MARCER and Missouri Kansas City EMS Region Time Critical Diagnosis Plan

A Regional Plan for
Pre-Hospital and Inter-Hospital Care
of Time Critical Diagnosis Patients

Plan Approved by DHSS 03/06/2015

Created by the Mid-America Regional Council Emergency Rescue (MARCER) Committee

Mid-America Regional Council

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FOREWORD

For patients who experience trauma, stroke or STEMI, a potentially fatal form of heart attack, time is critical. All of these conditions require quick assessment, diagnosis and treatment by a facility that can provide timely, definitive care to minimize risk for preventable complications and death.

The vision of this plan is to establish a uniform set of criteria for the pre-hospital and inter-hospital triage and transport of these Time Critical Diagnosis (TCD) patients. Local TCD plans may deviate from this plan in order to acknowledge and address variations in each community's resources and medical direction.

The primary focus of the TCD plan is to provide principles that facilitate the early recognition of patients suffering from STEMI, acute stroke or traumatic injuries, and expedite their transport to a facility that is able to provide definitive care within an appropriate time window.

The TCD plan was developed by the Mid-America Regional Council Emergency Rescue (MARCER) committee and formally adopted in January 2011. Additional emergency medical service providers in the broader Kansas City EMS region adopted the plan in August 2011. For the Kansas providers this plan is considered a model plan and the adoption does not establish it as a plan for the communities but instead as a guideline which can be varied as the need arises. In Kansas this plan does not establish the standard of care.

Success of this system is dependent on the participation of EMS providers and hospitals in both the MARCER and Kansas City EMS regions. This will require continuous review and communication between the partners in this effort.

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Appendices

Approval and Changes

Date	Description
January 2011	Plan approved by MARCER
August 8, 2011	Plan with amendments approved by Kansas City EMS Region Committee
January 31, 2012	Matrix updated, Research, Centerpoint,
February 7, 2012	Matrix updated, Overland Park Regional
May 1, 2012	Matrix update, Belton Regional Medical Center
November 9, 2012	Matrix update, Lee's Summit Medical Center, Saint Luke's East. Revisions from November 6th, 2012 TCD Meeting
January 22, 2013	Revision to Aspirin delivery guidline, revision to SBAT, Stroke interfacility transfer form and protocol.
February 8, 2013	Revision of the trauma routing criteria based on direction regional trauma directors.
April 11th, 2014	TCD Review and revision
September 3, 2014	Update to Appendix D: QI Contact List – list review
September 19, 2014	Added burn care receiving definition and burn routing criteria.
October 17, 2014	Revision based on comments and to add clarity in reflecting 2011 Field Triage guidelines.
November 25, 2014	Revise ASA guideline, add Witness to SBAT, Add CMH transport to EMS agenices, all based on SAC MD Review.
February 9, 2015	Additional language added as recommended by DHSS review prior to final approval.
March 1, 2015	Modification of the language as recommended by DHSS review prior to final approval.
March 6, 2015	MARCER TCD Plan was approved by DHSS. Addendum added in document based on recommendations for clarification of our plan.
March 23, 2015	Missouri Stroke designations were added to Appendix A

Background

The Mid-America Regional Council Emergency Rescue committee, commonly known as MARCER, promotes regional coordination and cooperation in emergency pre-hospital care for the metropolitan Kansas City region.

MARCER serves the nine-county, bistate Greater Kansas City region, which includes Cass, Clay, Jackson, Platte and Ray counties in Missouri, and Johnson, Leavenworth, Wyandotte and Miami counties in Kansas. The MARCER region spans 4,400 square miles, including 120 cities, 43 EMS agencies and 33 hospitals.

The Kansas City EMS Region is a body created under state law 190.102 with an appointed governing committee consisting of EMS professionals, fire service representatives, emergency physicians, trauma surgeons, specialty nurses and others as defined in Missouri Department of Health & Senior Services regulation (19 CSR 30-40.302). The Kansas City EMS Region consists of the Missouri counties of Bates, Benton, Carroll, Cass, Clay, Henry, Jackson, Johnson, Lafayette, Pettis, Platte, Ray and Saline. The Kansas City EMS Region does not include any Kansas counties. The regional boundaries are not established in law, but through regulation, and the use of the regional boundaries is not required for the creation of a TCD regional/ community plan.

TCD plans are identified in Missouri Statues 190.200-243, which created the statewide TCD program.

MARCER initiated the process which led to the development of this TCD plan. The Kansas City EMS Region has adopted the MARCER plan with a few changes to adapt the plan for the more rural areas of the larger Kansas City EMS Region.

The Kansas City EMS Region appreciates MARCER's willingness to allow the broader adoption of its TCD plan and the use of MARCER's resources in the creation of a joint data collection process.

MARCER AND MISSOURI KANSAS CITY EMS REGION — EMS AGENCIES	
American Medical Response*	Lee's Summit Fire Department*
American Paramedical Services, Inc.	Lenexa Fire Department*
Bates County Memorial Hospital Ambulance	Lexington Fire Department*
Belton Emergency Services*	Liberty Fire Department*
Bonner Springs Ambulance District*	LifeFlight Eagle*
Carroll County Ambulance District	Lone Jack Fire Protection District*
Central Cass County Fire Protection District*	Lotawana Fire Protection District*
Central Jackson County Fire Protection District*	Miami County EMS*
Childrens Mercy Critical Care Transport*	North Kansas City Fire Department*
Claycomo Fire Department*	Northland Regional Ambulance District*
Cole Camp Community Ambulance District	Odessa EMS
Concordia Fire Protection District	Olathe Fire Department*
Excelsior Springs Fire Department*	Overland Park Fire Department*
Fort Osage Fire District *	Pleasant Hill Ambulance District*
Franklin County Ambulance *	Pleasant Valley Fire Department*
Garden City Fire Protection District*	Prairie Township Fire Protection District*
Gladstone Public Safety Department*	Ray County EMS*
Golden Valley Memorial Hospital Ambulance	Raytown EMS*
Grandview Fire Department*	Raytown Fire Protection District*
Harrisonville Fire Department*	Saline Ambulance District #3
Higginsville EMS*	Slater Ambulance District
Holt Fire Protection District*	Smithville Fire Protection District*
Independence Fire Department*	Sni Valley Fire Protection District*
John Knox Village EMS*	South Metro Fire District.*
Johnson County, Kan., Fire District #2 (Rural)*	Southern Platte Fire District*
Johnson County Med-Act*	Staff for Life Helicopter – LaMonte
Johnson County, Mo., Ambulance District	Sweet Springs Ambulance District
Kansas City, Kan., Fire Department*	Warsaw-Lincoln Ambulance District
Kansas City, Mo., Fire Department.*	Wellington-Napoleon Fire Protection District*
Kearney Fire and Rescue*	West Peculiar Fire Protection District*
Lake City Fire Department*	West Platte Fire Protection District*
Lawrence-Douglas County Fire and Medical*	Windsor Ambulance District
Lawson Fire and Rescue*	
Leavenworth EMS*	

** MARCER members*

MARCER AND MISSOURI KANSAS CITY EMS REGION — HOSPITALS	
Bates County Memorial Hospital Belton Regional Medical Center* Bothwell Regional Health Center Carroll County Memorial Hospital Cass Regional Medical Center* Centerpoint Medical Center* Children's Mercy Hospital* Dwight Eisenhower Veterans Hospital* Excelsior Springs Hospital* Fitzgibbon Hospital Golden Valley Memorial Hospital I-70 Community Hospital Lafayette Regional Health Center Lawrence Memorial Hospital* Lee's Summit Hospital* Liberty Hospital* Menorah Medical Center* Miami County Medical Center * North Kansas City Hospital* Olathe Medical Center*	Overland Park Regional Medical Center* Providence Medical Center* Ray County Memorial Hospital Research Medical Center* Research Medical Center-Brookside* Shawnee Mission Medical Center* Shawnee Mission Prairie Star* St. John's Hospital* St Joseph Medical Center* St. Luke's Cushing Hospital* St Luke's Hospital Northland* St Luke's Hospital Plaza* St Luke's Hospital South* St. Luke's Hospital East* Saint Luke's Smithville* St. Mary's Hospital* Truman Medical Center* Truman Medical Center-Lakewood* University of Kansas Hospital* Western Missouri Medical Center Veterans Administration Hospital*

** MARCER members*

Time Critical Diagnosis Plan

In 2010, MARCER appointed a Time Critical Diagnosis Sub Committee to develop a coordinated, region-wide system of care for patients experiencing injuries or illnesses that fall within diagnosis categories that are time critical.

The purpose of this plan is to provide a common framework and language for the initial care and transport of TCD patients, with the goal of optimizing the care provided to our community.

The vision of the TCD Plan is to establish a uniform set of criteria for the pre-hospital and inter-hospital triage and transport of STEMI, acute stroke and trauma patients. Local TCD plans in Missouri may augment this plan to acknowledge and address variations in each community's EMS and hospital resources. This plan is considered a model plan for Kansas communities and these communities may deviate from this plan where local resources vary or medical direction determines that a different criteria is appropriate. The primary focus of the plan is to provide principles to facilitate early recognition of patients suffering from STEMI, acute stroke and traumatic injuries and to expedite their transport to a center able to provide definitive care within an appropriate time window.

Active participation on the part of all EMS agencies (transport and first-response), hospitals, STEMI centers, stroke centers and trauma centers, and all personnel therein will eventually define the success or failure of this program.

Several key activities must be undertaken so the system becomes functional:

- Develop triage and transport guidelines.
- Develop suggested basic management guidelines for various levels of care.
- Use and maintain the EMSystem. The EMSystem is an internet-based program designed to maintain up-to-the-minute information about a hospital's status (open or closed to ambulances) as it relates to STEMI, stroke, trauma or medical cases. The EMSystem is monitored in EMS communications centers around the region and is used to determine which facilities are open or closed. The program has many features, including the ability to discriminate between different reasons for being open or closed and whether the facility is able to handle a STEMI, stroke or trauma patient.
- Collect and report performance data including the creation and maintenance of contact lists for various centers and agencies.

Kansas City Region EMS agencies and Kansas agencies recognize the continuing evolution of scientific evidence indicating successful management of STEMI, stroke and trauma patients. In some instances, real-time contact with regional or local medical direction should be used to discuss individual cases and determine alternate transport and treatment decisions based on the dynamics of an individual case.

Initially, STEMI and Stroke Center capability will be based on voluntary identification by hospital administrators in consultation with applicable STEMI/stroke coordinators and physicians. At some point in the future, hospitals in Missouri will be designated as Level I–IV STEMI and/or

Stroke Centers. Once that occurs, MARCER EMS agencies will utilize those STEMI/Stroke Centers as designated.

Definitions

ACS: Acute coronary syndrome – symptoms consistent with an acute coronary event including but not limited to chest pain, upper abdominal pain, upper back pain, upper extremity pain, dyspnea, diaphoresis, weakness and nausea.

Burn Care Receiving Facility: These facilities will be understood to hold current ABA verification or be in the process of obtaining verification. Verification should be achieved within 3 years. Burn receiving centers in both Kansas and Missouri are hospitals that have a burn program in place with the ability to evaluate and care for large burns (>20% TBSA) including the following capabilities:

1) There must be at least 1 full-time equivalent attending staff surgeon involved in the management of burn patients for each 300 annual acute admissions.
2) The burn service must maintain an on call schedule for attending staff surgeons who are assigned to the burn service who must be available within 30 minutes of notification on a 24 hour basis.
3) The burn center hospital must maintain a specialized nursing unit dedicated to acute burn care.
4) The burn center must have at least 4 burn beds that are ICU capable within the dedicated burn unit.

PCI: Percutaneous coronary intervention.

Provider with first medical contact: May be an EMS or Emergency Department (ED) care provider, depending on how the patient enters the health care system.

STEMI: ST-elevated myocardial infarction, identified as 1mm ST elevation in two contiguous leads or new onset of left bundle branch block (LBBB).

STEMI Receiving Centers: In both Kansas and Missouri, hospitals that have a STEMI Program in place with the ability to evaluate and care for acute coronary syndromes, including:

1. A medication formulary which includes IV thrombolytic, with evidence-based processes/procedures in place to administer, when clinically indicated, 24/7.
2. The capacity to perform PCI 24/7.
3. Plans or processes in place to ensure that from the time the STEMI team is activated that the cardiovascular lab will be open and operational within 30 minutes, and the total Door-to-Balloon time does not exceed 90 minutes.
4. Practitioner(s) experienced in the diagnosis and treatment of STEMI who will be available within 15 minutes and at the bedside of a STEMI patient.
5. The ability to provide Cardiac ICU.

6. Plans or processes in place to transfer patients in an expedited manner to a facility with cardiothoracic surgery capabilities if such services are not immediately available at the first facility.

STEMI Receiving Centers will be based on Accreditation or State Designation. In Missouri the Missouri Department of Health and Senior Services will designate those hospitals who meet the requirements as Level I or Level II STEMI Centers when such designation becomes active.

STEMI Referral Center: In both Kansas and Missouri, STEMI Referral Centers based on Accreditation or State Designation are those hospitals that do not have the capacity to perform PCI 24/7 but do have the ability to evaluate and care for acute coronary syndromes, including the ability to administer a thrombolytic agent and transfer or transfer without administration of Thrombolytic to a STEMI receiving center within 30 minutes of patient arrival.

In Missouri, STEMI Referral Centers will be those hospitals designated as Level III or Level IV STEMI Centers by the Missouri Department of Health and Senior Services when such designation becomes active.

Primary Stroke Center: In both Kansas and Missouri, those hospitals that have:

1. 24/7 coverage to perform and report in 45 minutes or less: brain imaging (CT or MRI); labs (CBC w/ platelets, PT/INR, blood chemistries); EKG; CXR.
2. A medication formulary which includes IV thrombolytic (Alteplase/Activase); with evidence-based processes/procedures in place to administer, when clinically indicated, 24/7.
3. Practitioner(s) experienced in the diagnosis and treatment of stroke who will be available within 15 minutes and at the bedside of an acute stroke patient.
4. Neurosurgical coverage or a protocol to transfer acute stroke patients and, if neurosurgical coverage is available, the ability to have an Operating Room ready in two hours or less.

Stroke Receiving Centers will be based on Accreditation or State Designation. In Missouri, the Missouri Department of Health and Senior Services will designate those hospitals who meet the requirements a Level II Stroke Center by when such designation becomes active.

Comprehensive Stroke Centers: In both Missouri and Kansas, Comprehensive Stroke Centers will be hospitals based on accreditation or State Designation that have primary stroke center designation, plus neuro-interventionalists and all of the support staff and equipment to provide 24/7 intra-arterial treatment for acute stroke.

In Missouri, Comprehensive Stroke Centers will be based on State Designation. In Missouri, the Missouri Department of Health and Senior Services will designate those hospitals who meet the requirements a Level I Stroke Center when such designation becomes active.

Stroke Referral Centers: In both Missouri and Kansas, Stroke Referral Centers will be those hospitals that may not meet all of the requirements of a Stroke Receiving Center or Comprehensive Stroke Center but can deliver acute thrombolytic stroke treatment 24/7 and have in place processes/procedures in that encompass the following:

1. An identified Stroke Receiving Center or Comprehensive Stroke Center (as defined in this document) that will accept their stroke patients.
2. 24/7 access to a timely, informed consultation about the use of IV thrombolytic therapy, obtained from a physician with additional expertise in the diagnosis and treatment of ischemic stroke (either at the bedside, by telephone or through telemedicine).
3. 24/7 coverage to perform and report in 45 minutes: brain imaging (CT or MRI); labs (CBC w/ platelets, PT/INR, blood chemistries); EKG.
4. A medication formulary which includes IV thrombolytic (Alteplase/Activase); with evidence-based processes/procedures in place to administer, when clinically indicated, 24/7.
5. Practitioner(s) experienced in the diagnosis and treatment of stroke who will be available within 15 minutes and at the bedside of an acute stroke patient.
6. The ability to transfer a patient with acute stroke symptoms to the identified Primary or Comprehensive Stroke Center within 60 minutes.

In Missouri, based on State Designation, the Missouri Department of Health and Senior Services will designate those hospitals who meet the requirements a Stroke Referral Centers will be those hospitals designated by Missouri Department of Health and Senior Services as Level III Stroke Centers when such designation becomes active.

TCD (Time Critical Diagnosis): A medical condition where the time to definitive care may play an important role in modifying the outcome.

Trauma Center: A hospital distinguished by the availability of surgeons, physician specialists, anesthesiology services, nurses, and resuscitation and life support equipment on a 24/7 basis to care for persons with trauma. This term shall include the following: Level I trauma centers; Level II trauma centers; and Level III trauma centers.

In Kansas, Trauma Centers will be those hospitals that have a current American College of Surgeon's certificate of verification as a Trauma Center for the level which said hospital has indicated it has the ability to meet. Kansas Department of Health and Environment issues designation based on verification on American College of Surgeon's certification of Level I,II, III. KDHE designates LevelIV Trauma Centers.

In Missouri, Trauma Centers will be those hospitals designated by the Missouri Department of Health and Senior Services as Level I, II, or III Trauma Centers.

24/7: Twenty-four (24) hours per day, seven (7) days per week.

Recommendation

I. Community Education

MARCER and the Kansas City EMS Region should develop community plans in coordination with public health, hospitals, EMS agencies and other partners to improve early recognition of TCD signs and symptoms and the increase awareness of appropriate response.

II. Priority Dispatch and Pre-Arrival Instructions

EMS communication centers should utilize a system of priority dispatch whenever possible to match the level of response to the patient need.

EMS communication centers should provide condition-specific pre-arrival instructions whenever possible to begin appropriate treatment.

EMS communication centers should consider early launch of medical helicopters in accordance with Appendix F and Appendix G, in order to seek patient transportation to the appropriate receiving center.

III. Rapid Transport

Because time is of the essence in TCD patients, EMS providers should initiate rapid transport once a TCD patient is identified. Consideration should also be given to pre-hospital resources, including use of air medical transport, that are available at the time of the incident and other conditions such as transport time, road and weather conditions.

The use of the term “rapid transport” shall be done in accordance with jursidictions standard operating guidelines or protocol.

Use of air medical transport can facilitate TCD patients reaching designated centers in a timeframe that allows for acute treatment interventions. The use of Air Medical Utilization Guidelines (Appendix F) and the Helicopter Early Launch Process Guidelines (Appendix G) will help caregivers determine the best mode of transport.

IV. Protocols

EMS agencies should develop and adopt TCD Protocols based upon the following example guidelines.

STEMI GUIDELINES:

OBJECTIVE: To provide guidelines to facilitate the early recognition of patients suffering from a STEMI and to expedite their transport to a center capable of providing definitive care within an appropriate time window. All patients presenting to the health care system with a STEMI diagnosis will receive a thrombolytic within 30 minutes of arrival to Hospital or PCI within 90 minutes of first medical contact.

IDENTIFICATION OF STEMI:

1. All patients with suspected ACS shall have a quick assessment of airway, breathing, circulation and ACS symptoms.
2. A 12-lead ECG will be acquired and interpreted within 10 minutes of patient contact.
    a. In the case of an all-BLS service, the 12-lead ECG machine interpretation of STEMI (Acute MI) will be communicated to a receiving hospital within 10 minutes of patient contact.
    b. Consider completing ECG with additional right side and posterior leads if that capability is present.

COMMUNICATION OF ST ELEVATION

1. Patients presenting through the EMS System:
    a. EMS will notify the receiving facility that a patient with a STEMI has been identified.
        i. STEMI Receiving Centers will respect verbal notification, transmitted/ faxed ECGs or ECG computer interpretation of Acute MI with ST Elevation from an EMS service.
    b. STEMI Receiving Centers will activate their STEMI team upon notification by the EMS service.
2. Patients presenting through the STEMI Receiving Center Emergency Department (ED):
    a. All patients presenting with ACS symptoms will have a 12-lead ECG acquired and interpreted within 10 minutes of initial assessment.
        i. Consider completing ECG with additional right side and posterior leads if that capability is present.
    b. Activate the STEMI team immediately upon identification of STEMI.
3. Patients presenting through the STEMI Referral Center ED:
    a. All patients presenting with ACS symptoms will have a 12-lead ECG acquired and interpreted within 10 minutes of initial assessment.
        i. Consider completing ECG with additional right side and posterior leads if that capability is present.

b. Contact an EMS transport service as soon as possible, even if receiving location not yet known.

    i. Communicate that the patient is a "Time Critical Diagnosis Patient."

c. Contact a STEMI Receiving Center as soon as possible.

d. The STEMI Receiving Center will activate its STEMI Team upon notification by the STEMI Referral Center.

EMS TRANSPORT GUIDELINES

1. EMS will transport patients with identified STEMI directly to the appropriate STEMI Receiving Center that requires the shortest transport time. (Geography, driving conditions, etc., should be considered.)
2. The EMS service will give due consideration to the goal of 90 minutes or less from first medical contact to PCI/balloon. When there is not a STEMI Receiving Center proximate enough to achieve a first medical contact to PCI/balloon time of 90 minutes or less, then:
    a. Patient may be transported to the closest STEMI Referral Center, or
    b. Ground EMS may contact air ambulance to rendezvous as appropriate.
3. When the EMS unit is BLS or unable to identify a STEMI patient, the patient can be transported to the closest appropriate hospital.
4. When a patient requests transport to a specific hospital, EMS will respect the patient's request unless the longer transport time is contraindicated by the patient's condition.
    a. Patient/family preference is the highest level of authority and patients/families have the right to choose their destination even if it is not in their best interest. If patients/families request to go to a destination hospital that is not prepared to offer the care required, they must be given information to help them make an informed decision, including the associated risks of deciding on an inappropriate destination.

EMS STEMI MANAGEMENT GUIDELINES

(Note: These management guidelines are suggested treatments only. Local EMS Medical Directors are encouraged to consult cardiologists at receiving facilities and formulate management protocols with those physicians/facilities)

1. Administer aspirin up to a total dose of 324 mg (4 baby aspirin) or 325 mg (1 adult aspirin) per agency local protocol. Aspirin should be chewed and swallowed unless contraindicated.
    a. Aspirin is contraindicated in patients with history of allergy to aspirin.
    b. Administration may be withheld if a recent appropriate aspirin dose was already given.
2. Consider Sublingual NTG if not contraindicated.
    a. NTG is contraindicated in the following situations.

i. Erectile Dysfunction medication usage within 24-48 hours.

ii. SBP ≤ 100 mmHg.

iii. Right ventricular infarct without preoad volume replacement.

3. Consider analgesic/anxiolytic medications if SBP >100 mmHg.

INTERFACILITY TRANSFER GUIDELINES

(Note: These management guidelines are suggested treatments only. Referring facilities are encouraged to consult cardiologists at receiving facilities and formulate management protocols with those physicians/facilities)

1. All centers (both referral and receiving) are encouraged to have transfer agreements in place whenever possible.
2. STEMI Referral Centers will respect requests for transport to a specific hospital made by the patient, and/or consider preexisting patient-hospital system relationships.
    a. Patient/family preference is the highest level of authority and patients/families have the right to choose their destination even if it is not in their best interest. If patients/families request to go a destination hospital that is not prepared to offer the care required, they must be given information to help them make an informed decision, including the associated risks of deciding on an inappropriate destination.
3. STEMI Referral Centers should administer a thrombolytic or transfer the patient in 30 minutes or less of arrival.
4. STEMI Referral Centers should communicate:
    a. Time of onset of anginal equivalent symptoms.
    b. Location of ST elevation.
    c. Patient condition.
    d. Medication patient received prior to transfer.
5. In order to not delay a transfer, Referral Centers may send only EMTALA paperwork with the patient. Additional records and/or copies of x-rays may be faxed or sent by courier at a later time.
6. Thrombolytic agents should be considered if transportation is delayed for any reason that would prolong time to intervention of longer than 120 minutes from first medical contact to intervention.

REFERRAL CENTER STEMI MANAGEMENT GUIDELINES

(Note: These management guidelines are suggested treatments only. Referral Centers are encouraged to consult cardiologists at receiving centers and formulate management protocols with those physicians/facilities)

1. Administer aspirin up to a total dose of 324 mg (4 baby aspirin) or 325 mg (1 adult aspirin) per local protocol. Aspirin should be chewed and swallowed unless contraindicated.
    a. Aspirin is contraindicated in patients with history of allergy to aspirin.
    b. Administration may be withheld if a recent appropriate aspirin dose was already given.
2. Additional antiplatelet and anticoagulation may be administered as requested by the STEMI Receiving Center.
3. IV-infused medications should be used only when necessary to avoid delays related to IV pump and tubing compatibility.

EXPECTATIONS OF THE STEMI RECEIVING CENTER

1. All centers (both referral and receiving) are encouraged to have a prearranged transfer process in place whenever possible.
2. STEMI Receiving Centers will minimize diversion for STEMI patients. The goal is to only divert a STEMI patient if the CV Lab equipment is out of service or other patients already being treated would prevent the patient from receiving intervention in less than 90 minutes of first medical contact.
3. STEMI Receiving Centers will communicate the following to the EMS and Referral Centers as soon as possible:
    a. Verify STEMI diagnosis.
    b. Time to intervention.
    c. Patient condition.

STROKE GUIDELINES:

OBJECTIVE: To provide guidelines to facilitate the early recognition of patients suffering from acute stroke and to expedite their transport to a center capable of providing definitive care within an appropriate time window.

IDENTIFICATION OF STROKE

1. All patients with a presumptive stroke diagnosis shall have a quick assessment of airway, breathing, circulation and neurological assessment.
    a. Ensure that the patient's airway is open and that breathing and circulation are adequate.
    b. Consider other causes of altered mental status, such as hypoxia, hypoperfusion, hypoglycemia, trauma or overdose.
    c. Perform blood glucose assessment.
    d. Perform Cincinnati Pre-Hospital Stroke Scale:
        i. Assess for facial droop.
        ii. Assess for arm drift.
        iii. Assess for abnormal speech.
        iv. If the findings of the Cincinnati Pre-Hospital Stroke Scale are positive, establish onset of signs and symptoms.
            1. Specific questioning may be needed to determine the last time the patient was known well.
    e. Determine if Thrombolytic Exclusion Criteria exists:
        i. Head trauma at onset.
        ii. History of recent bleeding, current bleeding, surgery or invasive procedure within three months.
        iii. Bleeding disorder.

EMS TRANSPORT GUIDELINES

Transport patients with presumptive signs and symptoms of acute stroke to the Stroke Center that requires the shortest transport time. *(Note: These management guidelines are suggested treatments only. Local EMS Medical Directors are encouraged to consult neurologists at receiving facilities and formulate management protocols with those physicians/facilities)*

1. If stroke symptom onset plus the EMS transport time window is less than three and one half hours, transport to closest appropriate Stroke Center with the capability of

performing a non-contrast CT head scan and administering IV thrombolytic 24/7, with a target goal of administration within 60 minutes of arrival.

2. EMS agencies with extended ground transport time should consider using helicopter transportation if available.
3. If patients with presumptive signs and symptoms of acute stroke are outside the window for thrombolytic therapy, but the time from onset of signs and symptoms is less than 12 hours, consider transport to the closest Comprehensive Stroke Center.
4. For patients meeting exclusion criteria for thrombolytics, transport to closest Stroke Receiving Center.
    a. While en route, the attending EMT and/or paramedic shall make contact with the physician at the closest Stroke Receiving Center to discuss the appropriateness of diversion to another facility capable of providing neuro-interventions not available at the closest Stroke Receiving Center.
5. Notify the Stroke Receiving Center as soon as possible of impending arrival with an acute stroke patient, Cincinnati Pre-Hospital Stroke Scale findings, time signs and symptoms first began, and whether Thrombolytic Exclusion Criteria exists.
6. If the EMS unit is a BLS unit; the patient can be transported to the closest appropriate comprehensive stroke center, primary stroke center, or stroke referral center.
7. EMS will respect requests for transport to a specific hospital made by the patient unless the longer transport time is contraindicated by the patient's condition. .
    a. Patient/family preference is the highest level of authority and patients/families have the right to choose their destination even if it is not in their best interest. If patients/families request to go a destination hospital that is not prepared to offer the care required, they must be given information to help them make an informed decision, including the associated risks of deciding on an inappropriate destination.

EMS STROKE MANAGEMENT GUIDELINES

1. During transport, consider the following treatments: oxygen, initiating IV, cardiac monitoring, treat patients with low glucose according to local protocol.

INTERFACILITY TRANSFER GUIDELINES

1. Contact an EMS transport service as soon as possible, even if the receiving location not yet known.
    a. Communicate that the patient is a "Time Critical Diagnosis Patient."
2. All hospitals (both referral and receiving) are encouraged to have written transfer processes in place whenever possible.
3. Referring hospitals are encouraged to respect requests for transport to a specific hospital (Stroke Receiving Center) made by the patient, and/or consider preexisting patient-hospital system relationships.

   a. Patient/family preference is the highest level of authority and patients/families have the right to choose their destination even if it is not in their best interest. If patients/families request to go a destination hospital that is not prepared to offer the care required, they must be given information to help them make an informed decision, including the associated risks of deciding on an inappropriate destination.

4. Referring hospitals should administer a thrombolytic or transport using the following guidelines:
   a. If thrombolytic cannot be administered, do not delay transport of the patient to Stroke Receiving Center for more than 30 minutes.
   b. If thrombolytic therapy can be administered, the goal for thrombolytic therapy initiation with a target goal of 60 minutes from the time the patient arrived to the start of the therapy.
5. Referring hospitals should communicate:
   a. Time last known without acute stroke symptoms.
   b. Neurological exam focusing on LOC and focal deficits.
   c. Consider use of the National Institute of Health Stroke Scale.
   d. Pertinent medical history.
   e. A copy of the CT head scan if possible. (Do not delay transport of patient to wait on copies. Copies can be sent at a later time if needed.)
   f. Lab results.
   g. Evaluation if patient is a candidate for thrombolytic therapy.
6. In order to not delay a transfer, Referral Centers may send only EMTALA paperwork with the patient. Additional records and/or copies of x-rays may be faxed or sent by courier to receiving Stroke Center at a later time.
   a. A Sample Inter-Facility Transfer Worksheet can be found in Appendix E.

REFERRING HOSPITAL MANAGEMENT GUIDELINES

1. Establish two peripheral IVs (one 18 or 20 gauge AC or proximal to AC in upper arm)
2. Perform stat non-contrast CT head scan and pertinent lab work.
3. Review inclusion and exclusion and discuss with neurologist or other appropriate personnel at Stroke Receiving Center to determine if the patient is a candidate for thrombolytic.
4. Blood pressure (BP) management:
   a. If the patient is a candidate for thrombolytic, maintain BP <180/110 prior to treatment.
   b. If patient is NOT a candidate for thrombolytic, target BP is <220/120.

5. Obtain and record vital signs and neurological checks every 15 minutes.
6. Report to the transport team any treatment initiated, including IV bolus and total IV infusion of thrombolytic and expected time of infusion completion.
7. Maintain target BP <180/105 after thrombolytic therapy.
8. Monitor for deterioration in neurological status from baseline; discontinue thrombolytic drip immediately and obtain stat CT head scan.

EXPECTATION OF STROKE CENTERS

1. Have in place transfer agreements between Referring and Receiving Centers.
2. Minimize diversion of stroke patients. Only divert a stroke patient if specific lab or equipment needed to provide optimal care for a patient is out of service.

TRAUMA GUIDELINES

TRAUMA ROUTING

1. Any trauma patient with any of the following physiologic or anatomic criteria should be routed to a Level 1, or 2 Trauma Center even if it is not the nearest hospital. Any trauma patient that does not meet the physiologic or anatomic critera, but does meet the mechanism of injury critera should be transported to a trauma center, which need not be the highest level trauma center.

    a. Physiologic Criteria

        i. Shock, defined as BP less than 90mmHg (adults)

        ii. Respiratory distress; RR > 29 or < 10 (adults), or <20 (infant less than one year old) or need for ventilatory support

        iii. Altered mental status with Glasgow Coma Scale of less than 13

    b. Anatomic Criteria

        i. All penetrating injuries to head, neck, torso and extremities proximal to elbow or knee

        ii. Airway burns

        iii. 20 percent second-degree burns and/or 5 percent third-degree burns

        iv. Chest wall instability or deformity (e.g., flail chest)

        v. Two or more proximal long-bone fractures

        vi. Pelvic fracture

        vii. Paralysis

        viii. Amputation proximal to wrist or ankle

        ix. Open and/or depressed skull fracture

        x. Crushed, degloved, mangled, or pulseless extremity

    c. Mechanism of Injury Criteria

        i. Occupant ejection

        ii. Fall from height > 20 feet (adults), >10 feet (children)

        iii. Auto vs pedestrian/Bicyclist thrown, run over, or with siginificant (>20 mph) impact

        iv. Motorcycle crash >20mph

        v. Death of same-car occupant

        vi. Vehicle telemetry data consistent with high risk of injury

vii. Interior compartment intrusion including roof: >12” occupant site, >18” any site

d. Special Patients or System Considerations

For any trauma patients with the following criteria, contact medical control and consider transport to a Trauma Center even if it is not the nearest hospital.

i. Older Adults -Risk of injury/death increases after age 55 years -SBP <110 may represent shock after age 65 -Low impact mechanisms (e.g. ground level falls) may result in severe injury

ii. Children -Should be triaged preferentially to pediatric capable trauma centers

iii. • Anticoagulants and bleeding disorders -Patients with head injury are at high risk for rapid deterioration

iv. • Bums -Without other trauma mechanism: triage to burn facility -With trauma mechanism: triage to trauma center

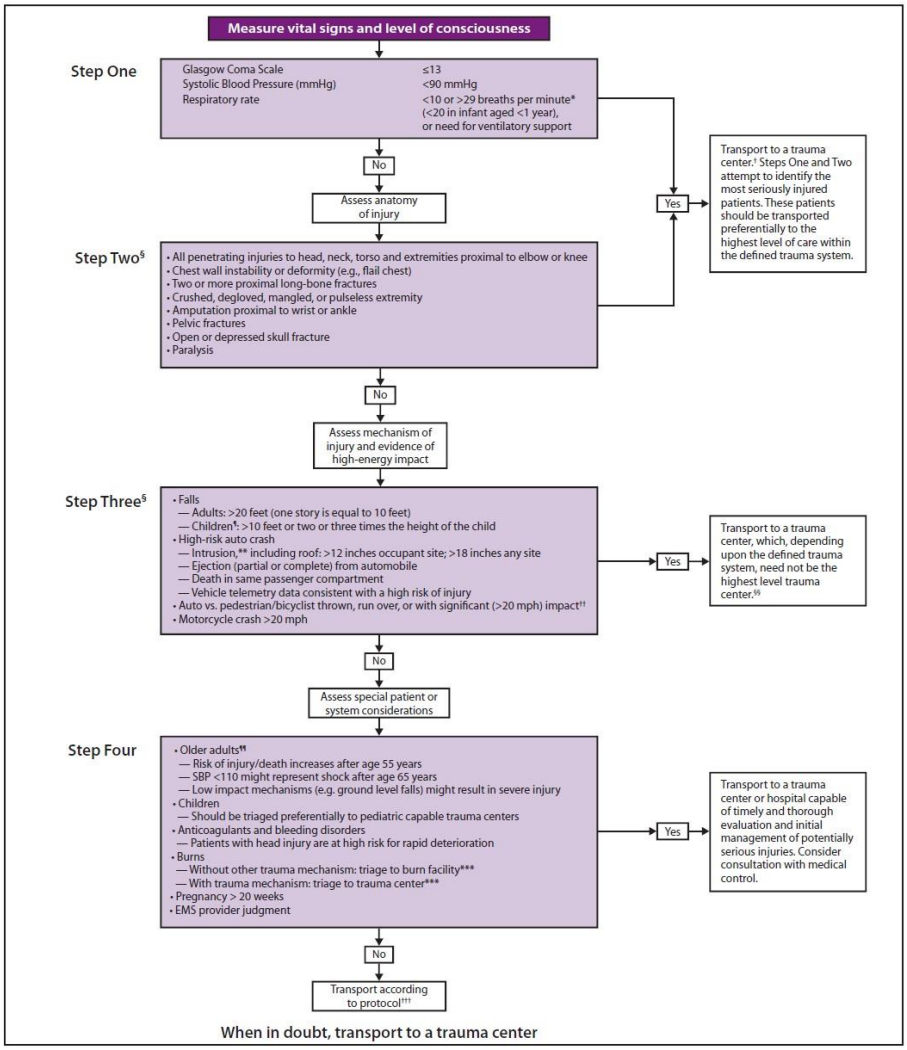
v. • Pregnancy >20 weeks

vi. • EMS provider judgment

1. Patients who are less than 14 years old and who meet the physiologic (pediatric), mechanism of injury or anatomic criteria should be routed to a pediatric trauma center.
2. In Missouri, Pediatric Trauma Centers will be those hospitals that have received designation as Pediatric Trauma Centers by the Missouri Department of Health and Senior Services.
3. In Kansas, Pediatric trauma Centers will be those hospitals that have received ACS designation as Pediatric Level I and Level II Trauma Centers.
4. EMS agencies in the urban/suburban core should develop protocols directing that traumatic cardiopulmonary arrest patients should be taken to the nearest trauma center unless it is out of service. EMS agencies outside of the urban/suburban core should develop protocols directing that traumatic cardiopulmonary arrest patients should be taken to the closest appropriate hospital.
5. When there is more than one adult trauma patient, consider evenly distributing patients among more than one trauma center. If this is not feasible, contact online medical control for routing assistance.

6. When more than one patient less than 14 years old meets physiologic or anatomic criteria per the trauma routing guidelines, contact central medical control for routing assistance.
7. EMS agencies should develop protocols directing burn patients that meet burn routing criteria, consider routing directly to an adult burn center. Patients 14 years of age or under should go to a pediatric verified or capable burn center as identified in Appendix A. Patients over 14 years of age should go to an adult verified or capable burn center."ABA burn care routing criteria includes:
    a. Partial thickness burns >10% total body surface area (TBSA)
    b. Burns that involves the face, hands, feet, genitalia, perineum, and major joints
    c. Third degree burns in any age group
    d. Electrical burns, including lightning injury
    e. Chemical burns
    f. Inhalation injury
    g. Burn injury in patients with pre-existing medical disorders that could complicate management, prolong recovery, or affect mortality.
    h. Any patient with burns and concomitant traumas (such as fractures, and so on) when the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient may be initially stabilized in a trauma center before being transferred to a burn center. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
    i. Burn injury that will require special social, emotional and/or long-term rehabilitative intervention
    j. With suspected more than 20 percent second-degree burns and/or greater than 5 percent third-degree burns, consider routing directly to appropriate Burn Care Facility as determined by protocol.
8. EMS will respect requests for transport to a specific hospital made by the patient unless the longer transport time is contraindicated by the patient's condition. .

9. Patient/family preference is the highest level of authority and patients/families have the right to choose their destination even if it is not in their best interest. If patients/families request to go a destination hospital that is not prepared to offer the care required, they must be given information to help them make an informed decision, including the associated risks of deciding on an inappropriate destination.
10. Prior to initiating transport to the requested facility, the EMT/Paramedic is encouraged to make contact with the requested receiving facility to ascertain they will accept the patient
11. EMS units further than 30 minutes from a trauma center with a patient meeting trauma routing criteria should consider in accordance with jursidictions protocol the feasibility of a medical helicopter for patient's transportation to a trauma center or transportation of the patient to the closest appropriate hospital



Data Collection and Monitoring

All disciplines within the TCD Plan must be willing to share specific data so that outcome measurements can be performed and modifications to the plan made based on findings from data measurements. The MARCER has established a Patient Safety Quality Improvement (PSQI) Sub Committee that meets monthly to review regional deidentified aggregate data to evaluate, analyze, and recommend changes to the TCD Sub Committee for revisions to the TCD Plan. A sample data collection form found in Appendix C, was a tool developed to assist in EMS agencies and Hospitals to share information for the purpose of sevice specific QA/QI.

MARCER PSQI Sub Committee will report aggregate TCD triage findings on an intermittent basis, at least biannually, to help EMS systems and the MARCER TCD Sub Committee identify any necessary improvements for both local and regional TCD Plans. A de-identified version of the report will be made available to regional agencies and will include, minimally:

1. Over- and under-triage to Designated Stroke Centers in comparison to the total number of acute stroke patients delivered to hospitals.
2. Helicopter EMS utilization.
3. EMS benchmarks (under development).

Using this data as a guide and a resource, MARCER will report on three primary evaluation areas: timeliness of care, treatment provided, and outcomes of care. These areas are critical because they allow linking of EMS data and hospital TCD data; they allow for “real time” collection of data focused on process improvement; and they allow for retrospective systemic analyses.

The ultimate goal of collecting this data is to provide actionable information to the MARCER TCD Sub Committee, MARCER members and local EMS operation managers, enabling better care processes and outcomes for TCD patients.

Plan Implementation

It is incumbent on all EMS systems and hospital groups to ask their respective medical directors and governing bodies to formally approve the policies and procedures herein, formalize protocols to reflect the principles in the plan, and develop any necessary forms and procedures to support implementation of the plan.

Success of this system is dependent on the participation of MARCER, EMS and area hospitals.

Appendix A: Kansas City Area Hospital TCD Capabilities*

	Trauma Center	Burn Care Facility	STEMI Receiving Center	STEMI Referral Center	Missouri Stroke Designation	Primary Stroke Center Level 2 (Kansas only)	Comprehensive Stroke Center Level 1 (Kansas only)
Belton Regional Medical Center	III			X	III		
Cass Regional Medical Center	III			X			
Centerpoint Medical Center	II		X		II		
Children's Mercy Hospital _	I	P	N/A	N/A	N/A		
Cushing Memorial Hospital				X			
Excelsior Springs Hospital							
University of Kansas Hospital	I	A,P	X				X
Kansas City VA Medical Center							
Lee's Summit Medical Center	III		X		II		
Liberty Hospital	II		X				
Menorah Medical Center			X			X	
Miami County Medical Center							
North Kansas City Hospital	II		X				
Olathe Medical Center			X			X	
Overland Park Regional Medical Center	II		X			X	
Providence Medical Center			X			X	
Research Medical Center	I	A	X		I		
Shawnee Mission Medical Center			X			X	
St. Joseph Medical Center			X		II		
St. John's Hospital				X			
St. Luke's Hospital — East	III		X		II		
St. Luke's Hospital	I		X		I		
St. Luke's Hospital — Northland			X		III		
St. Luke's Hospital — South			X				
St. Luke's Smithville				X			
St. Mary's Medical Center			X		II		
Truman Medical Center — Hospital Hill	I		X				
Truman Medical Center — Lakewood							

*Additional hospitals to be added as data is received

*For Burn Care Facilities A=Adult and P=Pediatric

Missouri Stroke Center designations released by DHSS on 03/23/2015

Appendix B: MARCER Patient Handoff (SBAT) Report

MARCER Patient Handoff (SBAT) Report

Label

Date: _____/_____/_____ **Time** _____ : _____

Reporting Agency/ Person: _____

Unit #: _____ **Reference#** _____

S

SITUATION:

☐ STEMI Alert ☐ Stroke Alert ☐ Trauma Alert ☐ (other describe)_____

Patient's Name _____ Patient's Age: _____ Patient's Gender: ☐ M ☐ F

Chief Complaint: _____

B

BACKGROUND:

History of Present Complaint/Condition:_____

_____

_____

_____

How the patient found: _____

(Trauma) Mechanism of Injury: _____

(STEMI) Chest Pain Onset: Date _____/_____/_____ Time _____ : _____

(Stroke) Last Date and Time Known Well: Date _____/_____/_____ Time ____:____ Witnessed by:_____

Associated Symptoms: _____

Pertinent past Medical History: _____

Current Medications: _____

_____

Allergies: ☐ None_____

_____

Primary Care Physician: _____

A

ASSESSMENT:

Time of Initial Patient Contact: _____ : _____

Level of Consciousness: ☐A ☐V ☐P ☐U Initial GCS _____@ Time_____:_____ Final GCS _____@ Time_____:_____

Airway/Breathing/Circulation Status: _____

Vital Signs @ (time) _____: _____ B/P _____/_____ P_____ R_____ SpO_2 _____ Glucose _____

Pertinent Physical Findings _____

_____

EKG Rhythm _____ If STEMI Time 1st EKG pos. for STEMI _____ ; _____

Cincinnati Stroke Scale: ☐Facial Droop Present (L R) ☐Arm Drift Present (L R) ☐ Abnormal Speech

Thrombolytic Intervention Exclusion Criteria Met ☐ Yes ☐ No explain _____

T

TREATMENTS:

Airway Interventions performed: _____

CPR ☐ Yes started at _____:_____ ☐ No

Defibrillation Total number administered _____ last administered @ (time) _____:_____ @ energy level _____

Cardioversion ☐Synchronized ☐ Unsynchronized @ (time) _____:_____ @ energy level _____

Oxygen Administration @ _____ lpm via ☐ Nasal Cannula ☐ Non-rebreather Mask

Medications Given: Time_____:_____ Medication_____Dose_____Route_____

Time_____:_____ Medication_____Dose_____Route_____

Time_____:_____ Medication_____Dose_____Route_____

Time_____:_____ Medication_____Dose_____Route_____

IV rt-PA drip and ship: ☐ Yes ☐ No Total MG Dose _____

IV Fluids Administered: Fluid _____ Total amt. admin _____ ml # sites _____ Cath. Size(s) _____

Other Pertinent Treatments: _____

_____

_____

r

Requests/Recommendations:

Orders Requested: _____

_____

Revised 11/25/14

Appendix C: EMS/Hospital Time Critical Diagnosis Follow-up Form

Instructions: This form is used to provide data to the transporting EMS agency on Time Critical Diagnosis (TCD) patients (trauma patients entered into the trauma registry, trauma activations not requiring entry into the trauma registry, stroke patients, STEMI patients, and all cardiac arrests. Hospital staff completes the upper section and faxes to the identified contact for the EMS agency. EMS agency completes the lower section and adds the information to their internal spreadsheet. EMS agency reports de-identified data to MARCER quarterly

Your Name: email: Date:

ALL PATIENTS

Hospital Name:		Patient Name:	
Race: ❒ White ❒ African American/Black ❒ Hispanic/Latino ❒ Asian ❒ Other	Date of arrival: ___/___/___ ED Disposition: ❒Death ❒Admitted ❒Floor ❒Telemetry ❒ICU ❒Discharged home	Date of discharge: ___/___/_____ Discharge disposition: ❒Morgue ❒Home ❒Skilled ❒Rehab ❒Nursing Home ❒Hospice	Out of Hospital Cardiac Arrest: ❒No ❒Yes Presumed Etiology: ❒Cardiac ❒Non-cardiac ❒Trauma ❒Respiratory ❒Other _____ Code ICE: ❒Initiated in field ❒No ❒Yes ❒NA ❒Continued in ED ❒No ❒Yes ❒NA ❒Discontinued on arrival ❒No ❒Yes ❒NA
Sex: ❒Male ❒Female ❒Other DOB _ __/___/_____ Age _____			

STROKE PATIENTS ONLY

Stroke Team Activated: ❒No ❒Yes Time: ____:____ Time notified enroute with Stroke Pt: ___:___	Type of Stroke: ❒Ischemic ❒TIA ❒SAH ❒ICH ❒Non-Stroke: please identify diagnosis: _____	Therapy initiated: ❒Lytic ❒ Endovascular ❒Both ❒None ❒Contraindicated ❒Other: _____	Time to first intervention: ___:____ IVTPA ___:____Groin Puncture ___:____Operative Procedure ___:____Other _____
Identified Inclusion/Exclusion criteria communicated to receiving facility? ❒Yes ❒No		NIHSS on arrival:	NIHSS upon DC:
Stroke Location: ❒Right hemisphere ❒Left hemisphere Vessel Size ❒PCA ❒PCA ❒Large ❒ACA ❒ACA ❒Small		Comments:	

STEMI PATIENTS ONLY

STEMI Team Activated: ❒No ❒Yes Time: ____:____	Vessel Involvement / %Blockage ❒ RCA System ____% ❒ LAD System ____% ❒ Circumflex System ____%	Time to first intervention: ___:____ PCI ___:____ CABG ___:____Other	Procedural Delay: ❒No ❒Yes Reason: _____ _____
		___:____Other _____	

TRAUMA PATIENTS ONLY

Trauma Team Activated: ❒No ❒Yes Time: ____:____ Level: ❒Full ❒Partial ❒Consult	Mechanism of Injury: ❒Animal ❒Assault ❒ATV ❒Bicycle ❒Burn ❒Drown ❒Electrical ❒Fall ❒GSW ❒Machinery ❒MCC ❒MVC ❒Plane ❒Rape ❒Stab ❒Pedestrian ❒Sports ❒Water Craft ❒ Other _____	Injury Severity Score ISS = ____ 1-9 (Mild) ISS = ____ 10-15(Moderate) ISS = ____ 16-25(Severe) ISS = ____ > 25(Very Severe)	ED Disposition: ❒OR ❒Interventional ❒Admitted ❒Floor ❒Telemetry ❒ICU ❒Home ❒Morgue ❒Other _____
Known Injuries:			

Appendix D: QI Contact List

Department	Agency Contact	Telephone Number	Email Address
AMR – Independence	Paul Lininger	816-836-1594 ext 21908	Paul.lininger@amr.net
AMR- Kansas City KS	Joe Blecha	785-233-2400	Joseph.blecha@amr.net
Bates County Memorial Hospital	Kelly Phillips	660-200-7119	kellyphillips@bcmhospital.com
Belton Fire and EMS	Doug McQuire	816- 331-7969	dmcguire@beltonfire.org
Bonner Springs EMS	John Claxton	913-422-7744	jclaxton@bonnersprings.org
Carroll County Ambulance District	Sheri Clavin	816-542-1808	ems400@sbcglobal.net
Central Cass Co. FPD	George Polignot	816-380-6744	gpoulignot@embarqmail.com
Central Jackson Co. Fire	Chip Portz	816-229-9118	cportz@cjcfpd.org
Children's Mercy Critical Care Transport	Sherry McCool	(816) 983-6552	mccool@cmh.edu
Claycomo Fire Department	Ron Steward	816-452-8392	Chief900@kc.rr.com
Cole Camp Community Ambulance District	Erik Wildeman	660-668-4772	colecamp_ems@yahoo.com
Concordia FPD	Debra Wulser	660-463-7900	cfpd@centurytel.net
Edwardsville EMS	Christina Akins	913-422-5460	cakins@edwardsvilleks.org
Excelsior Springs Fire/EMS	Joe Maddick	816-630-3000	maddick@esfire.com
Ft. Osage FPD	John Yocum	816-650-5811	jyocum@fortosagefire.org
Garden City FPD	Mark Lopez	816-862-6366	
Golden Valley Memorial	Reon Garza-	660-885-8811 ext	rgarza-gonzalez@gvmh.org
Grandview Fire and EMS	Ralph Loar	816-316-4965	rloar@ci.grandview.mo.us
Harrisonville EMS	Eric Myler	816-380-8927	emyler@ci.harrisonville.mo.us
Harrisonville Fire	Larry Francis	816-380-8952	firechief@ci.harrisonville.mo.us
Higginsville EMS	Rod Kirchhoff	660-584-3832	emsdir@ctcis.net
Holt Fire and EMS	Robert Looper	816-918-2818	rlooper@holtfire.org
Johnson County Med Act	Ted McFarlane	(913) 715-1950	tmcfarlane@jocoems.org
Johnson County, Mo., Ambulance District	Ben Minks	660-747-5735	bminks@jocamb.com
John Knox Village EMS	Brian Opoka	816-347-2932	bopoka@jkv.org
Kansas City MO (KCFD)	Jason Shearer	816- 300-2404	jason.shearer@kcmo.org
Kearney Fire and EMS	Robert Looper	816-628-4122	Rlooper@kearneyfire.org
Kansas City KS	David Shost	913-573-5550	dshost@kckfd.org
Lawson Fire and EMS	Ms. Pat Nolker	816 580-3903	plnolker@mchsi.com
Lee's Summit Fire/ EMS	John Spencer	816-969-1304	john.spencer@cityofls.net

Leavenworth County EMS	Brian Bailey	913-727-4930	bbailey@leavenworthcounty.org
Lexington Fire	Kirk Smith	660-259-4550	lexfire@classicnet.net
Lifeflight Eagle	Stacey Dock	816-214-9227	sdock@lifeflighteagle.org
Liberty Fire and EMS	Mike Snider	816-439-4310.	msnider@ci.liberty.mo.us
Lone Jack FPD	Dave Kelsey	816-697-2018	dkelsey@lonejackfire.org
Lotawana FPD	Bill Large	816-578-4211	chiefbilllarge@lotawanafire.org
Miami County EMS	Dave Ediger	913-294-5010 ext. 25	dediger@miamicountyks.org
North Kansas City Fire/ EMS	Mike Fisher	816-274-6025	mfisher@nkc.org
NRAD	Jason James	816-858-4450	jjames75@kc.rr.com
Odessa EMS	Ruth Ann Dillon	816-230-4444	odessaems@cityofodessamo.com
Overland Park Fire/ EMS	Brad Cusick	913-888-6066	Brad.Cusick@opkansas.org
Pettis County Ambulance District	Mike Gardner	(660) 829-0777	pcadadm@gmail.com
Pleasant Hill EMS	Steve Long	816-540-9108	slong720@comcast.net
Pleasant Valley EMS	Scott Clark	816-792-0200	pvfire401@yahoo.com
Prairie Township FPD	Larry Robinson		LRobinson@ptfpd.org
Ray County Ambulance District	Sam Moppin	816-470-3030	rcadsam@gmail.com
Raytown EMS	Doug Jonesi	816-737-6030	dougj@raytown.mo.us
Saline Ambulance District #3	Wade Kelling	660-886-3317	wadek@salinecountyambulance.com
Slater Ambulance District	John Martin	660-888-8347	Johnrmartin39@yahoo.com
Sni Valley Fire/EMS	Mike Johnson	816-690-6990	mjohnson@snivalleyfire.org
Staff for Life Helicopter – LaMonte	Michele Laas	573-239-7728	laasm@health.missouri.edu
South Metro EMS	Lee Stevens	816-331-3008	lssmfd@yahoo.com
South Platte Fire/EMS	Richard Carrizzo	816.741.2900	rcarrizzo@spfpd.com
Sweet Springs Ambulance District	Carl Webb	660-335-4852	sweetspringsamd@yahoo.com
Warsaw-Lincoln Ambulance District	Nathan Burton	660-438-2993	nburton@iland.net
Wellington- Napoleon FPD	Wes Young	816-934-2330	wnchief@live.com
West Peculiar Fire/EMS	Dennis Downey	816-779-5766	ddowney@westpeculiarfire.org
West Platte FPD	Lynn Johnson	816-640-2724	poojohnson@aol.com
Windsor Ambulance District	Ron Arnold	660-647-2859	windsor_ambulance@yahoo.com

Appendix E: Sample Inter-Facility Transfer Worksheet

SAMPLE
INTERFACILITY TRANSFER WORKSHEET
Please send this documentation with EMS team

Ischemic Stroke Management with IV t-PA (Activase – Alteplase) Recommendations

Date: _____ Time: _____ Patient Name: _____
Neurologist Recommending: _____
Call (____) _____ - _____ for questions concerning t-PA recommendations

Section A: Pre-t-PA Treatment Recommendations:

1. Last time patient was known to be well _____ (please document)
2. CT shows no hemorrhage
3. Labs completed Platelets greater than 100,000 and INR less than or equal to 1.7
4. Place two peripheral IVs, one must be 18 or 20 gauge AC or proximal to AC in upper arm.
5. Insert Foley prior to t-PA administration.
6. Strict NPO
7. Place oxygen per nasal cannula and titrate to maintain 0_2 sat. greater than 95% with oxygen.
8. If patient intubated please place OG tube.
9. Prior to administration of IV t-PA B/P must be less than 185/110 – see Blood Pressure Management section C.

Section B: t-PA Treatment Dosing Recommendations if patient is Candidate for IV t-PA (DOC 1 to check with recommendation). For Patient Safety never hang more t-PA than ordered dose. Use charts to figure correct dose to give and waste.

1. ☐ Dosing with 0.9 mg/kg (maximum dose – do not exceed 90 mg.)
   a. 0.9 mg/kg X _____ wt. (kg) = _____ total mg.
   - I.V. Bolus = 10% of total mg (_____mg) over 1 minute. Time administered _____.
   - Infusion dose = 90% of total mg (_____mg) per pump over 60 minutes. Time infusion started _____.

OR

2. ☐ Dosing with 0/6 mg/kg (maximum dose – do not exceed 60 mg)
   a. 0.6 mg/kg X _____ wt. (kg) = _____ total mg.
   - IV Bolus = 15% of total mg (_____ mg) over 1 minute. Time administered _____.
   - Infusion dose – 85% of total mg (_____ mg) per pump over 30 minutes. Time infusion started _____.

Section C: BP Management recommendations – Pre (≤180/110) and Post t-APA Treatment (≤180/105).

1. **IV Bolus Management**
   - Labetalol 10 mg over 2 minutes. If goal not met, then repeat Labetalol 20 mg X1 over 2 minutes. Do not use if heart rate less than 60.
   - Metoprolol 5 mg IV bolus, repeat every 5 minutes for a maximum of 20 mg. Hold if SBP less than 140 or DBP less than 80 and HR less than 60.
2. **Initiate (or titrate existing) continuous infusion**
   - Nicardipine infusion, 5 mg/h, titrate up to 2.5 mg/hr. at 5 to 15—minute intervals, maximum dose 15 mg/hr.; when desired blood pressure attained, reduce to 3 mg/hr.
   - Labetalol 2 mg/min infusion as initial dose & titrate by increasing 1 mg/min every 5 minutes up to 8 mg/min.

Section D: Post t-PA Treatment recommendations

1. **Monitor and document blood pressure and neuro checks every 15 minutes during and after t-PA administration. If any significant deterioration turn of t-PA and obtain STAT CT Head Scan.**
   - Monitor for deterioration in neurological status from baseline, for example: LOC, motor.
   - Monitor for sudden onset of headache, nausea and/or vomiting.
   - Monitor for sudden elevation in BP.
2. After t-PA infusion may start NS at 80 ml per hour.

Section E: Transport Preparation

1. Titrate BP medication to maintain BP **less than 180/105** after t-PA administration and during transport.
2. Stop BP medication infusion if SBP less than 140 or DBP greater than 80.
3. Obtain **emergency contact number for family, caregiver or bystander (preferably cell phone) to obtain further information or obtain consent for further treatment** _____(Cell Phone).
4. Send copy of CT Head Scan.
5. Send patient records with documentation of allergies, current medications and IV t-PA dosages, past medical history.
6. Review with transport team t-PA IV Bolus given, total infusion mg and expected time of infusion completion.
7. Give transport team Transport Protocol

Note: Doc 1 initiates this documentation and faxes to referring hospital for continued documentation

Sample Inter-Facility Worksheet, continued

SAMPLE
INTERFACILITY WORKSHEET

Please Give to Transporting EMS Team

Stroke Management Transport Protocol

Date: _____ Time: _____ Transport Unit Name: _____

A. Prior to Departure:

- ☐ Two peripheral IVs on 18 or 30 gauge AC or proximal to AC in upper are is preferred.
- ☐ Foley to Dependent Drainage.
- ☐ Strict NPO
- ☐ Place oxygen per nasal cannula and titrate to maintain O_2 sat. greater than 95%.
- ☐ If patient intubated please place OG tube to suction.
- ☐ Obtain emergency contact number for family, caregiver or bystander (preferably cell phone) to obtain further information or obtain consent for further treatment: (Cell Phone number _____)
- ☐ If t-PA has been started, document BP is less than 180/105 before departure; BP = _____.

B. Review with RN prior to departure

1. Type of stroke: ☐ Ischemic stroke ☐ Hemorrhagic ☐ Unknown
2. Initial physical assessment; vital signs, ABC's, Neurological exam focusing on LOC and focal deficits

C. **Acute Management according to type of stroke – Call Medical Control for management and patient concerns**

1. For Ischemic types: Target HR 60-120; target FF 8-30; target O_2 sat. greater than 95%
2. Ischemic with IV t-PA (Please refer to section E for post treatment recommendations)
   - Confirm current t-PA Treatment and Times and Amount of Infusion
     i. IV t-PA Bolus _____ Time Started _____.
     ii. T-PA infusion mg _____ Time started_____ Time to complete _____ Time t-PA stopped_____.
   - Maintain target BP before treatment less than 180/105—follow BP protocol in section F-2. Call medical control if does not meet parameters
3. Ischemic Stroke—Not eligible for thrombolytic therapy or type of stroke unknown
   - Target BP < 220/120 follow BP management protocol.
4. Hemorrhagic Stroke – Target BP less than 180/90—follow BP management protocol in section F below.

D. During Transport

1. Maintain HOB 15-30 degrees.
2. Continuous cardiac and pulse monitoring.
3. Obtain and Record Vitals and Neurologic checks every 15 minutes.

E. Post t-PA Treatment Recommendations

1. **Monitor & document blood pressure and neuro checks every 15 minutes during and after t-PA administration. If deterioration in neurological status – turn off t-PA and notify Medical Control.**
   - Monitoring for deterioration in neurological status from baseline; for example LOC, monitor changes.
   - Monitor for sudden onset of headache, nausea and/or vomiting.
   - Monitor for sudden elevation in BP.
   - Titrate BP medication to maintain BP **less than 180/105** after t-PA administration and during transport.
   - Stop BP medication infusion if SBP less than 140 or DBP less than 80.
2. After t-PA infusion completed start LR or NS at 80 ml per hour to infuse remaining t-PA in the tubing.

F. Transport Treatment or Complication

1. **Hypotension** – STOP t-PA infusion, HOB flat, Turn off any drips, administer 500ml fluid bolus (NS), recheck for response.
2. **Hypertension**—Check with medical control. If available give Labetalol 10 mg IV over 2 minutes, Recheck in 5 minutes for response, may repeat one time.
3. **Neurologic Deterioration**—STOP t-PA, assess ABC's obtain full set of vitals, Finger stick glucose (treat accordingly)
4. **Airway edema**—STOP t-PA infusion and treat according to allergic reaction protocol.
5. **Nausea and Vomiting**—treat according to protocol.
6. **Bleeding**—apply direct pressure to all bleeding cutaneous sites.

After any treatment call receiving facility (stroke team) to update and await further orders.

Note: This is the hand-off documentation, Referring ED to EMS

Appendix F: Air Medical Transport Utilization Guidelines

Definition: Air Medical Transport Utilization or Helicopter Emergency Medical Services (HEMS) is a crucial component of a tiered response in an Emergency Medical System for the expeditious initial care and delivery of the critically ill patient to an appropriate health care facility. It should be considered when:

- The patient requires a high level of Advanced Life Support not available by ground transport
- The patient has a significant potential to require a time-critical intervention and an air medical helicopter will deliver the patient to the critical treatment area of an appropriate facility faster than ground transport
- The patient is located in a geographically isolated area which would make ground transport impossible or greatly delayed
- Local EMS resources are exceeded and utilization of such would exhaust ground EMS in that service area. (Adapted from ACEP Board of Directors 2008)
- Air Medical Transport for trauma patients should be considered if there is a time-critical, potentially life- and/or limb-threatening trauma requiring treatment at a trauma center. (Adapted from Air Medical Physicians Assoc. 2001).

An air ambulance should be considered when it will assist the Time Critical Diagnosis patient in arriving at the appropriate facility as early as possible within the time window specific to the disease. EMS Systems, 9-1-1 Services and hospitals are encouraged to activate Helicopter Emergency Medical Services as part of the initial EMS response.

Appendix G: Helicopter Early Launch Process Guidelines

Definition: Helicopter Early Launch Process (HELP) is designed to reduce the window of time to access the patient when said access would be greater 20 minues due to travel time request for an air ambulance response prior to EMS arrival on scene. The resource request should be coordinated between communications center and EMS.

In the event that time to first medical contact of a responder would be greater than 20 minutes, the communication center should consider the following guidelines as criteria for early helicopter launch.

I. The Helicopter Early Launch Process should be considered when first response EMS is greater than **20** minutes from the ill or injured patient with the following mechanism or conditions:

(The very young and the very old should be given special consideration)

A. **Trauma Patient with apparent significant injury** *following a mechanism or condition such as:

1. Amputation, Crushed or Mangled Extremity
2. Bleeding, Uncontrolled
3. Drowning/Near Drowning
4. Farming/Industrial/Logging Accidents
5. Head Injury with Decreased Level of Consciousness
6. Motor Vehicle Crash (significant examples: Ejection, Rollover, Fatality in Same Vehicle)
7. Motorcycle or ATV crash
8. Paralysis, new
9. Pedestrian Struck by a Motor Vehicle
10. Penetrating Trauma of Head, Chest, Abdomen or Groin
11. Pregnant Patient

B. **Burn Patient**

1. Explosive Mechanism with Burns and/or Traumatic Injuries
2. Facial Burns in Closed Space with Difficulty Breathing or Hoarse Voice

C **Medical Patient**

1. Anaphylaxis or Severe Allergic Reaction
2. Bleeding, Uncontrolled
3. Chest Pain, Severe Non-Trauma or Suspected STEMI
4. Poisoning/Overdose with Severe Decreased Level of Consciousness
5. Respiratory Distress, Severe
6. Seizure, Continuous
7. Stroke, Suspected: Inability to Talk or Difficulty Speaking or New Paralysis on One Side

II. An air ambulance should be considered when it will assist the Time Critical Diagnosis patient in arriving at the appropriate facility during the time window specific to the disease.

Note: These guidelines were developed by the Air Ambulance Subcommittee to be used by agencies that incorporate early launch into their guidelines/protocols.

*The intent of initiation of HELP in situations where patients may meet ACS trauma routing criteria, based on information received by communication center, prior to EMS Access to patient. The goal of HELP is to narrow window of time for the patient to receive definitive care.

Appendix G: Clarifications as recommended by DHSS

1. By approving the MARCER and Missouri Kansas City EMS Region TCD plan, the Missouri Department of Health and Senior Services has waived 19 CSR 30-40.790, entitled Transport Protocol for Stroke and ST-Segment Elevation Myocardial Infarction (STEMI) Patients only.

2. The administration and maintenance of this community plan will be shared between a representative from MARCER and the Kansas City EMS Regional Committee. The representative from MARCER that will serve as the administrator who maintains this plan will be Emergency Services Health and Medical Program manager. The representative from the Kansas City EMS Regional Committee that has responsibility to administer and maintain this plan is the sitting Chair of the Committee.

3. In the STEMI Guidelines of the plan, Page 13, Interfacility Transfer Guidelines, 1. In the current approved plan reads ¨All centers (both referral and receiving) are encouraged to have transfer agreements in place whenever possible.¨ DHSS advised that this should read ¨All centers (both referral and receiving) shall have transfer agreements in place.¨ Per DHSS, ¨Level II, III, and IV centers must have these transfer agreements in place or they will be in violation of 19 CSR 30-40.760 (1)(N).¨

4. In the STEMI Guidelines of the plan, Page 14, Expectations of the STEMI Receiving Center, 1. In the current approved plan reads ¨All centers (both referral and receiving) are encouraged to have a prearranged transfer process in place whenever possible.¨ DHSS advised that this should read ¨All centers (both referral and receiving) shall have prearranged transfer processes in place.¨ Per DHSS, ¨Level II, III, and IV centers must have these transfer agreements in place or they will be in violation of 19 CSR 30-40.760 (1)(N).¨

5. In the Stroke Guidelines of the plan, Page 16, Interfacility Transfer Guidelines, 2. In the current approved plan reads ¨All centers (both referral and receiving) are encouraged to have written transfer processes in place whenever possible.¨ DHSS advised that this should read ¨All centers (both referral and receiving) shall have transfer agreements in place.¨

5. Although the TCD plan outlines appropriate transport guidelines, Patient/family preference is the highest level of authority and patients/families have the right to choose their destination even if it is not in their best interest. If patients/families request to go a destination hospital that is not prepared to offer the care required, they must be given information to help them make an informed decision, including the associated risks of deciding on an inappropriate destination. These conversations must be documented in the patient record or patient care report.