Summary of Survey Responses for *An Assessment of RAC Implementation of GETAC Recommendations:*

A Reference Document for GETAC Stroke Committee and GETAC Cardiac Care Committee – August 2012

Prepared by the Texas Department of State Health Services,
Health Promotion and Chronic Disease Prevention Section,
Cardiovascular Disease and Stroke Program

TEXAS Department of State Health Services

Texas Department of State Health Services

List of Figures

Introduction

In 2011 the Texas Department of State Health Services (DSHS) conducted a survey endorsed by the Texas Council on Cardiovascular Disease and Stroke, the Governor's Emergency Medical Services Trauma Advisory Council (GETAC), GETAC Stroke Committee, GETAC Cardiac Care Committee and Texas Emergency Medical Services Trauma Acute Care Advisory Foundation (TETAF). This survey aimed to uncover recent cardiac and stroke system development within the twenty-two Regional Advisory Councils (RAC) in Texas. In 2008, an original RAC survey was conducted to discover how many RACs had cardiac care committees, and all RACs reported that they had an acute care committee or two separate committees of either stroke or cardiac care; but not all RACs had regional stroke system of care and cardiac care plans. Some had treatment guidelines or protocols and transport plans or guidelines. The results of the 2008 survey were shared with GETAC in the summer of 2009. In 2010, the GETAC Cardiac Care Committee made recommendations to the RACs on acute care system development. This survey, *An Assessment of RAC Implementation of GETAC Recommendations*, intended to update previous data and assessed to what extent RACs have implemented GETAC recommendations. Data will serve to identify regional delivery policies and processes for delivery of stroke and cardiac care and provide geographic data to help inform strengthening or development of regional plans, treatment guidelines/protocols, and transport plans. See Figures 1 and 2 for a list and map of RACs and Trauma Service Areas (TSAs).

Discussion

Twenty RACs were represented in this survey in some capacity. TSAs F and P were the only RACs not represented in this data. TSA U provided only cardiac data, and TSA L provided only stroke data. TSAs G, H, and O provided introductory data, and TSA S provided introductory information in addition to some stroke data. TSAs that provided comprehensive data are: A, B, C, D, E, I, J, K, M, N, Q, R, T, V. Of the twenty represented RACs, most committees had an acute care committee structure that included both cardiac and stroke. TSA T was the only RAC that reported to not have a committee that addressed stroke or cardiac care.

There are several limitations of this survey data. First, multiple representatives completed the survey for individual committees, resulting in conflicting responses/data. Conflicting responses or data within a RAC was noted as "internal disagreement" throughout this report. Secondly, this survey data was self-reported, which poses a risk of error. Certain RACs, such as TSA F and TSA P did not participate at all and therefore cannot be reported on or compared. Other RACs only provided limited data. Lastly, the GETAC recommendations were listed prior to each survey question, which could have elicited response bias.

Survey Methodology

A survey was created by the Cardiovascular Disease and Stroke Program and the Office of EMS of DSHS in Survey Monkey with guidance and input from GETAC. The survey was originally emailed out by the Office of EMS of DSHS to 82 people, including RAC executive directors and chairs, to complete. These respondents were then asked to forward the survey on to the Stroke and Cardiac Committee chairs or

most appropriate person to complete. The surveys were emailed out on September 28, 2011 and respondents had until close of business on October 28, 2011 to complete and submit the surveys.

The survey consisted of 79 questions, varying in format from fill in the blank, to open-ended, to multiple choice, to ranking, to select all that apply. Data was collected on RAC leadership and contact information, committee structure, purchasing methods, stroke and cardiac system plans, levels of stroke facilities, stroke and cardiac treatment guidelines, medical oversight, regional stroke and cardiac transport plans, stroke and cardiac data collection, pre-hospital triage criteria, stroke training for EMS and public education, regional, acute care capability criteria, percutaneous coronary intervention (PCI) capability, hypothermia treatment protocols, and availability of 12-lead electrocardiogram (ECG) equipment on Advanced Life Support (ALS) ambulances.

Certain terms were defined in the survey for clarification, as different areas may use different terms for components. For the purposes of this survey, a *regional plan* included many aspects of regional policies and resources. For example, the Stroke System of Care Regional Plan also included prevention education, pre-hospital triage, communication, medical oversight, etc. *Treatment guidelines or protocols* were the triage portion and medical algorithm used in treating a patient for both EMS and within the hospital. *Transport plans or guidelines* were the normal delivery, diversion or bypass policies; these were components of the larger Regional Plan.

Results

A total of sixty-one participants completed the survey, representing 20 RACs. Fourteen RACs provided comprehensive stroke and cardiac data. Four RACs only provided introductory data on RAC leadership, committee structure and purchasing methods. TSA U only reported on cardiac data and TSA L only reported on stroke data. TSAs F and P did not provide any data and therefore are not represented in this report.

Trauma Service Area (TSA)	Regional Advisory Council (RAC)	Number of Respondents
A – Amarillo	Panhandle	2
B – Lubbock	BRAC	3
C – Wichita Falls	North Texas	4
D – Abilene	Big Country	3
E – Dallas/Ft Worth	North Central Texas	3
F – Texarkana	Northeast Texas	0
G – Tyler	Piney Woods	1
H – Lufkin/Nacogdoches	Deep East Texas	1
I – El Paso	Far West Texas & Southern New Mexico	6
J – Midland/Odessa	Texas “J”	2
K – San Angelo	Concho Valley	3
L – Belton	Central Texas	2
M – Waco	Heart of Texas	6
N – Bryan/College Station	Brazos Valley	3
O – Austin	Capital Area Trauma	2
P – San Antonio	Southwest Texas	0
Q – Houston	Southeast Texas Trauma	4
R – Galveston/Beaumont	East Texas Gulf Coast	6

S – Victoria	Golden Crescent	4
T – Laredo	Seven Flags	1
U – Corpus Christi	Coastal Bend	2
V – Harlingen	Lower Rio Grande Valley	3

Figure 1: Trauma Service Areas and Regional Advisory Council Names [1]

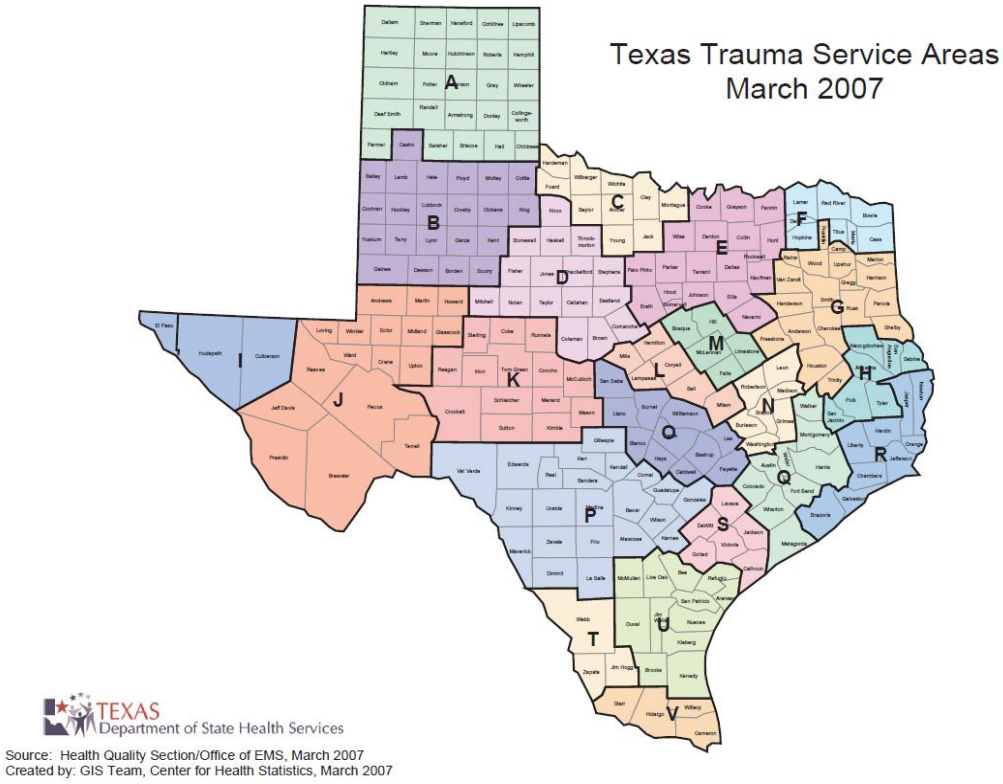

Figure 2: Texas Trauma Service Areas [1]

Committee Structure and Purchasing Methods

Of the 20 RACs that responded, all but one had formed committees to address stroke and/or cardiac care. Eleven RACs reported to have combined acute care (stroke and cardiac) committees. Seven RACs had both a cardiac and a stroke committee, and one had only a stroke committee (see Figure 3).

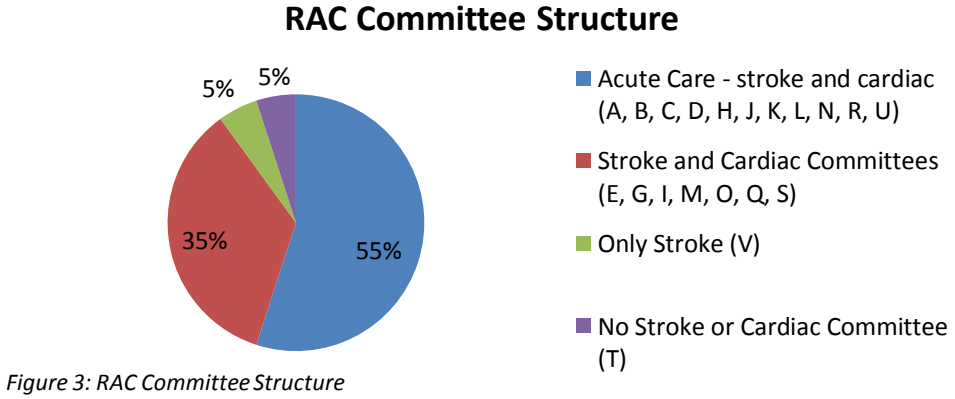

Figure 3: RAC Committee Structure

The survey asked whether the RACs use the following purchasing methods for supplies: cooperative purchasing agreements, preferred provider agreements, neither, don't know, and/or other. Other reported purchasing methods included: competitive bids, using proven cost-effective vendors, prioritizing Texas vendors, best cost, and sole sourcing. Most RACs reported discussing preferred provider agreements and cooperative purchasing agreements, while four reported not discussing these agreement. Reasons for deciding against certain purchasing methods are listed in Figure 4 below.

Purchasing Methods	**TSAs**	**Number**	**Percent**
Cooperative purchasing agreements	A,E,U	3	15%
Preferred provider agreements	C,G,L,O,V	5	25%
Neither	D,H,I,J,K,Q,T	7	35%
Both cooperative and preferred provider agreements	M,N	2	10%
Internal Disagreement	B,R,S	3	15%
Discussion about methods	A,B,C,D,E,G,I,J,L,M,N,O,R,S,U,V	16	80%
No discussion about methods	H,K,Q,T	4	20%
Reasons for Deciding Against Cooperative or Preferred Provider Agreements (All that Apply)			
Unknown	A,B,K,M,R,U	6	
Not enough demand	C,D,I,O,S,T	5	
Too cumbersome	I,S	2	
Too expensive	I	1	

Figure 4: Purchasing Methods

Stroke Systems of Care

Of the sixteen RACs that responded, 81 percent reported that they had a regional Stroke System Plan that includes all counties within its TSA (see Figure 5).

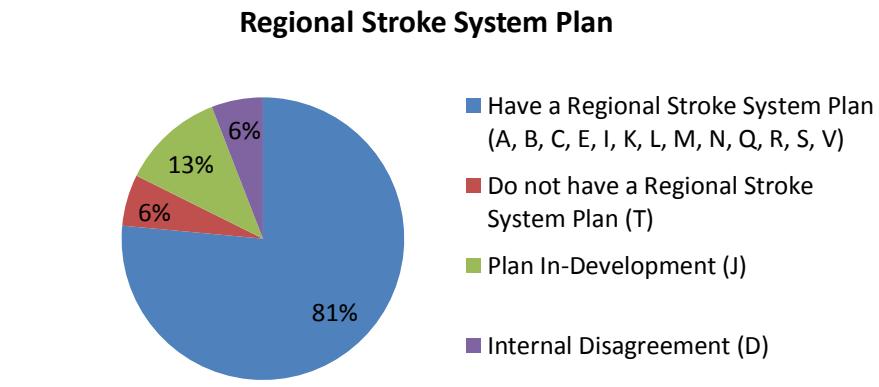

Figure 5: Regional Stroke System Plan

A list of comprehensive, primary and support stroke facilities by TSA are listed below in Figure 6. Six RACs reported that there were facilities in their TSAs that met designation guidelines but had not yet applied for or received designation by DSHS.

Trauma Service Area (TSA)	Comprehensive	Primary	Support
A – Amarillo	None	NWTHS in process	None
B – Lubbock	None	Covenant Medical Center , University Medical Center	None
C – Wichita Falls	None	United Regional Health Care Systems	None
D – Abilene	None	None	None
E – Dallas/Ft Worth	None	John Peter Smith Hospital, Medical Center of Arlington , Plaza Medical Center, Texas Health Arlington Memorial Hospital, Texas Health Harris Methodist Hospital Fort Worth, Texas Health Harris Methodist Hospital Hurst-Euless-Bedford, Baylor University Medical Center, Medical City Dallas Hospital, Parkland Health & Hospital System, Medical Center of McKinney, Medical Center of Plano, Methodist Charlton Medical Center, Methodist Richardson, North Hills Hospital, Baylor Grapevine, Doctors Hospital- White Rock Lake, UT Southwestern University Hospital, Texoma Medical Center	None
F – Texarkana	*	*	*
G – Tyler	*	*	*
H – Lufkin/Nacogdoches	*	*	*
I – El Paso	None	Providence Memorial Hospital, Las Palmas Medical Center, Sierra Medical Center, Del Sol Medical Center, Sierra Providence East Medical Center	None
J – Midland/Odessa	None	Midland Memorial Hospital, Medical Center Hospital, Odessa Regional Medical Center	None
K – San Angelo	None	Shannon Medical Center	None
L – Belton	Scott & White Memorial	None	Metroplex Hospital, Carl R. Darnall Army Medical Center
M – Waco	None	Providence Health Center, Hillcrest Baptist Medical Center/S&W	None
N – Bryan/College Station	No designation, but St. Joseph Regional Health Center has comprehensive stroke capabilities	St. Joseph Regional Health Center	None, S&W Brenham has submitted their application
O – Austin	*	*	*
P – San Antonio	*	*	*
Q – Houston	None	Cypress Fairbanks Medical Center Hospital, Eddy Scurlock Stroke Center -The Methodist Hospital at Medical Center, Kingwood Medical Center, Memorial Hermann Hospital, Memorial Hermann Katy Hospital, Memorial Hermann Memorial City Medical Center, Memorial	Don't Know

		Hermann Southwest Hospital, Memorial Hermann The Woodlands Hospital, Methodist Sugarland Hospital, Methodist Willowbrook Hospital, Oakbend Medical Center, San Jacinto Methodist Hospital, St. Luke's The Woodlands Hospital, West Houston Medical Center	
R – Galveston/Beaumont	None	CHRISTUS Hospital St. Elizabeth, CHRISTUS Hospital St. Mary	None
S – Victoria	None	DeTar Hospital Navarro, Citizen's Medical Center	None
T – Laredo	None	None	None
U – Corpus Christi	*	*	*
V – Harlingen	None	Valley Baptist- Harlingen, Valley Baptist-Brownsville, McAllen Medical Center, Edinburg Regional Medical Center, McAllen Heart Hospital	None designated through the state

*Figure 6: Designated Stroke Facilities by Level and TSA, * No Response*

Stroke Treatment Guidelines

Most RACs reported that they had developed or were developing regional stroke treatment guidelines at the time of the survey. Five RACs developed regional stroke treatment guidelines as part of their regional Stroke System Plan, and four RACs developed regional stroke treatment guidelines as a separate document (See Figure 7).

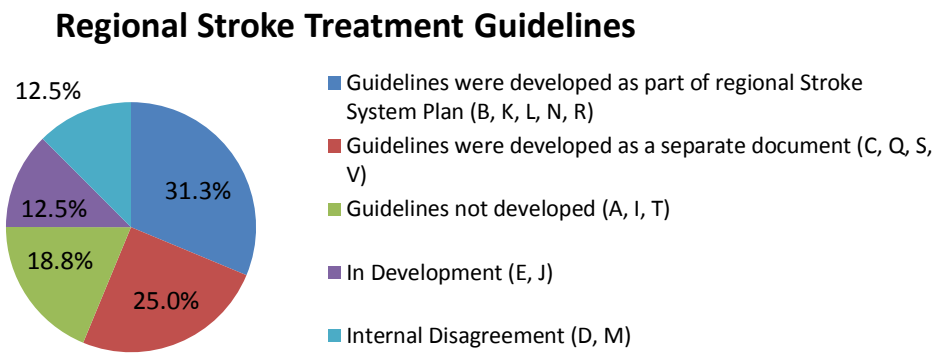

Figure 7: Regional Stroke Treatment Guidelines

Stroke Medical Direction, Review and Oversight

Most RACs reported that their regional Stroke System Plans include policy language for medical direction, review, and oversight. However, the majority of RACs had not made changes as a result of reviews conducted by hospital and EMS medical directors (See Figure 8 below). Five RACs reported that they had made changes based on these reviews, including: protocol revisions, decisions to review stroke care plans, changes in diversion protocols related to rural facilities, changing stroke levels to be more consistent with trauma levels (A-B-C to A-B), stroke alert activation criteria revisions, implementing trainings, and changes in by-laws to include more physicians and EMS directors in the Board of Directors.

Stroke Medical Direction, Review and Oversight	TSA	Number	Percent
Stroke System Plan Includes Policy Language for Medical Direction, Review and Oversight	B, C, D, E, I, L, M, N, Q, R, S, V	12	75%
Stroke System Plan Does Not Include Policy Language for Medical Direction, Review and Oversight	A, J, K, T	4	25%
Hospitals			
100% of hospital medical directors reviewing stroke cases	E, I, J, L, M, N, V	7	43.8%
Not all hospital medical directors reviewing stroke cases	B, C, D, K, Q, R	6	37.5%
Don't know whether hospital medical directors are reviewing stroke cases	A, S, T	3	18.8%
Hospital medical directors review charts separately	B, C, E, J, L, M, Q, R, V	9	56.3%
Hospital medical directors review charts through a general review per protocol	S	1	6.3%
Don't know how reviews are conducted	A, K, N, T	4	25%
Internal Disagreement	D, I	2	12.5%
Hospital stroke case reviews are discussed at RAC meetings	B, I, L, M, N, Q, V	7	43.8%
Hospital stroke case reviews are not discussed at RAC meetings	A, C, E, J, K, R, S, T	8	50%
Internal Disagreement	D	1	6.3%
EMS			
100% of EMS medical directors reviewing stroke cases	E, V	2	12.5%
Not all EMS medical directors reviewing stroke cases	B, C, D, I, K, L, M	7	43.8%
Don't know whether EMS medical directors are reviewing stroke cases	A, J, N, Q, R, S, T	7	43.8%
EMS medical directors review charts separately	C, E, L, V	4	25%
EMS medical directors review charts through a general review per protocol	D, M	2	12.5%
Don't know how reviews are conducted	A, B, J, K, N, Q, R, S, T	9	56.3%
Internal Disagreement	I	1	6.3%
EMS stroke case reviews are discussed at RAC meetings	A, B, L, N, Q, V	6	37.5%
EMS stroke case reviews are not discussed at RAC meetings	C, D, E, I, J, K, R, S, T	9	56.3%
Internal Disagreement	M	1	6.3%
Changes			
RAC had made changes as a result of reviews by hospitals/EMS	A, L, M, N, V	5	33.3%
RAC had not made changes as a result of reviews by hospitals/EMS	B, C, E, I, J, K, Q, R, S, T	10	66.7%
Internal Disagreement	D	1	6.3%

Figure 8: Stroke Medical Direction, Review and Oversight

Regional Stroke Transport Plan

Most RACs reported that they had a regional stroke transport plan as part of their regional Stroke System Plan. Out of fifteen RACs, only one reported to not have a regional stroke transport plan. Two RACs reported that their plan was in development, and three RACs had internal disagreement on whether their plan was part of the regional Stroke System Plan or a separate document or in development (see Figure 9).

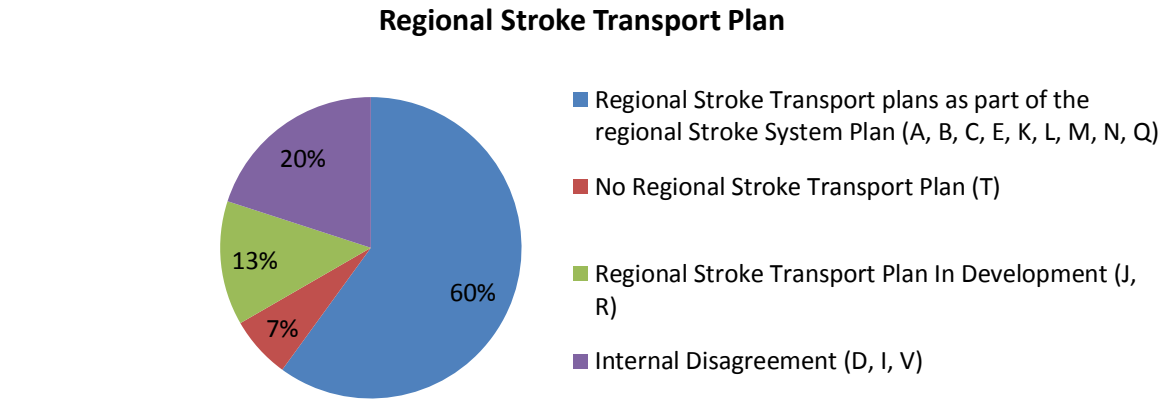

Figure 9: Regional Stroke Transport Plan

Most RACs had a protocol or policy that determines where acute stroke patients are transported as part of their regional transport plan; TSA K and T did not have a protocol or policy that determines where acute stroke patients are transported. TSA R had a policy in development, and TSA D had internal disagreement about whether a plan was in place as part of their regional transport plan or was in development.

Most RACs reported multiple ways that their transport practices are implemented. Only four RACs listed a single way that they implement their transport practices. Most RACs reported using EMS/Ambulance service protocols, but some other ways that RACs implement transport practices are through written policies; standard, unwritten procedures; verbal agreements; and contracts (see Figure 10).

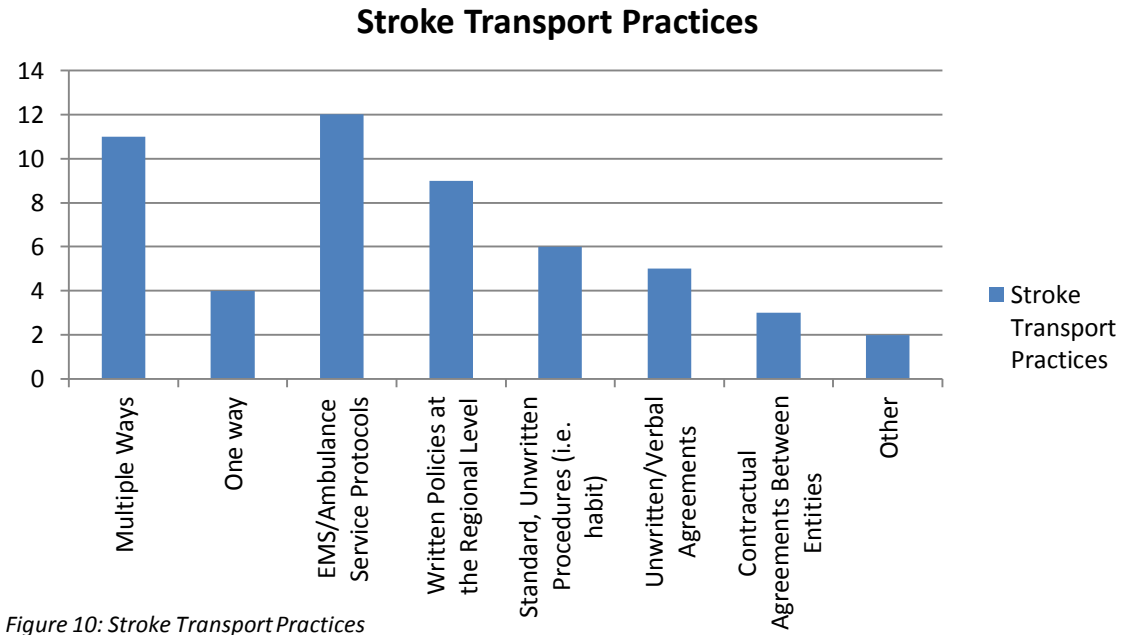

Figure 10: Stroke Transport Practices

A third of the RACs reported that the number one way EMS agencies determine to which hospitals to take stroke patients is by proximity (the closest facility). Other determinations included the Regional Stroke Transport Plan, EMS Medical Director oversight/order, and patient choice (see Figure 11).

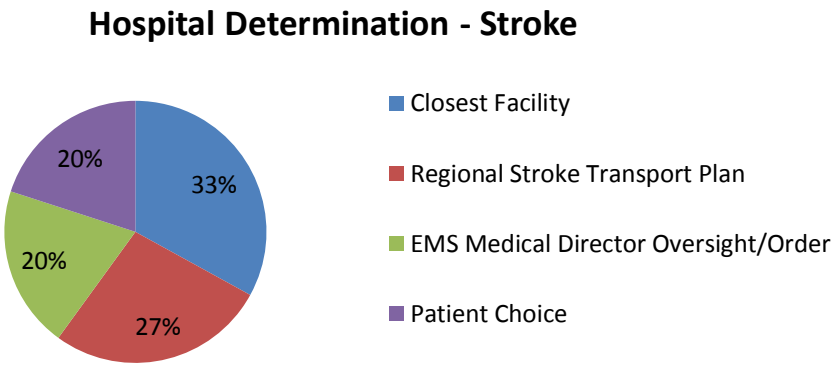

Figure 11: Hospital Determination - Stroke

Most RACs reported that their transport plan guidelines vary based upon circumstances; only TSAs L and N reported that their transport plan guidelines are fixed. Of the ten RACs that reported that their transport plan guidelines vary, the primary circumstance for which guidelines vary was distance (see Figure 12).

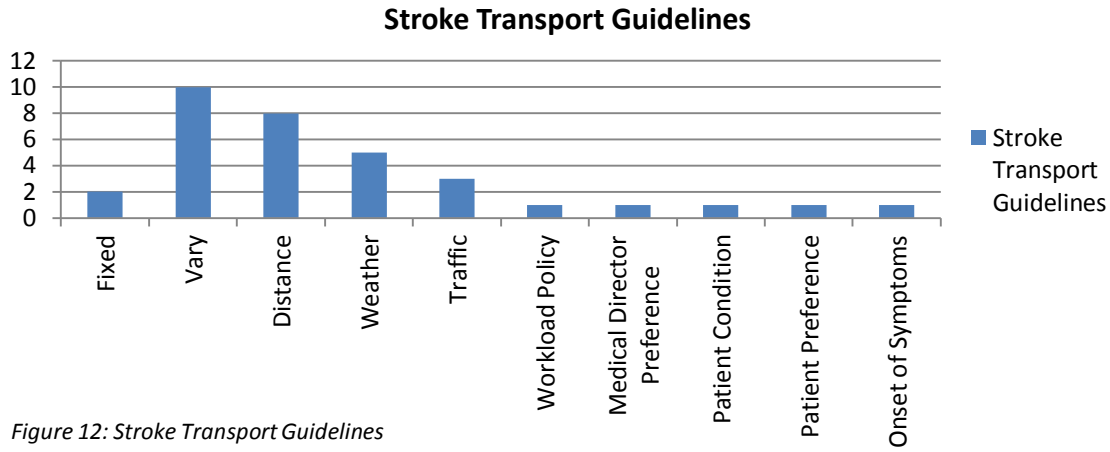

Figure 12: Stroke Transport Guidelines

Stroke Data Reporting

TSAs J, M, and N reported that 100 percent of their applicable hospitals were reporting data to the RAC. TSAs B, I, K, Q, and V were collecting stroke data from the hospitals in their TSA, but not all applicable hospitals were reporting their data. TSAs A and T were not collecting stroke data from hospitals in their TSA, and five RACs reported that this process was in development (C, D, E, L, R). TSA J reported that 100 percent of the EMS agencies in its TSA were reporting their stroke related response and transport data to the RAC. TSAs B, K, Q and V collected stroke related responses and transport data from the EMS facilities in their TSA, but not all EMS agencies were reporting their data. TSAs N and T were not collecting this data from EMS facilities, and six RACs reported that this process was in development (TSAs A, C, D, E, L, R).

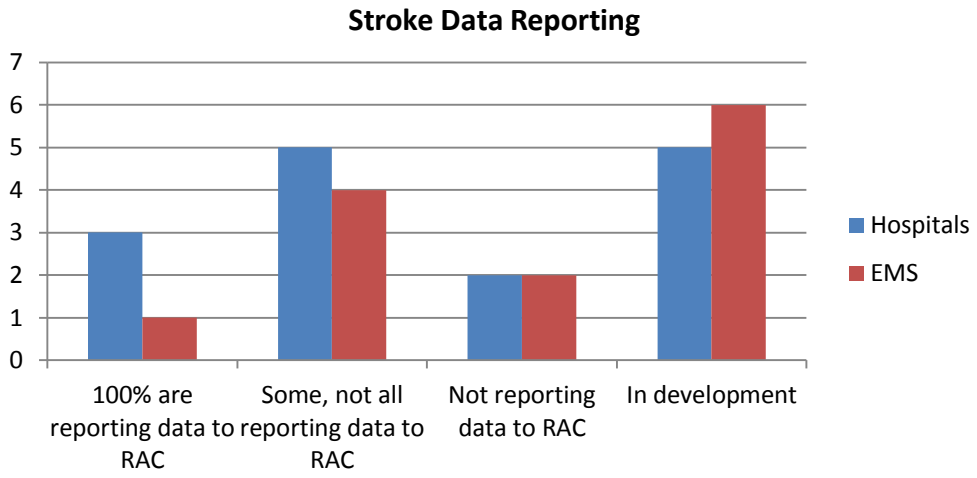

Figure 13: Stroke Data Reporting

Stroke Activation Process

Nearly 30 percent of RACs used FAST for pre-hospital identification of stroke. TSA A also used the Cincinnati scale. While five RACs had internal disagreement about which protocol they use and whether it is part of the regional Stroke System Plan, TSA I and M were in agreement that their Stroke System Plans had some designation for a protocol for pre-hospital identification of stroke. Most RACs reported that their regional Stroke System Plan did not designate a process for imaging/CT Scan activation (see Figure 14).

Stroke Activation Process	**TSA**	**Number**	**Percent**
Regional Stroke System Plan designates FAST	B, C, K, L, Q	4	28.6%
Regional Stroke System Plan designates non-FAST	N	1	7.1%
No protocol for pre-hospital id of stroke	T	1	7.1%
Protocol not part of Regional Stroke System Plan	A, E, V	3	21.4%
Internal Disagreement	D, I, J, M, R	5	35.7%
Imaging/CT Scan Activation			
Regional Stroke System Plan designates this process	B, E	2	13.3%
Regional Stroke System Plan does not designate this process	A, C, I, K, L, N, R, T	8	53.3%
Process in development	D, Q	2	13.3%
Have this process, but not as part of Regional Stroke System Plan	V	1	6.7%
Internal Disagreement	J, M	2	13.3%

Figure 14: Stroke Activation Process

Professional Training and Stroke Public Education

Most RACs reported that stroke education is provided for EMS ALS personnel in their TSA, and of those RACs, most use American Heart/American Stroke Association and/or National Stroke Association curriculum. Other curriculum or education methods included the National Institute of Neurological Disorders and Stroke, “medical direction” and “stroke program coordinators”. Most RACs reported multiple ways that EMS personnel receive stroke training, including in-person, online and video/DVD

trainings (see Figure 15). Some other methods of training included: lectures, case studies, individual services, and the Border RAC Stroke Summit.

The majority of RACs reported that stroke public education is provided in their TSA by the hospitals, RACs and EMS agencies. Of the twelve RACs who stated that stroke public education is provided in their TSA, the education reach ranged from 0 to 50 percent, and three RACs had internal disagreement about what percent of the TSA population was reached. Of those same 12, most reported that the stroke public education includes messages that are culturally appropriate for the African American community (see Figure 15).

Stroke Education	**TSA**	**Number**	**Percent**
Provided to EMS ALS Personnel in TSA	B, C, D, I, K, L, M, N Q, R, V	11	73.3%
Not provided to EMS ALS Personnel in TSA	A, E, T	3	20%
Internal Disagreement	J	1	6.7%
AHA and/or NSA Curriculum	B, C, D, I, K, L, M, N, Q, R, V	11	
Other Curriculum	M, N	2	
In-Person Only	L, Q	2	
In-Person and Online	B, C, K, R, V	5	
In-Person, Online and Video/DVD	D, I, M, N	4	
Other	E, I	2	
Stroke Public Education			
Provided in TSA	B, C, E, I, J, K, L, M, N, Q, R, V	12	80%
Not Provided in TSA		0	0%
Don't Know if it is provided in TSA	A, T	2	13.3%
Internal Disagreement	D	1	6.7%
Reaches 0-25 %	B, C, E, J, N	5	41.7%
Reaches 26 – 50 %	K, L, Q, V	4	33.3%
Internal Disagreement	I, M, R	3	25%
Includes messages culturally appropriate for African American community	B, C, E, J, K, L, M, R	8	66.7%
Does not include messages culturally appropriate for African American community	V	1	8.3%
Don't know if education includes messages culturally appropriate for African American community	N, Q	2	16.7%
Internal Disagreement	I	1	8.3%
Provided by the RAC	B, C, E, I, J, K, L, M, Q, R, V	11	
Provided by the hospitals	B, C, E, I, J, K, L, M, N, Q, R, V	12	
Provided by EMS agencies	B, E, I, K, L, M, N, Q, V	9	

Figure 15: Stroke Education

Recommendations for Others

Recommendations for other RACs to improve the Stroke System of Care included: working together for the best interest of the patient; review the plan quarterly; add direction specific to imaging/CT activation; use billboard companies to post stroke education for the public; the cost of the survey process for support is too high and causes rural facilities to pull out of system development; funding is critical to implement the process; and make it mandatory for EMS to follow RAC protocols for continuity of care across the region and to join RAC.

Cardiac Systems of Care

While 16 RACs responded to the Cardiac Systems of Care section, only 15 RACs provided comprehensive cardiac data. Therefore, most of the responses and data represent only 15 RACs. Most RACs reported that they had developed a regional Cardiac Care System Plan or were in the process of developing a plan (see Figure 16).

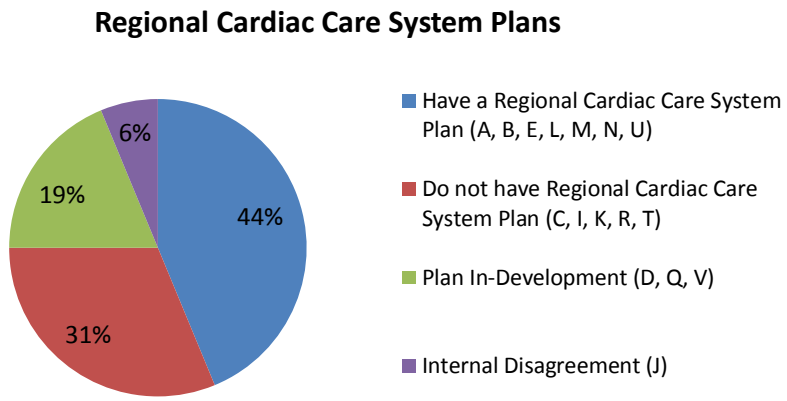

Figure 16: Regional Cardiac Care System Plans

Cardiac Care Facilities

Three RACs reported that they have no regional criteria in the TSA to determine acute care capability, that hospitals are self-reporting 24/7 receiving capabilities. Most RACs use the Society of Chest Pain Center criteria (n=5). Four developed their own regional criteria, and three use door to balloon times and outcomes (see Figure 17). Four RACs had internal disagreement about which standard criteria the TSA uses to determine acute care capability.

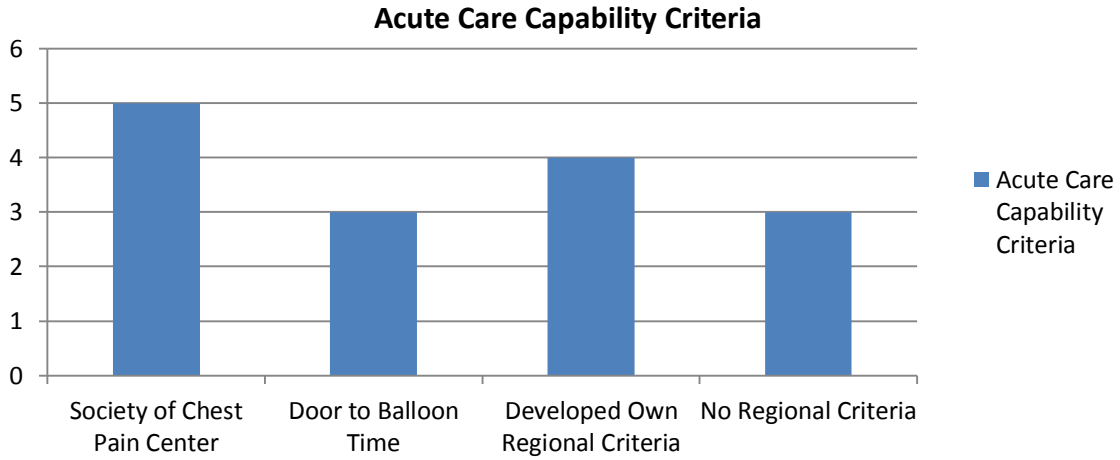

Figure 17: Acute Care Capability Criteria

Fourteen RACs identified at least one facility in their TSA with PCI capability. Nine RACs identified at least one facility in their TSA that use a hypothermia treatment protocol. Four RACs reported that there were no facilities in their TSA using a hypothermia treatment protocol (see Figure 18).

TSA	Facilities with PCI Capability	Facilities Using Hypothermia Treatment Protocol
A	NWTHS	NWTHS
B	Covenant Medical Center, University Medical Center, Lubbock Heart Hospital	University Medical Center
C	United Regional Health Care	None
D	Brownwood Regional Hospital, Hendrick Medical Center, Abilene Regional Medical Center	None
E	*	*
F	*	*
G	*	*
H	*	*
I	Providence Memorial Hospital, Las Palmas Medical Center, Sierra Medical Center, University Medical Center, Del Sol Medical Center	University Medical Center, Del Sol Medical Center
J	Midland Memorial Hospital, Medical Center Hospital, Odessa Regional Medical Center	Medical Center Hospital
K	Shannon Medical Center, San Angelo Community Medical Center	Shannon Medical Center – In development
L	*	*
M	Hillcrest Baptist Medical Center, Providence Health Center	Hillcrest Baptist Medical Center, Providence Health Center
N	St. Joseph Regional Health Center, College Station Medical Center	St. Joseph Regional Health Center, College Station Medical Center
O	*	*
P	*	*
Q	27 hospitals with 24/7 PCI	6
R	CHRISTUS Hospital St. Mary, CHRISTUS Hospital St. Elizabeth, The Medical Center of Southeast Texas, Baptist Hospital Beaumont	None
S	*	*
T	Laredo Medical Center, Doctors Hospital of Laredo	None
U	Corpus Christi Medical Center-Bay Area, Corpus Christi Medical Center – Doctors Regional, Christus Spohn Shoreline	Christus Spohn Shoreline
V	McAllen Heart Hospital, Rio Grande Regional Hospital, Doctor's Hospital at Renaissance, Mission Regional Medical Center, Valley Baptist Brownsville, Valley Regional Medical Center, Harlingen Medical Center, Valley Baptist Medical Center	McAllen Medical Center, Edinburg Regional Medical Center, McAllen Heart Hospital, Valley Baptist Medical Center, Harlingen Valley Baptist Medical Center Brownsville, Knapp Medical Center, Valley Regional Medical Center

*Figure 18: Facilities with PCI capability and hypothermia treatment protocols by TSA, *No Response*

Cardiac Care Treatment Guidelines

Most RACs reported that they had developed or were currently developing regional cardiac treatment guidelines, while thirty-three percent did not have regional cardiac treatment guidelines (see Figure 19).

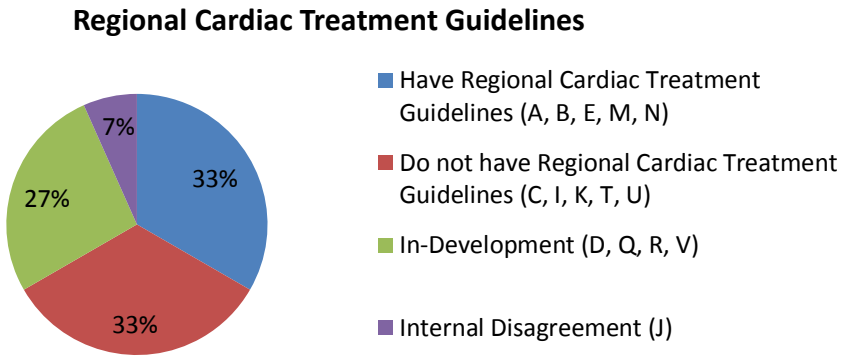

Figure 19: Regional Cardiac Treatment Guidelines

Cardiac Medical Direction, Review, and Oversight

Most RACs who had a Cardiac Care System Plan reported that their plans included policy language for medical direction, review and oversight. However, the majority of RACs reported that they had not made changes as a result of the reviews conducted by hospital and EMS medical directors (see Figure 20). Five RACs reported that they did make changes as a result of these reviews, including: protocol revisions and changes, utilization of transport protocols to provide rapid access to care at a primary PCI facility for STEMI patients, revisions to STEMI Alert activation criteria, development of a STEMI bypass protocol, and development of a Cardiac Committee.

Cardiac Medical Direction, Review and Oversight	**TSA**	**Number**	**Percent**
Cardiac System Plan Includes Policy Language for Medical Direction, Review and Oversight	B, D, E, M, N	5	35.7%
Cardiac System Plan Does Not Include Policy Language for Medical Direction, Review and Oversight	A, U	2	14.3%
N/A, No Cardiac System Plan	I, J, K, T, V	5	35.7%
Internal Disagreement	Q, R	2	14.3%
Hospitals			
100% of hospital medical directors reviewing cardiac cases	C, I, N, Q	4	26.7%
Not all hospital medical directors reviewing cardiac cases	A, B, D, K, V	5	33.3%
Don't know whether hospital medical directors are reviewing cardiac cases	E, J, R, T, U	5	33.3%
Internal Disagreement	M	1	6.7%
Hospital medical directors review charts separately	A, B, C, I, M, R	6	40%
Hospital medical directors review charts through a general review per protocol	K	1	6.7%
Don't know how reviews are conducted	D, E, J, N, Q, T, U, V	8	53.3%
Hospital cardiac case reviews are discussed at RAC meetings	B, I, M, N, U	5	33.3%
Hospital cardiac case reviews are not discussed at RAC meetings	A, C, D, E, J, K, R, T, V	9	60%

Internal Disagreement	Q	1	6.7%
EMS			
100% of EMS medical directors reviewing cardiac cases	V	1	6.7%
Not all EMS medical directors reviewing cardiac cases	B, D, E, I, K, M, Q, R	8	53.3%
Don't know whether EMS medical directors are reviewing cardiac cases	C, J, N, T, U	5	33.3%
Internal Disagreement	A	1	6.7%
EMS medical directors review charts separately	B, R, V	3	20%
EMS medical directors review charts through a general review per protocol	E, M	2	13.3%
Don't know how reviews are conducted	C, D, I, J, K, N, Q, T, U	9	60%
Internal Disagreement	A	1	6.7%
EMS cardiac case reviews are discussed at RAC meetings	A, B, N	3	20%
EMS cardiac case reviews are not discussed at RAC meetings	C, D, E, I, J, K, R, T, U	9	60%
Internal Disagreement	M, Q, V	3	20%
Changes			
RAC has made changes as a result of reviews by hospitals/EMS	A, D, N, U, V	5	33.3%
RAC has not made changes as a result of reviews by hospitals/EMS	B, C, E, I, J, K, Q, R, T	9	60%
Internal Disagreement	M	1	6.7%

Figure 20: Cardiac Medical Direction, Review and Oversight

Regional Cardiac Transport Plan

About a third of the RACs had a regional cardiac transport plan as part of the regional Cardiac Care System Plan that included a protocol to determine where acute cardiac patients are transported, and one had a regional cardiac transport plan as part of a separate document. Four RACs did not have regional cardiac transport plans, and four RACs reported that their plans were in development (see Figure 21).

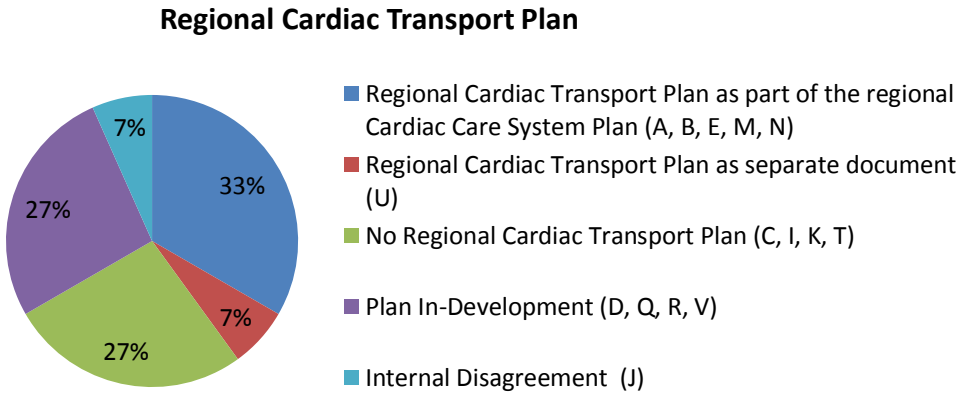

Figure 21: Regional Cardiac Transport Plan

Forty percent of RACs had protocols or policies that determine where STEMI patients are transported, while thirty-three percent of RACs did not have such protocols. Twenty percent of RACs said that such protocols were in development (see Figure 22).

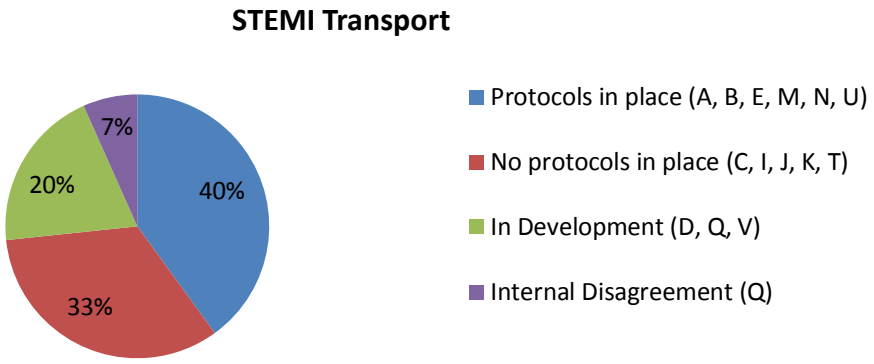

Figure 22: STEMI Transport

Most RACs listed multiple ways that transport practices are implemented, and five RACs listed only one way that their transport practices are implemented. Most RACs implemented transport practices through EMS/Ambulance Service protocols. Other RACs implemented their transport practices through written policy at the regional level; standard, unwritten procedure (habit); unwritten/verbal agreements; contractual agreements between entities; and EMS Medical Director orders (see Figure 23).

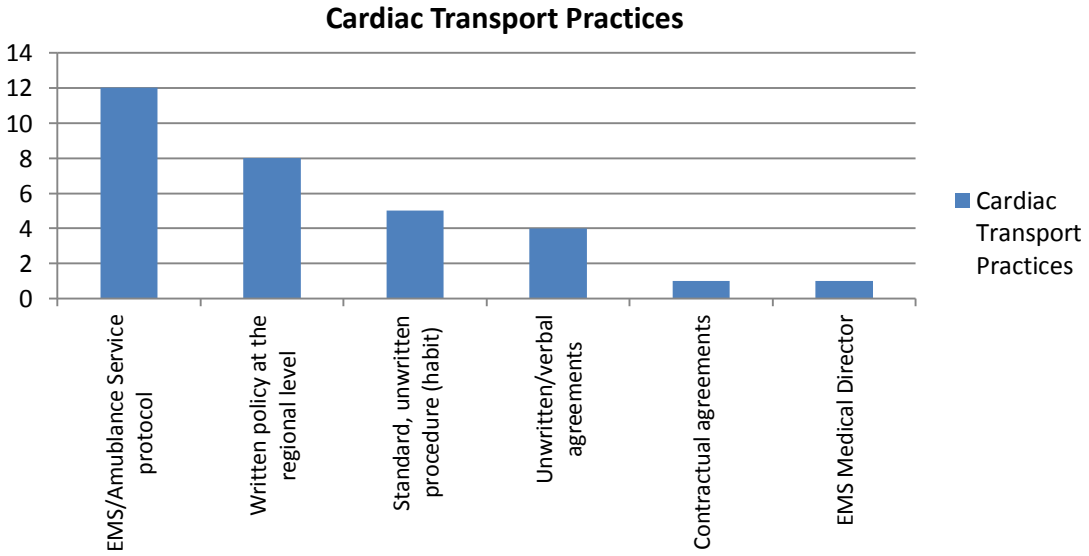

Figure 23: Cardiac Transport Practices

RACs reported that the primary ways EMS agencies determined to which hospitals to take cardiac patients is by closest facility and EMS Medical Director oversight/order. Other determinations included the regional Cardiac Transport Plan and patient choice (see Figure 24).

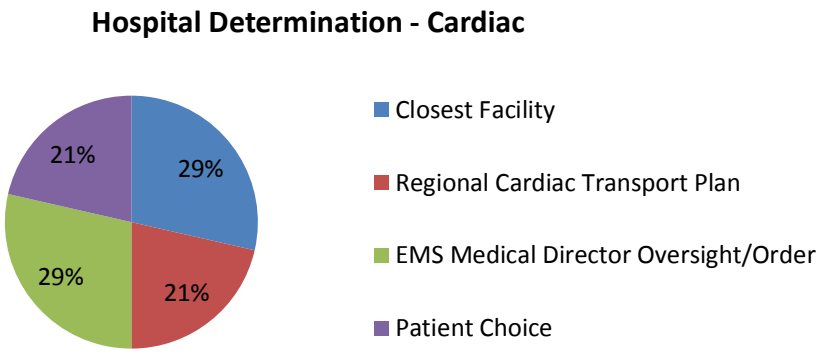

Figure 24: Hospital Determination - Cardiac

The majority of RACs said that their transport plan guidelines varied based upon circumstance. Only two RACs said that their transport plan guidelines were fixed (TSA K and N). Three RACs, however, had internal disagreement about whether their transport plan guidelines were fixed or varied. Of the RACs whose transport plan guidelines varied upon circumstance, five RACs reported that guidelines varied by multiple circumstance and four RACs reported that their guidelines only varied by a single circumstance, namely distance (see Figure 25).

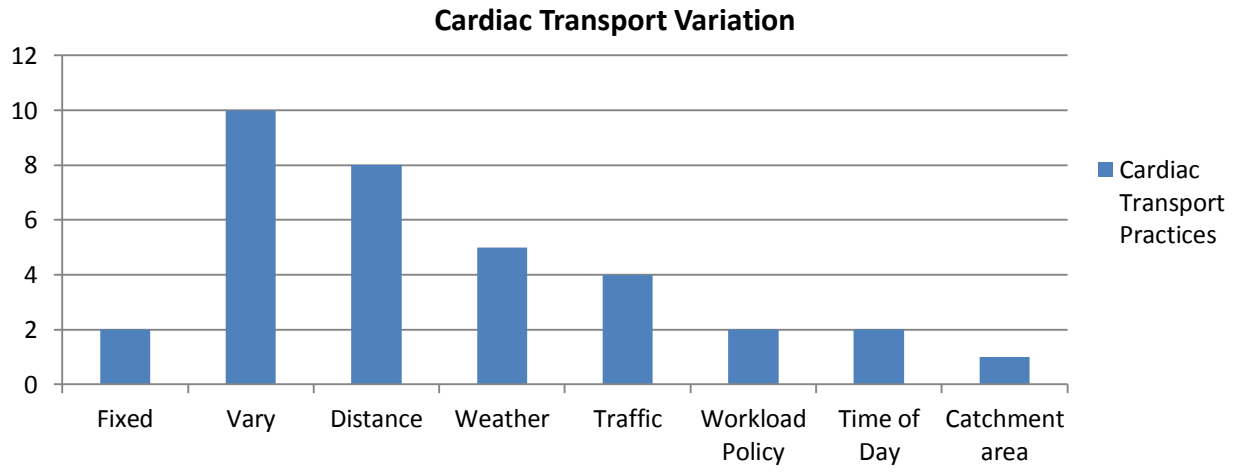

Figure 25: Cardiac Transport Variation

Cardiac Data Reporting

TSAs A, B, I, Q and U reported that they are collecting cardiac data from hospitals, but not all applicable hospitals are reporting their data. Only TSA N is collecting cardiac data from 100 percent of applicable hospitals and EMS agencies in the TSA. TSAs C, K, and T are not collecting cardiac data from hospitals or EMS agencies in their TSA. Six RACs collect cardiac related response and transport data from EMS facilities in the TSA, but not all EMS agencies report their data (TSAs A, B, I, M, R, U). TSAs D, E, R, and V said that hospital data collection was in the development process, and TSAs D, E, and V are in the process of developing EMS data collection systems (see Figure 26).

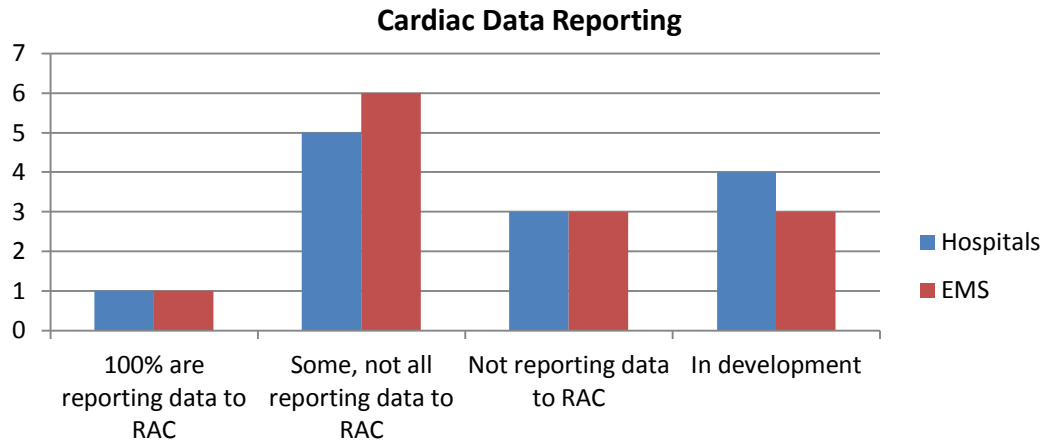

Figure 26: Cardiac Data Reporting

When asked whether the RAC would be willing to report cardiac/STEMI data to the GETAC Cardiac Committee to support ongoing quality improvement activities, the majority of RACs said that they would report data GETAC. Comments on this question included: they could provide data in the future; they do not collect cardiac information, only aggregate data; and "The RAC does not have employees and/or a collection medium for regional reporting. It is not that we are unwilling to report the data but not having an employee or dedicated person will make it very difficult produce the data as needed/required".

Cardiac Care Activation Process

Five RACs had designated a protocol for pre-hospital identification of STEMI, and four were in the development stage. Four RACs had not designated a protocol for pre-hospital identification of STEMI. While seven RACs were developing regional criteria for cath lab pre-hospital activation, only two had established regional criteria. Most RACs reported that EMS provider interpretation and 12-lead transmission to the hospital activate the cath lab. TSA N also said that BVRAC STEMI Alert activation criteria activate the cath lab (see Figure 28). Most RACs had assessed the availability of 12-lead ECG equipment on ALS ambulances responding to 911 calls in the TSA, and of those who had assessed the availability of this equipment, most RACs (n=4) said that 26-50 percent of ALS ambulances in their TSA had 12-lead ECG equipment (see Figure 27).

Cardiac Care Activation Process	TSA	Number	Percent
Designated protocol for pre-hospital identification of STEMI	B, E, I, M, N	5	33.3%
No designated protocol for pre-hospital identification of STEMI	C, K, T, U	4	26.7%
In development	A, D, R, V	4	26.7%
Internal Disagreement	J, Q	2	13.3%
Developed regional criteria for cath lab pre-hospital activation	B, N	2	13.3%
No regional criteria for cath lab pre-hospital activation	A, C, K, T, U	5	33.3%
In development	D, E, I, J, M, R, V	7	46.7%
Internal Disagreement	Q	1	6.7%
Assessed availability of 12 lead ECG equipment on ALS ambulances	A, B, D, I, J, M, N, Q, R, U, V	11	73.3%

0-25% have 12-lead ECG equipment	B	1	9.1%
26-50% have 12-lead ECG equipment	D, I, J, U	4	36.4%
51-75% have 12-lead ECG equipment	A	1	9.1%
76-99% have 12-lead ECG equipment	N	1	9.1%
100% have 12-lead ECG equipment	Q, V	2	18.2%
Internal Disagreement	M, R	2	18.2%
Have not assessed availability of 12 lead ECG equipment on ALS ambulances	C, E, K, T	4	26.7%

Figure 27: Cardiac Care Activation Process

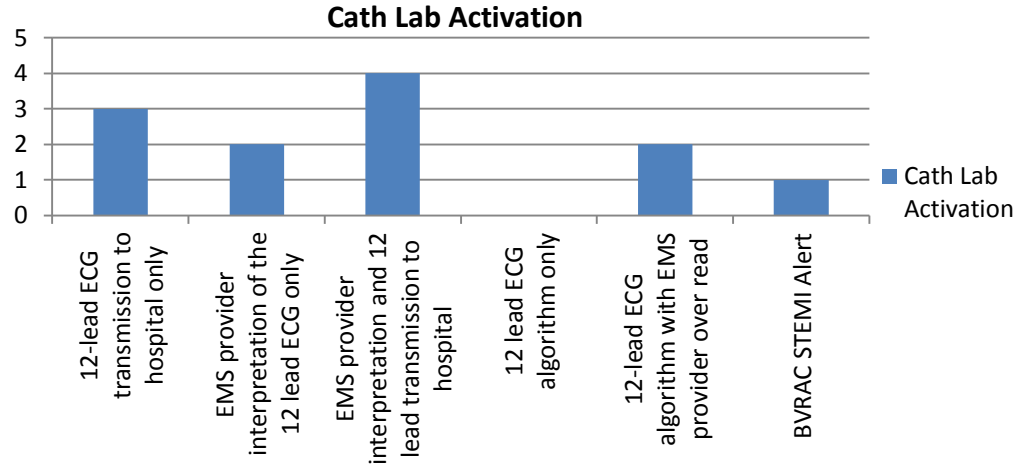

Figure 28: Cath Lab Activation

Recommendations for Others

Recommendations for other RACs to improve the Cardiac Care System included: work together to do what's in the best interest of the patients; develop a multi-disciplinary team that includes EMS, nurses, physicians, EMS medical directors, etc.; create a computerized statewide data base to input information and run reports; use regional STEMI alert form to follow STEMI patients from onset to cath; line item funding for committee support; and mandate and pay for EMS services to use LifeNet for all cardiac and stroke patients.

References

1 Map of Texas Trauma Service Areas – March 2007. Retrieved on July 2, 2012 from http://www.dshs.state.tx.us/emstraumasystems/TSAMap.pdf