alternative Routing allowing 911 calls to be routed to a designated alternative location is in effect. Most areas route their calls to the county 911 in case of overload or failure.

When calls come into a 911 center, the communication system insures that the call taker has the appropriate written protocols as well as proper training. The caller must never have to talk to more than two telecommunications personnel. The call transfer equipment used in transferring these calls must take no longer than ten seconds and the equipment must have a history of being 95% reliable.

# VI. COMMUNICATIONS

## Goal

All 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. EMS must notify the receiving cardiac facility of incoming acute cardiac patient transports in order for the facility to activate their cardiac protocol.

## Committee Charge

Responsibilities charged to the NCTTRAC Emergency Medical Services (EMS) Committee and NCTTRAC Systems Development Committee.

## Objective

The system of communication is an integral part of a regional plan for the care of cardiac 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.

EMS communication center(s) should be staffed with fully trained telecommunicators. The ideal telecommunicator 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.

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

# VII. MEDICAL OVERSIGHT

## Goal

The development of a Regional System of Cardiac care requires the active participation of qualified physician providers. All of the physicians should not only be clinically qualified in their area of clinical practice, but should have expertise and competence in the treatment of cardiac patients. The regional cardiac system of care will be developed under the direction of representatives of NCTTRAC medical staff throughout the region who will ensure appropriate medical oversight of all pre-hospital care providers through a Quality Improvement (QI) process.

## Committee Charge

Responsibilities charged to the NCTTRAC Systems Development Committee and Physicians Advisory Group.

## Objective

All EMS providers must have the benefit of medical oversight. This is true regardless of the level of services provided. Such oversight is necessary to help ensure that EMS is delivering appropriate and quality services that best meet the needs of the community.

# VIII. REGIONAL PRE-HOSPITAL MEDICAL CONTROL

## Goal

The regional cardiac plan will identify and educate regional medical control resources, standardize treatment protocols, and analyze accessibility of medical control resources. Additionally, it will identify and educate NCTTRAC EMS providers and sources of on-line and off-line medical control.

## Committee Charge

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Responsibilities charged to the NCTTRAC Emergency Medical Services Committee, Emergency Medical Services Physicians Advisory Group, Systems Development Committee, and Physician's Advisory Group.

## Objectives

Currently, all EMS Providers have a medical director for their service. Those medical directors have signed a form verifying that they are following the minimum NCTTRAC guidelines for the treatment of patients within their area. These forms are updated and maintained in the NCTTRAC office.

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

Physician Involvement in Regional Plan Development - The Physician Advisory Group meets on a periodic basis to conduct its usual business and to review and approve regional planning components, policies, and protocols 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. Any interested NCTTRAC physician is invited to attend these meetings.

Medical Direction of Pre-hospital Care Providers - In accordance with DSHS guidelines, all NCTTRAC pre-hospital care providers function under medical control through a delegated physician practice. Regional EMS protocols are printed and distributed to all EMS providers for incorporation into local protocols. Periodic reviews and updates are completed and upon approval are distributed as necessary. These protocols serve as a baseline and individual Medical Directors may adapt for their local community.

Regional Quality Improvement - The Physician Advisory Group meets periodically to conduct its usual business and to carry out regional quality improvement activities. (Please see System QI section for more details).

# IX. PRE-HOSPITAL TRIAGE CRITERIA

## Goal

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Patients will be identified, rapidly and accurately assessed, and will be transported to the nearest appropriate NCTTRAC cardiac facility.

### Committee Charge

Responsibilities charged to the NCTTRAC Emergency Medical Services Committee, Emergency Medical Services Physicians Advisory Group, AND Systems Development Committee.

### Purpose

The pre-hospital triage plan serves to direct the regional triage of adult cardiac patients to the facility most appropriate. This plan instructs EMS to transport patients with a STEMI to a level I or II cardiac center, if available, within the region (or adjacent region, if a higher level cardiac center in the adjacent region is closer than a lower level cardiac facility in the region). In making this determination, distance and time parameters should be considered and there should be a minimal delay caused by taking a patient to the next highest level of cardiac care. (See appendix B)

In order to ensure the prompt availability of medical resources needed for optimal patient care, each patient will be assessed for the onset of cardiac symptoms, abnormal vital signs, and concurrent disease/predisposing factors.

### System Triage

- Cardiac patients are classified based on cardiac symptoms
    - Level I Cardiac – STEMI, qualifying left bundle branch (LBB) or return of spontaneous circulation (ROSC) status post cardiac arrest with initiation and/or evaluation of therapeutic hypothermia
    - Level II Cardiac – STEMI, qualifying left bundle branch
    - Level III Cardiac – ACS without identified STEMI or qualifying LBB
- NCTTRAC Cardiac Center bypass may occur for the following reasons:
    1) Patient preference
    2) Physician Preference
    3) Paramedic Discretion

## X. HELICOPTER ACTIVATION

### Goal

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

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### Committee Charge

Responsibilities charged to the NCTTRAC Air Medical Committee, Emergency Medical Services Committee, Emergency Medical Services Physicians Advisory Group, and Systems Development Committee.

### Decision Criteria

- Helicopter activation/scene response may be considered when it can reduce transportation time or provide advanced life support.
- Patients meeting criteria for helicopter dispatch should be transported to the nearest Level I or Level II Cardiac Center.

## XI.FACILITY DIVERSION

### Goal

NCTTRAC cardiac facilities will communicate “facility diversion” status promptly and clearly to regional EMS and other facilities through E*TRACS in order to ensure that cardiac patients are transported to the nearest appropriate cardiac facility.

### Committee Charge

Responsibilities charged to the NCTTRAC Emergency Medical Services Committee, Emergency Medical Services Physicians Advisory Group, Systems Development Committee, and Physician’s Advisory Group.

### System Objective

- To ensure that cardiac patients will be transported to the nearest appropriate NCTTRAC cardiac facility.

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# XII. FACILITY TRIAGE CRITERIA

## Goal

The goal of establishing and implementing facility criteria in NCTTRAC is to ensure that all regional hospitals use standard definitions to classify cardiac patients in order to ensure uniform patient reporting and facilitate inter-hospital transfer decisions. Patients must be rapidly identified and transported to the appropriate level of care based on clinical need so that time-dependent interventions may be performed.

Triage is the classification of patients according to medical need. Reduction of cardiac morbidity requires emergent evaluation and treatment, requiring pre-hospital and emergency personnel to make rapid triage decisions based on established system standards. (See appendix C)

## Committee Charge

Responsibilities charged to the NCTTRAC Systems Development Committee and Physician's Advisory Group.

## Objectives

The objective set forth is to ensure that each cardiac patient is rapidly and accurately assessed and transferred to the nearest appropriate NCTTRAC cardiac facility.

- To ensure the prompt availability of medical resources needed for optimal patient care at the receiving cardiac facility.
- To develop and implement a system of standardized cardiac receiving facility classification definitions.

# XIII. INTER-HOSPITAL TRANSFERS

## Goal

The goal for establishing and implementing inter-hospital transfer criteria in NCTTRAC is to ensure that those cardiac patients requiring additional or specialized care and treatment beyond a facility's capability are identified and transferred to the most appropriate facility as soon as possible.

## Committee Charge

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Responsibilities charged to NCTTRAC Systems Development Committee and Cardiac Physician's Advisory Group.

### Objectives

- To ensure that all regional hospitals make transfer decisions based on the ACC/AHA guidelines (see next page below)
- To identify cardiac treatment and specialty facilities within NCTTRAC.

## XIV. SYSTEM PERFORMANCE IMPROVEMENT

Participation in the NCTTRAC, must have a performance improvement system for cardiac patients.

### Goals

The goals for systems performance improvement (SPI) in NCTTRAC are to establish a method for monitoring and evaluating system performance over time and to assess the impact of cardiac system development.

### Committee Charge

Responsibilities charged to NCTTRAC Performance Improvement Committee and Systems Development Committee.

### Objectives

- To identify regional cardiac data filters which reflect evidence based practices of the processes and outcomes of the NCTTRAC cardiac system of care
- To provide a multidisciplinary forum for cardiac care providers to evaluate cardiac patient outcomes from a system perspective and to assure the optimal delivery of cardiac care
- To facilitate the sharing of information and performance data
- To provide a process for medical oversight of regional cardiac operations

### Discussion

- In order to assess the impact of regional cardiac 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 is meeting its stated goals.
- Directions – The direction for the development of a NCTTRAC Regional QI program is derived from the Texas EMS Rules: Section 157.124 Regional EMS Trauma Systems:

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(2.K) of the EMS Rules (effective 2/17/92) requires the development of a "performance management program that evaluates outcome from a system perspective".

- Authority - The authority and responsibility for regional performance improvement rests with the Regional Advisory Council. This will be accomplished in a comprehensive, integrated manner through the work of the Physician Advisory, Cardiac, and Emergency Medical Services (EMS) committee.
- Scope & Process - The Cardiac Committee with System Performance Improvement Committee, the Physician Advisory Committee serves as the oversight committee for regional performance improvement. Referrals for follow-up and feedback to & from the Emergency Medical Services (EMS) committee and providers ensure system-wide, multidisciplinary performance improvement.
  - The System Performance Improvement Committee, in consultation with the Cardiac Committee, will determine the type of data and manner of collection, set the agenda for the performance improvement (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 cardiac resources, procedural/patient care techniques, and or systems/process outcomes.
  - Occurrences will be evaluated from a system, outcomes prospective 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 NCTTRAC 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 (please see attached).
  - The functions and effectiveness of NCTTRAC performance improvement 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 in which they are professionally involved, but will be given the opportunity to participate in the review process.
  - Hospitals will provide individual follow-up on acute cardiac transports directly to the EMS agency transporting the patient.

- Data Collection –
  - PI data will be collected by the Cardiac Coordinators.
  - Summary reports are submitted for each NCTTRAC hospital facility and EMS provider.
  - Sentinel events will be used to focus attention on specific situations/occurrences of major significance to patient care outcomes to be reviewed by System Performance Improvement Committee

- Confidentiality - All information and materials provided and/or presented during PI meetings are strictly confidential. Refer to SPI committee for additional information.

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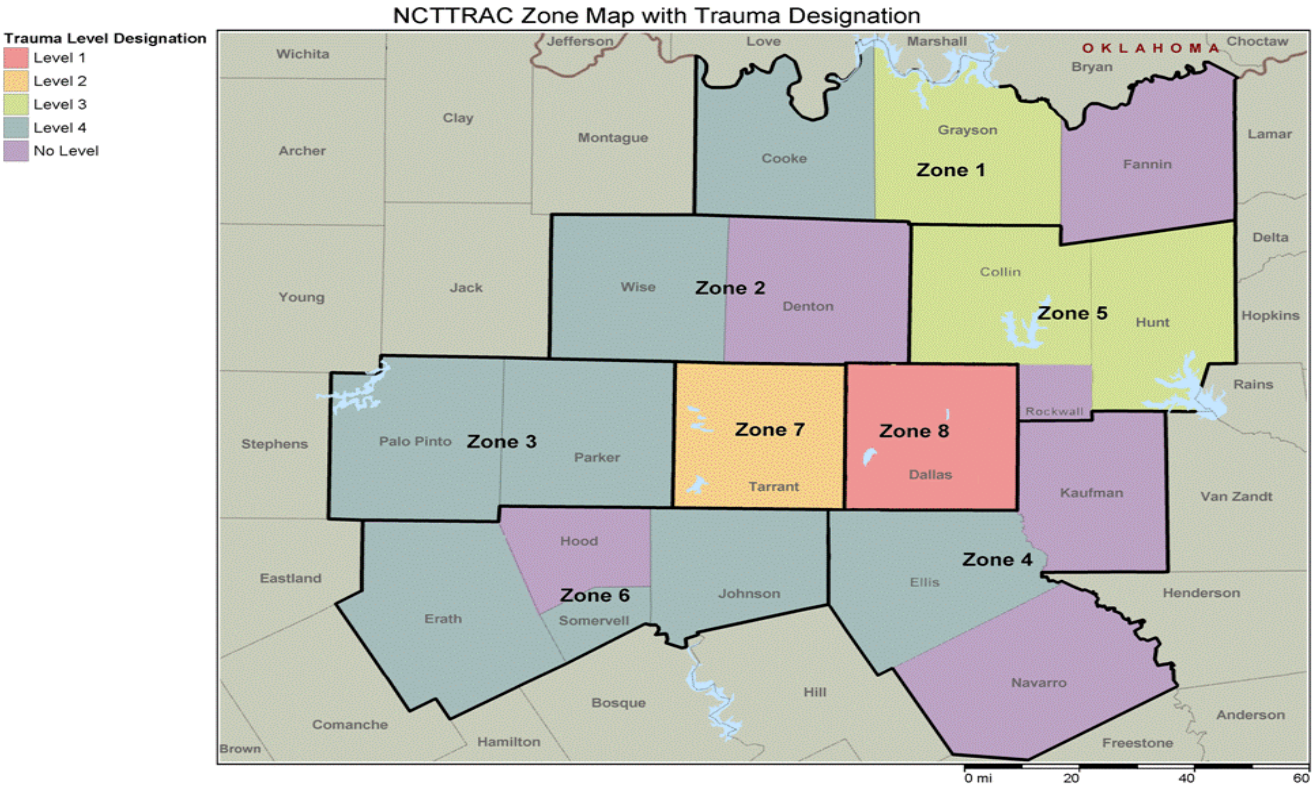
**Appendix A**

**Zone Map**



**Appendix B**

# EMS CHEST PAIN/ACS GUIDELINES

**ACS Signs & Symptoms**

Chest pain- any non-traumatic pain between the jaw & umbilicus
Chest pressure, discomfort or tightness
Complaints of "heart racing" or palpitations
Bradycardia
Syncope
Weakness in patients > 45 years old
New onset stroke symptoms
Difficulty breathing (without obvious cause i.e. asthma or CHF)

**STEMI Criteria**

**ST segment elevation of ≥ 1 mm in 2 contiguous leads with or without signs & symptoms of ACS**

**12 Lead EMS ECG Criteria**

Patients > 20 years old experiencing any ACS signs & symptoms

**OR**

Any age patient with ACS signs & symptoms AND a history of:

| | |
|---|---|
| HTN | Cardiac disease |
| Smoking | Diabetes mellitus |
| Severe Obesity | High Cholesterol |

Recent recreational drug use

**When in Doubt, Obtain an ECG**

Minimize patient exertion

Apply Oxygen to maintain SPO2 ≥ 94%

324 mg Aspirin PO
Chewed, not swallowed

Obtain 12 Lead ECG within 10 minutes of patient contact

**If STEMI Criteria met, activate CATH LAB, transmit ECG & immediately initiate transport to appropriate PCI capable hospital.**

Establish IV access at TKO rate or saline lock

**SBP > 110 mmHg**

0.4 mg nitroglycerin SL tablet or SL spray q 5 minutes until pain is gone or max 3 doses. Maintain SBP > 110 mmHg

Pain unrelieved by Nitro:
Morphine 2-4mg slow IVP max 20mg
**OR**
Fentanyl 1mcg/kg q 15 minutes max 200 mcg

**SBP < 110 mmHg**

Shock position

250ml NS bolus to achieve SBP≥110mmHg. Max 1 L NS, monitoring breath sounds

Morphine or Fentanyl analgesic per medical control

**Code STEMI Considerations:**

**1)** Keep patient connected to monitor & 12 lead cables when brought into ED for physician evaluation
**2)** If possible, remain on EMS stretcher and monitor in ED
**3)** Prepare to be escorted to CATH Lab on EMS stretcher and monitor to expedite transfer of care to CATH LAB nurse/physician.

**If SBP falls < 110 mmHg in response to treatment:**

Discontinue standing nitroglycerin & analgesic treatments

**If C/P is thought to be stimulant induced:**

Diazepam 2.5-5mg slow IVP max 10mg
**OR**
Midazolam 2.5-5mg slow IVP max 5mg or IN max 10mg

**PEARLS:**

- Females, diabetics and geriatric patients often have atypical signs/symptoms, or only generalized complaints
- Remember Erectile Dysfunction drugs are now being used to treat pulmonary hypertension
- Do not administer Nitroglycerin in any patient who has used Viagra (sildenafil) or Levitra (vardenafil) in the past 24 hours or Cialis (tadalafil) in the past 36 hours due to potential severe hypotension
- If possible, establish a second IV on

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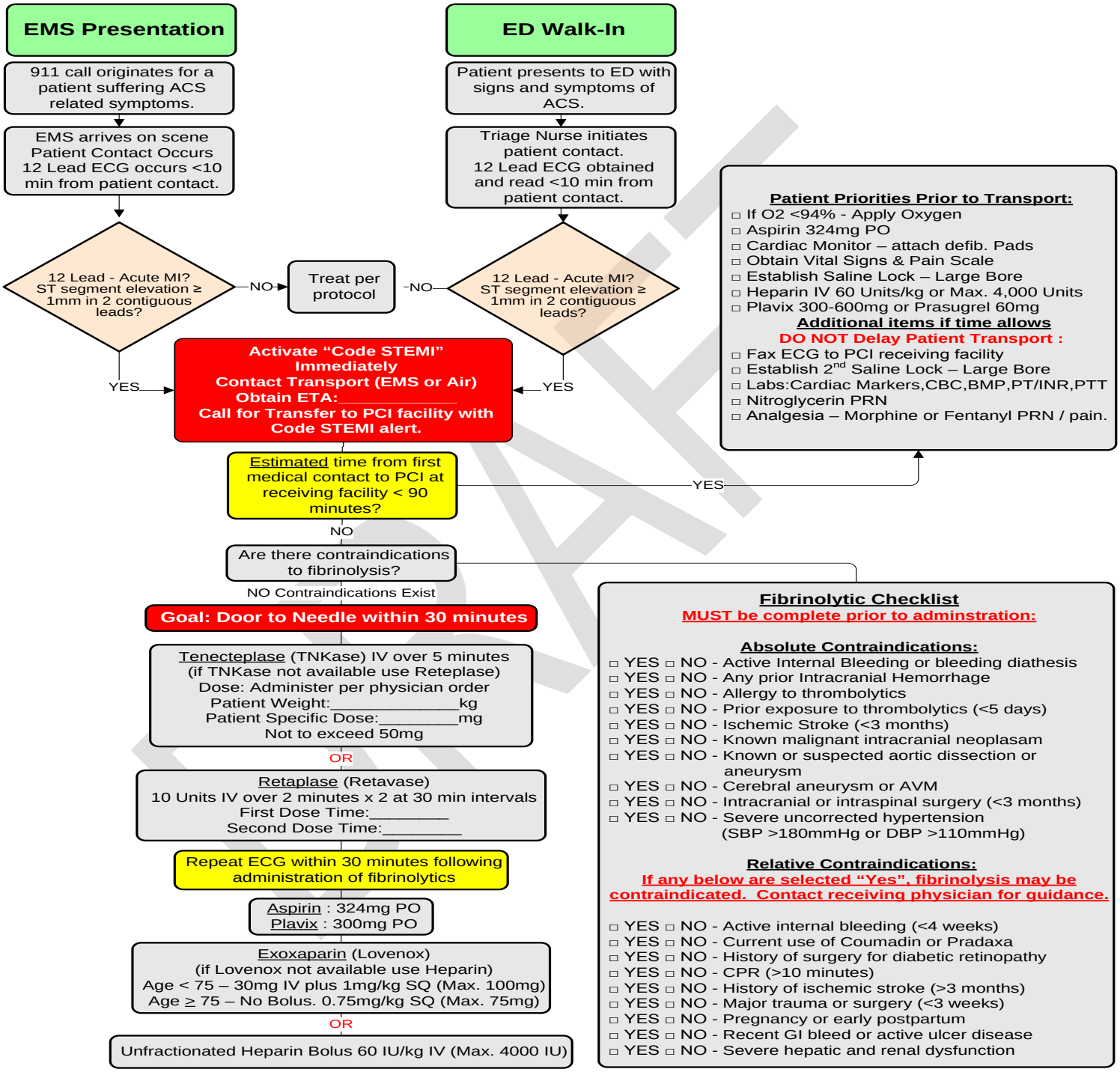
**Appendix C**

# NON-PCI GUIDELINES

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