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Nashville

October 27, 2016

Ms. Krista Lee
Executive Director
Fiscal Review Committee
320 Sixth Avenue, North-8th Floor
Nashville, TN 37243-0057

Dear Ms. Lee,

In October 2014, the Assisi Foundation funded a multi-year grant to establish a mobile stroke unit in Memphis – where one of the highest stroke mortality rates exist in the country. The grant is intended to construct and operate an ambulance enhanced to specifically diagnose and treat stroke patients sooner than traditional treatment providing a significantly more optimistic prognosis. The goal of our program is to demonstrate the improvement in outcomes and quality of life for patients when a stroke is identified and treated earlier than in the time it takes to get to a hospital emergency room.

In February, the Health Science Center accepted delivery of the ambulance which is like no other in the world (please see attached Fact Sheet). The ambulance started operations this summer through our relationship with University Clinical Health (formerly the UT Medical Group) and its subsidiary the UT Mobile Stroke Unit, LLC (UTMSU). As the protocol for this method of treatment is not yet an accepted standard of care, insurance companies, including the federal government, do not yet recognize it for reimbursement. Part of our research will also be to demonstrate the savings to third party payors through this earlier treatment which is believed will significantly reduce brain damage caused by a stroke and therefore improve quality of life in the long term – reducing the costs of care. To support this effort, the University continues to raise external funds to provide the staff and support of operating the ambulance.

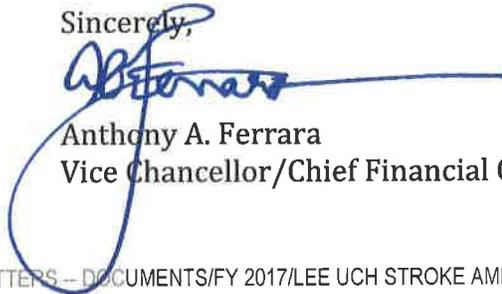
The University signed a contract with UTMSU in June 2016 for a maximum liability of \$225,000 to cover unreimbursed costs incurred in the operation of the ambulance. The contract expires on December 31, 2016. Costs being reimbursed are for the additional staff necessary to manage the ambulance including physician extenders such as nurse practitioners as well as EMTs and CT technicians.

The proposed amendment is for \$500,000 bringing the maximum liability to a total of \$725,000 and would extend the end date of the contract by one year through December 31, 2017. The Health Science Center has commitments in hand from donors to support this cost.

Ms. K. Lee
UCH Stroke Ambulance
October 27, 2016
Page 2

I hope this letter and the attached documents adequately present the justification for this Amendment. As always, please let me know if you have questions or need additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'A. Ferrara', with a long horizontal line extending to the right and a large loop on the left side.

Anthony A. Ferrara
Vice Chancellor/Chief Financial Officer

/VOLUMES/FINANCE/VICECHANCELLOR/GENERAL LETTERS -- DOCUMENTS/FY 2017/LEE UCH STROKE AMBULANCE.DOCX

Enclosures

cc: Meagan Jones
Mark Paganelli
Sandra Pulliam

The University of Tennessee College of Medicine Mobile Stroke Unit Fact Overview

What Makes this Mobile Stroke Unit One-of-a-Kind in the World

- A hospital-quality CT scanner with advanced imaging capabilities to not only allow brain imaging, but also imaging of blood vessels in the brain. Other Mobile Stroke Units in the U.S. and Europe use smaller portable CT scans that only image the brain (without vessels) and also require the team to move the patient for each slice (picture) that is taken.
- UT's Mobile Stroke Unit provides the same number of slices in high resolution as obtained and expected in the hospital setting since it is equipped with a dedicated gantry that automatically moves the patient to obtain images.
- This is the first time CT capabilities of this magnitude have been available in a mobile setting, creating the ability to diagnose and launch treatment including tissue plasminogen activator (tPA) treatment and the potent blood pressure drug nicardipine within the critical first hour time frame and select patients for endovascular interventions, neurosurgery and neurocritical care right from the prehospital arena.
- It is the largest Mobile Stroke Unit in the world, complete with an internal power source capable of matching regular electrical outlet access.
- The Mobile Stroke Unit will be able to bypass hospital emergency departments and take patients directly to endovascular suites, operating rooms, and stroke or neurocritical units.

Who's on Board

A combination of the following:

- A vascular neurologist
- Stroke fellowship-trained, doctorally-prepared nurses certified as advanced neurovascular practitioners, ANVP-BC. Only 88 of these expert nurses are in practice and four have been recruited to Memphis for the Mobile Stroke Unit
- A CT technologist
- An emergency medical paramedic
- An emergency medical technician driver/helper
- The Mobile Stroke Unit capacity includes the ability to transport trainees and researchers interested in building the science of early stroke management

How It Will Work

- A family member or bystander recognizes stroke warning signs in a person and calls 911.

- The Mobile Stroke Unit will be dispatched to the scene and perform a detailed stroke assessment of the patient.
- CT scan of the brain and blood vessels, and other appropriate diagnostics are performed to determine what kind of stroke the patient is experiencing.
- Once the type of stroke is determined, the doctor administers the appropriate vital initial treatment. That treatment could include tissue plasminogen activator (tPA) to begin the process of brain damage mitigation or nicardipine within the critical first hour time frame. The patient could then be selected for endovascular interventions, neurosurgery and neurocritical care right from the prehospital arena.
- After the patient is evaluated, given initial treatment and stabilized, the patient will be taken to a primary stroke center at a local hospital for the next phase of care, being able to bypass the emergency department and go straight to the hospital's Neuro Intensive Care Unit, Cardiac Catheterization Lab or Stroke Unit for treatment.
- The Unit will operate out of Fire Department 14 with immediate access to high stroke populations in Whitehaven and Frayser, but will travel to all of Shelby County.
- Initially, it will operate one week on and one week off so as to evaluate its performance to maximize its efficiency to treat stroke.

Time is Brain

- The average time from ambulance arrival to pick up a patient through hospital arrival, beginning diagnosis and treatment is 75 minutes or more.
- The average anticipated time from this new Mobile Stroke Unit arrival at the patient to diagnosis and initial treatment for a stroke is 15 minutes.
- The quicker a patient receives medical treatment, the less permanent brain damage occurs.
- According to the American Stroke Association, stroke is the fifth leading cause of death in the U.S., killing someone approximately every four minutes.
- African Americans have nearly twice the risk of a first-time stroke and a higher death rate from stroke.
- "Time is brain," said Andrei V. Alexandrov, M.D., Chairman of the Department of Neurology at The University of Tennessee Health Science Center and Semmes-Murphey Professor. "The longer a blood clot sits there, the more brain cells die. If you're having a stroke, you only have one hour to decide to do something, and that hour will largely determine how you are you going to spend the rest of your life."
- According to the American Stroke Association, stroke is the leading cause of disability in the U.S.

Why Memphis

- Shelby County has a tremendous burden of stroke with a stroke incidence 37 percent higher than the national average. ¹
- Tennessee is ranked 48th in stroke mortality with a rate of 45.6 per 100,000 people in 2013. ²

¹ Centers for Disease Control Division for Heart Disease and Stroke Prevention
<http://nccd.cdc.gov/DHDSAtlas/DetailedReports.aspx?AreaId=47157&ThemeSubClassId=3&filterId=9,2,3,4,7&filterOptions=1,1,1,1,1>

² Centers for Disease Control, 2013

- Stroke risk factors, according to the American Stroke Association include:
 - *Obesity.* More than 35 percent of the population in Shelby County is obese, compared to 25 percent of the U.S. population.³
 - *Race.* African Americans have a much higher risk of death from a stroke than Caucasians do. Shelby County's demographics include more than a 53% African American population.⁴
 - *Hypertension.* Tennessee is ranked the sixth highest state for hypertension rates with more than 38 percent of Tennesseans suffering from high blood pressure. The national average is 28 percent⁵

Special Recognitions

- The University of Tennessee College of Medicine physicians, led by Dr. Stern and Dr. Alexandrov
- The University of Tennessee Advisory Board, led by Chairman David Levine
- Memphis Fire Department EMS teams

Key Donors

- Jan Young and The Assisi Foundation
- Jack Moore
- An anonymous foundation
- The H.W. Durham Foundation, Inc.

Special Acknowledgement

- George Cates
- Ron Belz
- Dr. John Dreyzehner, Tennessee Commissioner of Health
- Gary Shorb

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³ Centers for Disease Control, County Health Rankings
<http://www.countyhealthrankings.org/app/tennessee/2015/rankings/shelby/county/outcomes/overall/snapshot>

⁴ United States Census Bureau
<http://www.census.gov/quickfacts/table/PST045215/47157>

⁵The State of Obesity: Better Policies for a Healthier America.
<http://stateofobesity.org/states/tn/>



**COLLEGE OF MEDICINE
MOBILE STROKE UNIT
SUMMARY OF OPERATIONS THROUGH SEPTEMBER 2016**

- ✚ First day of service was July 12, 2016
- ✚ On service every other week from Sunday to Saturday
 - average 3-4 calls per day
- ✚ The total patients transported by the Mobile Stroke Unit = 42 cases
 - Includes only diagnosed stroke patients, team does an assessment on the scene and then turns over management to Memphis Fire EMS if not a stroke
- ✚ Ischemic strokes (clot occluding an artery) account for 36 (86%) of the 42 transported patients.
 - 10 (28%) of these 36 patients were treated with Alteplase tissue plasminogen activator (tPA) the clot busting drug that needs to be started within 4.5 hours of symptom onset to reduce disability and death from ischemic stroke.
 - Zero patients treated with tPA suffered hemorrhage complications from the drug.
 - The most common reason for NOT being eligible for tPA treatment: Waiting too long after the start of stroke symptoms to seek help, so the damage is already done and cannot be reversed.
- ✚ Intracerebral hemorrhage strokes (ruptured artery usually due to poorly controlled BP) account for 6 (14%) of the 42 transported patients, with uncontrolled hypertension identified as the cause of the stroke in each case.
- ✚ Scene arrival to definitive diagnosis time = median 7 minutes
- ✚ Computed tomography (CT) scan and CT angiography (CTA) scan times = 3.5 minutes
- ✚ Scene arrival to Alteplase tPA bolus = median 16 minutes

**THE UNIVERSITY OF TENNESSEE
CONTRACT AMENDMENT**

This Amendment is to the Contract between the University of Tennessee ("University") and UT Mobile Stroke Unit, LLC (UT Medical Group) ("Contractor"), which Contract was entered into on 06/30/16 (UT Contract # 8500053927).

This Contract Amendment consists of this cover page and 0 additional pages.

By mutual agreement, the UNIVERSITY and CONTRACTOR agree to the following amendment for the operation of the mobile stroke unit:

- (1) Extend the service dates from 12/31/16 to 12/31/17.
- (2) Increase the maximum financial obligation by \$500,000, making the cumulative total \$725,000.

All other terms remain unchanged.

In witness of their acceptance of the terms of this agreement, the parties have had this Contract Amendment executed by their duly authorized representatives.

FOR CONTRACTOR:

ADDRESS:

UT Mobile Stroke Unit/UT Medical Group
1407 Union Avenue, Suite 700
Memphis, TN 38104

PHONE: 901-866-8398

FEDERAL ID #: XXXXXXXXXX

Name: Andrew T. Botschner
Title: CEO

Title:

Date

FOR UNIVERSITY:

DEPARTMENT NAME:

Neurology – MSU

RESPONSIBLE ACCOUNT:

R073279265

James R. Maples
Interim Treasurer / Chief Financial Officer

Date

**THE UNIVERSITY OF TENNESSEE
REQUEST: NON-COMPETITIVE AMENDMENT
CONTRACT**

1) NCJ Number:	9000022329	Fund Number:	R073279265
2) Campus/Institute Name:	Memphis	Neurology	

EXISTING CONTRACT INFORMATION

3) Short Description:	UT Mobile Stroke Unit Operation		
4) Proposed Vendor:	Name:	UT MEDICAL GROUP INC	
	Vendor Number:	1030003	
	Vendor ID:		
5) Original CTS Number:	8500053927		
6) Contract Start Date:	05/01/2016		
7) <u>Current</u> Contract End Date IF <u>all</u> Options to Extend the Contract are Exercised:	12/31/2016		
8) <u>Current</u> Total Maximum Cost IF <u>all</u> Options to Extend the Contract are Exercised:	\$ 225,000.00		

PROPOSED AMENDMENT INFORMATION

9) <u>Proposed</u> Amendment #	001		
10) <u>Proposed</u> Amendment Effective Date:	01/01/2017		
11) <u>Proposed</u> Contract End Date IF <u>all</u> Options to Extend the Contract are Exercised:	12/31/2017		
12) <u>Proposed</u> Amendment Amount	\$ 500,000.00		
13) <u>Proposed</u> Total Maximum Cost IF <u>all</u> Options to Extend the Contract are Exercised:	\$ 725,000.00		
14) Approval Criteria:	Only one uniquely qualified provider able to furnish service		
15) Description of the Proposed Amendment Effects & Any Additional Service:	<p>The mobile stroke unit will be operated by UCH. UCH is the COM affiliated practice partner. This is an amendment to:</p> <p>(1) Extend the end date to 12/31/2017 (2) Increase the maximum liability by \$500,000 from \$225,000 to \$725,000</p>		
16) Explanation of Need for the Proposed Amendment:	The amendment is needed because the project is ongoing.		
17) Name & Address of Vendor/Contractor's Current Principal Owner(s): (not required if proposed contractor is a state education institution)	UT MEDICAL GROUP INC 1407 UNION AVE STE 700 MEMPHIS TN 38104-3641 US USA		
18) Documentation of Office for Information Resources Endorsement:	N/A (required only if the subject service involves information technology)		
19) Documentation of Department of Personnel Endorsement:	N/A (required only if the subject service involves training for state employees)		
20) Documentation of State Architect Endorsement:	N/A (required only if the subject service involves construction or real property related services)		
21) Description of Procuring Agency Efforts to Identify Reasonable, Competitive, Procurement Alternatives:	There are no other alternatives available.		

22) Justification for the Proposed Non-Competitive Amendment:

Non-competitive Negotiation is best because the project has already been established with UCH.

CONTRACT SUMMARY SHEET

021406

RFS #		Contract #	
N/A		N/A	
State Agency		State Agency Division	
University of Tennessee		Health Science Center	
Contractor Name		Contractor ID # (FEIN or SSN)	
UT Medical Group Inc.		<input type="checkbox"/> C- or <input checked="" type="checkbox"/> V- XXXXXXXXXX	
Service Description			
Vehicle and Equipment Lease Agreement for the purposes of operating and assisting in the maintenance of the University's mobile stroke unit ambulance and equipment.			
of simulation to become a leader			
Contract BEGIN Date	Contract END Date	Subrecipient or Vendor?	CFDA #
5/1/16	12/31/17	Vendor	
Mark Each TRUE Statement			
<input type="checkbox"/> n/a Contractor is on STARS		<input checked="" type="checkbox"/> Contractor's Form W-9 is on file in Accounts	
Allotment Code	Cost Center	Object Code	Fund
332.3	N/A	N/A	N/A
Funding Grant Code	Funding Subgrant Code		
N/A	N/a		
FY	State	Federal	Interdepartmental
2014-2017			
2017-2018			
TOTAL:	\$ -	\$ -	\$ -
			\$ 725,000.00
			\$ 725,000.00
— COMPLETE FOR AMENDMENTS ONLY —		State Agency Fiscal Contact & Telephone #	
FY	Base Contract & Prior Amendments	THIS Amendment ONLY	
2014-2017	\$225,000.00		Anthony A. Ferrara 901-448-5523
2017-2018		\$ 500,000.00	James R. Maples 865-974-2243
TOTAL:	\$ 225,000.00	\$ 500,000.00	
End Date	5/1/16	12/31/17	
7			
<input type="checkbox"/> African American	<input type="checkbox"/> Person w/ Disability	<input type="checkbox"/> Hispanic	<input type="checkbox"/> Small Business
<input type="checkbox"/> Asian	<input type="checkbox"/> Female	<input type="checkbox"/> Native American	<input type="checkbox"/> NOT disadvantaged
<input type="checkbox"/> OTHER minority/disadvantaged—			
Contractor Selection Method (complete for ALL base contracts— N/A to amendments or delegated authorities)			
<input type="checkbox"/> RFP	<input type="checkbox"/> Competitive Negotiation	<input type="checkbox"/> Alternative Competitive Method	
<input checked="" type="checkbox"/> Non-Competitive Negotiation	<input type="checkbox"/> Negotiation w/ Government(eg.ID,GG,GU)	<input type="checkbox"/> Other	
Procurement Process Summary (complete for Alternative Method, Competitive Negotiation, Non-Competitive Negotiation, OR Other)			

Supplemental Documentation Required for
Fiscal Review Committee

*Contact Name:	Anthony A. Ferrara	*Contact Phone:	901-448-5523
*Presenter's name(s):	Anthony A. Ferrara		
Edison Contract Number: <i>(if applicable)</i>		RFS Number: <i>(if applicable)</i>	
*Original or Proposed Contract Begin Date:	05/01/16	*Current or Proposed End Date:	12/31/17
Current Request Amendment Number: <i>(if applicable)</i>	1		
Proposed Amendment Effective Date: <i>(if applicable)</i>	January 1, 2017		
*Department Submitting:	University of Tennessee		
*Division:	Health Science Center		
*Date Submitted:	October 28, 2016		
*Submitted Within Sixty (60) days:	Yes		
<i>If not, explain:</i>			
*Contract Vendor Name:	UT Medical Group		
*Current or Proposed Maximum Liability:	725,000.00		
*Estimated Total Spend for Commodities:	\$		
*Current or Proposed Contract Allocation by Fiscal Year: (as Shown on Most Current Fully Executed Contract Summary Sheet)			
FY: 2016	FY: 2017	FY: 2018	FY: FY FY
\$ 5,572.59	\$ 469,427.41	\$ 250,000.00	\$ \$ \$
*Current Total Expenditures by Fiscal Year of Contract: (attach backup documentation from Edison)			
FY:2016	FY: 2017	FY: 2018	FY: FY FY
\$5,572.59	\$37,955.93	\$	\$ \$ \$
IF Contract Allocation has been greater than Contract Expenditures, please give the reasons and explain where surplus funds were spent:			
IF surplus funds have been carried forward, please give the reasons and provide the authority for the carry forward provision:			
IF Contract Expenditures exceeded Contract Allocation, please give the reasons and explain how funding was acquired to pay the overage:			

Supplemental Documentation Required for
Fiscal Review Committee

*Contract Funding Source/Amount:			
State:	\$	Federal:	
<i>Interdepartmental:</i>		<i>Other:</i>	\$725,000.00
If “ <i>other</i> ” please define:		Gift funds.	
If “ <i>interdepartmental</i> ” please define:			
Dates of All Previous Amendments or Revisions: <i>(if applicable)</i>		Brief Description of Actions in Previous Amendments or Revisions: <i>(if applicable)</i>	
Method of Original Award: <i>(if applicable)</i>		Competitive - RFP	
*What were the projected costs of the service for the entire term of the contract prior to contract award? How was this cost determined?			
*List number of other potential vendors who could provide this good or service; efforts to identify other competitive procurement alternatives; and the reason(s) a sole-source contract is in the best interest of the State.			

**MOBILE STROKE UNIT
AMBULANCE OPERATIONS AND SERVICES AGREEMENT**

THIS MOBILE STROKE UNIT AMBULANCE OPERATIONS AND SERVICES AGREEMENT (together with all Exhibits hereto, this “Agreement”) is entered into effective as of the 1st day of May, 2016, (the “Effective Date”), by and between **The University of Tennessee**, a public higher education institution and instrumentality of the State of Tennessee, on behalf of its Health Science Center (the “University”) and **UT Mobile Stroke Unit, LLC**, a Tennessee non-profit limited liability company (“Company”), whose sole member is UT Medical Group, Inc. (“UTMG”). The University and Company are referred to herein individually as a “party” and collectively as the “parties.”

WITNESSETH:

WHEREAS, the University’s mission includes the improvement of health through education, research, the promotion of better clinical care, and public service. This mission is achieved through the education of future leaders in the field of medicine, dentistry, pharmacy, allied health, and nursing;

WHEREAS, Company’s mission includes leasing, operating, managing and working with community partners in the provision of mobile stroke unit services, as is more fully set forth in Company’s Articles of Organization and Operating Agreement attached hereto as **EXHIBITS A AND B**, respectively;

WHEREAS, the University maintains an affiliation agreement with UTMG, which is a University-designated faculty practice plan and the sole member of Company;

WHEREAS, the University wishes to engage Company to operate and assist in the maintenance of the University-owned mobile stroke unit ambulance and equipment, and Company wishes to be so engaged as more fully provided herein;

WHEREAS, in the provision of Company’s services to the University under this Agreement, Company may utilize the services, space, experience and/or expertise of UTMG and other entities with the advance written consent of the University.

NOW, THEREFORE, for and in consideration of the mutual covenants and promises set forth herein and other good and valuable consideration, the receipt, adequacy and sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. The Services to Be Provided by Company. Company shall enter into with the University the Vehicle and Equipment Lease Agreement attached hereto as **EXHIBIT C** for purposes of operating and assisting in the maintenance of the University’s mobile stroke unit ambulance and equipment (hereafter the “Ambulance”). Company shall provide (or shall contract for the provision of), at its own expense and without charge to the University, adequate space, equipment, facilities, supplies and materials necessary and appropriate for the operation of the University’s Ambulance. In partial satisfaction of such obligation, Company shall enter into

and sign the “Reach Most” Project Agreement Between the City of Memphis, Tennessee and UT Mobile Stroke Unit, LLC attached hereto as **EXHIBIT D**. Company represents and warrants that, at all times during the term of this Agreement, Company will take the following actions without the need for any further request from the University:

- (a) Company will not revise, alter, amend or terminate Company Articles of Incorporation and Operating Agreement attached as **EXHIBITS A AND B** without either having first entered into a written amendment to this Agreement signed by both parties, which amends EXHIBITS A and/or B accordingly, or without having provided the University with one (1) year’s advance written notice of such revisions or amendments;
- (b) Company will ensure that the Ambulance is and remains actively licensed and operated in accordance with all applicable law, including but not limited to Tennessee Administrative Rules and Regulations Rules 1200-12-1-.01, .02, .03, .05, .06, .07, .08, .09, .10, .11, .14, and .15;
- (c) Company will promptly provide written notice to the University of the names of all proposed drivers of the Ambulance prior to any such proposed drivers being permitted to drive or operate such Ambulance;
- (d) Company will ensure that all proposed drivers of the Ambulance enter into and sign a written contract with Company prior to any such proposed drivers being permitted to drive or operate such Ambulance, with such contract including at a minimum (i) a requirement for such proposed driver to immediately and without delay provide written notice to the President of Company of any and all citations (whether moving or non-moving) for traffic violations, driving under the influence, driving while intoxicated, or failure to submit to a breathalyzer or other intoxication test, whether convicted or not and whether such citation was issue within or outside of the State of Tennessee; and (ii) a written authorization and express permission for Company to obtain copies of such proposed drivers’ driving and other records from the Tennessee Department of Motor Vehicles or other state agency that maintains driving records;
- (e) Company will ensure that all health care professionals who are to provide any professional services on the Ambulance, whether billable or not, are actively licensed to provide such professional services, and that such health care professional is covered for acts and omissions and for health care liability actions under one or more professional liability insurance policy maintained by Company;
- (f) Company shall provide and maintain professional liability, general liability and worker’s compensation insurance for their own personnel with limits as determined reasonable by Company or as otherwise agreed to by the parties;

- (g) Company will provide advance written notice to, and obtain advance written approval from, the University prior to entering into or terminating any oral or written contract, or any addendum or amendment thereto, with any other individual or entity that relates in any way to this Agreement or to the operation, storage or maintenance of the Ambulance; and
- (h) Company agrees promptly to provide to the University and/or its designee any and all cooperation and assistance necessary for the University to comply with The Assisi Foundation Grant Award (Grant No. 14-065 R15) entitled "Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (REACH MOST) dated October 22, 2015 (hereafter the "Grant"), attached hereto as **EXHIBIT E**.

2. **Co-Branding.** (a) *License to Use Names, Logos, Trademarks and Other Indicia.* Many of the services subject to this Agreement may be operated and/or marketed using the brands and other intellectual property of both Company and the University ("Co-Branding"). For the purposes of such Co-Branding Efforts, the University and Company each grant to the other a non-exclusive, non-transferable license to use the other party's names, logos, trademarks, and other indicia in the form attached as **EXHIBIT F** hereto, or in such other form or format to which the parties agree in writing. Company shall be entitled to use the name "UT Mobile Stroke Unit" in its company name and operations only upon the express written approval of the President of The University of Tennessee. Company shall be entitled to use the logo attached as **EXHIBIT F**, which incorporates the name "University Clinical Health," after UTMG has registered such name with the Tennessee Secretary of State as an assumed name of UTMG and/or Company. This license, and any party's right to use the names, logos, trademarks, and other indicia of the other party, will terminate upon the expiration or earlier termination of this Agreement. Within thirty (30) days after expiration or termination of this Agreement, Company, at its expense, shall remove the University's name, logos, trademarks, and any other indicia from all Company vehicles, facilities and stationary.

(b) *Co-Branding Policy.* The parties agree that:

- Each party remains the exclusive owner of its names, logos, trademarks, and other indicia.
- Each party will adhere to the other party's published policies and guidelines regarding the use of the other party's names, logos, trademarks, and other indicia.
- Each party will take reasonable steps necessary to prevent the misuse of the names, logos, trademarks, and other indicia of the other party by its employees and agents.
- Neither party will use the names, logos, trademarks, and other indicia of the other party in a way that will not be detrimental to the value of the names, logos, trademarks, and other indicia.
- As necessary, each party will use appropriate trademark notices on the other party's names, logos, trademarks, and other indicia.

- For online collaborations, the parties agree to share relevant statistical data concerning co-branded programs and services in a timely manner for the purpose of joint review and evaluation.

3. Reimbursement by the University. (a) During the Initial Term of this Agreement, the University will reimburse Company for (or shall advance funds to Company to cover) reasonable and necessary expenses incurred by Company, provided that such expenses are (i) directly related to operating and assisting in the maintenance of the Ambulance and ii) expended to fund clinical staff, support staff, research staff, fuel, drugs, licenses, equipment, maintenance and supplies, insurance required by this Agreement, and other miscellaneous expenses approved in writing in advance by the University (hereafter "Operating Expenses").

(b) Without limitation and by way of example only, such Operating Expenses specifically shall not include any costs, damages or other expenses related to Company's liability to third parties (including but not limited to the City of Memphis, the Memphis Fire Department or any hospital, clinic or patient), nor shall such Operating Expenses include any overhead expenses, legal fees, accounting fees, rent, utilities, or other costs of doing business incurred by the Company. The University shall also have the option of providing some items or services directly to the Company, which would otherwise qualify as Operating Expenses under this Agreement.

(c) In order for Company to be entitled to reimbursement for or to be advanced Operating Expenses by the University, Company shall be required to provide to the University receipts and other documentation (including but not limited to time sheets for staff and professionals) in a form acceptable to the University (hereafter "Supporting Documentation"). The University's obligation to reimburse Company for Operating Expenses under this Agreement shall be offset by any and all amounts of revenue collected by the Company as a result of the Company's operation of the Ambulance, including but not limited to Company's receipt of ambulance service fees, and reimbursements from third parties for drugs, supplies and billable professional services (hereafter "Company's Revenue"). The maximum amount of the University's obligation to pay the Company for Operating Expenses during the Initial Term of this Agreement shall not exceed Two Hundred, Twenty-Five Thousand Dollars (\$225,000).

(d) Within ten (10) days after the end of each calendar month during the Initial Term of this Agreement, Company shall forward an invoice to the University for any and all Operating Expenses due to Company from the University. Such invoices shall show all Operating Expenses incurred by Company and all of the Company's Revenue during the preceding calendar month, and shall be accompanied by Supporting Documentation for all Operating Expenses. The University shall have the right to review and audit all such Supporting Documentation and evidence of Company Revenue upon reasonable notice to Company. The University shall pay all such invoices within thirty (30) days after its receipt.

4. Independent Contractors. This Agreement does not create, and shall not be construed as creating, a partnership or joint venture between the University and Company. All services provided by Company pursuant to this Agreement are provided by Company as an independent contractor and all personnel performing services on behalf of Company pursuant to

this Agreement are employees of Company and provide their services under the control and supervision of Company. Notwithstanding the foregoing, the University may from time-to-time require that one or more University employees directly provide certain services on the Ambulance, and such services shall not be considered to be provided by Company to University in such instances. Each party shall be solely responsible for and shall comply with all state and federal laws pertaining to employment taxes, income withholding, unemployment compensation contributions and other employment related statutes applicable to that party, and each party shall determine and provide such benefits for its employees as it deems appropriate.

5. **Conduct of Medical Practice.** Company shall be solely and exclusively in control of and responsible for all professional medical services to its patients rendered by its physicians or under their control, including but not limited to all medical training and medical supervision of physicians and residents.

6. **Events Excusing Performance.** Company shall not be liable to the University for failure to perform any of the services required hereunder in the event of strikes, lock-outs, calamities, acts of God, unavailability of supplies or other events over which Company has no control for so long as such events continue and for a reasonable period of time thereafter.

7. **Business and Medical Records.**

(a) **Business Records.** All business records, papers, documents, ledgers, journals and reports relating to the business and/or medical operations of Company shall remain the property and obligation of Company. The University shall have the right to make copies, within twenty-four (24) hours of notice to Company, during reasonable business hours and at the University's expense, of any such records in connection with any legitimate purpose related to this Agreement. Company agrees to create and maintain the records in accordance with all federal and state laws, rules and regulations.

(b) **Patient Information and Medical Records.** All patient records and charts maintained by Company in connection with professional medical services provided by Company shall be Company's property and obligation to create and maintained. Neither the University nor any of its employees shall disclose to any third party, except where permitted or required by law or where such disclosure is expressly approved by Company in writing, any patient or medical record information, regarding patients of Company, and Company and its employees or agents shall comply with all federal and state laws and regulations regarding the confidentiality of such information. Company shall use its reasonable efforts to preserve the confidentiality of patient medical records and use information contained in such records only for the limited purpose necessary to perform the services set forth herein and in the Exhibits hereto. Such efforts shall be in accordance with the federal Health Insurance Portability and Accountability Act ("HIPAA") and applicable state law.

8. **Term; Termination.**

(a) **Term.** The term of this Agreement shall begin on the Effective Date and shall end on December 31, 2016 (the "Initial Term"), provided that the University shall have the

option of renewing this Agreement at any time based on the same terms and conditions set forth herein, including but not limited to the effective reimbursement rates set forth herein during the Initial Term, by providing advance written notice to the Company. However, it is the parties' intent that prior to the expiration of the Initial Term, the parties will enter into an Addendum or Amendment to this Agreement, to provide for a longer-term (an "Extended Term") Agreement, which will include a more detailed budget. Either party may terminate this Agreement without cause by providing one hundred eighty (180) days' advance written notice to the other party.

(b) **Termination With Cause.** If Company defaults in performing any of its obligations under this Agreement, then the University will give written notice of such default and Company shall have thirty (30) days to cure such default. If such default is not timely cured, the University may terminate this Agreement immediately. If the University defaults in performing any of its obligations under this Agreement, then Company will give written notice of such default and the University shall have thirty (30) days to cure such default. If such default is not timely cured, Company may terminate this Agreement with an additional ninety (90) days' notice. Termination with cause shall not preclude the terminating party from seeking damages for breaches of this Agreement.

(c) **Automatic Termination.** This Agreement shall automatically terminate upon dissolution of Company.

(d) **Termination by University Due to Grant Changes or Funding.** The University may terminate this Agreement at any time upon written notice to Company in the event of changes in the Grant, or the lack of Grant funding, which makes it impractical or undesirable for the University to continue to perform under the Grant project or this Agreement.

(e) **Reconciliation Upon Termination.** In the event of any termination of this Agreement, Company shall be entitled to reimbursement for any Operating Expenses incurred prior to the effective date of termination of this Agreement, minus and Company Revenue due to Company up to and after termination of this Agreement. The parties shall reconcile any and all such payments due from the University to Company within one hundred eighty (180) days after termination of this Agreement.

9. Compliance with Certain Requirements and Laws.

(a) Upon the written request of the Secretary of Health and Human Services, or the Inspector General of the Department of Health and Human Services, or any of their duly authorized representatives, Company shall make available those contracts, books, documents and records within its control necessary to verify the nature and extent of the costs of providing its services under this Agreement. Such information shall be available for up to four (4) years following the rendering of such service. This provision is included pursuant to and governed by the requirements of Public Law 96-499 (§ 81861(b)(1) of the Social Security Act) and the regulations thereunder. No attorney-client, accountant-client or other privilege will be deemed to be waived by the University or Company by virtue of this provision.

(b) This Agreement is intended to comply with all applicable state and federal fraud and abuse and/or physician self-referral laws, including, but not limited to, the Patient Self-Referral Restrictions set forth in the “Stark” provisions, 42 U.S.C. §1395nn, and the federal Anti-Kickback Statute set forth in 42 U.S.C. §1320a-7b(b). In the event that any law, regulation or administrative or judicial interpretation is adopted, amended, promulgated, noticed to the University or Company, modified or issued, or any investigation undertaken, which prohibits or restricts all or any part of this Agreement in the opinion of either party or its counsel, the University and Company shall either: (i) attempt to renegotiate this Agreement in a manner intended to comply with such law, regulation or interpretation, or (ii) terminate this Agreement.

(c) Company agrees to comply with all applicable federal, state and local laws, regulations and restrictions in the conduct of its obligations under this Agreement, including but not limited to billing for services provided in relation to Ambulance operations. Company agrees to properly coordinate any such billing activities with area hospitals, clinics and/or health care professionals to ensure that no private or governmental third party payer is overbilled or improperly billed for services provided in relation to the operations of the Ambulance. Company shall remain at all times during the term of this Agreement, in full compliance with all state, federal and private payors’ claims submissions policies and billing rules and regulations, including but not limited to those set forth in 42 U.S.C. § 1395nn et seq., 42 U.S.C. § 1320a-7b(b), and 31 U.S.C. § 3729(a) and regulations adopted pursuant thereto.

(d) Company agrees that it shall indemnify, defend (at the University’s request and including reasonable attorney fees, costs and expenses), and hold harmless the University from and against any and all claims for damages, and any damages incurred by the University, associated with Company’s breach of any provision of this Agreement.

10. Miscellaneous.

(a) **Notices.** All notices, requests, demands and other communications made with respect to this Agreement shall be in writing, and personally delivered, sent by registered or certified mail (postage prepaid), by telefax or by prepaid carrier service, and shall be deemed to be effective on the date delivered in person or the date indicated on the signature card or other similar proof of receipt. All such notices shall be addressed to the address as set forth below:

To Company: UT Mobile Stroke Unit, LLC
c/o UTMG: Attention: Andrew Botschner, CEO
1407 Union Ave.
Suite 700
Memphis, Tennessee 38104

Copy to: J. Martin Regan, Jr., Legal Counsel
Lewis Thomason
40 S. Main, Suite 2900
Memphis, TN 38103

To the University: The University of Tennessee Health Science Center
Anthony A. Ferrara
62 S. Dunlap
Suite 300
Memphis, Tennessee 38163

or to such other address or telefax number as either party shall notify the other as provided herein.

(b) **Governing Law.** The validity, interpretation and performance of this Agreement shall be governed by and construed in accordance with the laws of the State of Tennessee.

(c) **Assignment; Successors.** Neither the University nor Company shall have the right to assign its rights and obligations hereunder without the prior written consent of the other party. Subject to the preceding sentence, this Agreement shall be binding upon the parties hereto and their successors and assigns.

(d) **Headings.** The section headings contained in this Agreement are for reference purposes only and will not affect the meaning of this Agreement.

(e) **Waiver of Provisions.** Any waiver of any terms and conditions of this Agreement must be in writing and signed by the parties hereto. The waiver of any of the terms and conditions hereof shall not be construed as a waiver of any other terms and conditions hereof. Failure by either party to promptly exercise a right hereunder or seek remedies available hereunder because of a breach shall not be construed as a waiver of that right or of any remedy for that breach or any future breach of this Agreement.

(f) **Entire Agreement; Modification.** No other agreements or understandings, written or oral, exist between the parties regarding the subject matter of this Agreement other than as set forth herein. This Agreement shall not be modified or amended except by a written document executed by both parties to this Agreement, and any such written modification shall be attached hereto.

(g) **Severability.** The provisions of this Agreement shall be deemed severable, and if any portion of this Agreement shall be held invalid, illegal or unenforceable for any reason, the remainder of this Agreement shall be effective and binding upon the parties.

(h) **No Obligation to Third Parties.** None of the obligations and duties of the University or Company under this Agreement shall in any way or in any manner be deemed to create any obligation of the University or Company to, or any rights in, any person or entity not a party to this Agreement.

(i) **No Obligation to Refer.** The parties acknowledge and agree that none of the benefits to either party hereunder require or is in any way contingent upon or intended to induce the admission, recommendation, referral or any other arrangement for the provision, ordering or leasing of any item or service offered by the other party.

(j) **Fair Market Value.** The parties acknowledge and agree that the compensation arrangements have been set forth herein to be consistent with the fair market value for similar services in the Memphis, Tennessee area.

(k) **Counterparts.** This Agreement may be executed in multiple counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

(l) **No Waiver of Sovereign Immunity.** Nothing contained in this Agreement shall be deemed or construed to waive or abrogate in any way the sovereign immunity of the State of Tennessee or the University, or any official, officer, or employee of the State or University or to deprive any official, officer, or employee of the State or University of any other immunity to which the official, officer, or employee is otherwise entitled under state law. The University's liability for any claims, damages, losses, or costs to Company and to third parties shall be subject to the terms, limits, and conditions of the Tennessee Claims Commissions Act, Tenn. Code Ann. § 9-8-301 et seq.

(m) **Relationship of the Parties.** The relationship of Company and University under this Agreement is that of independent contractor and not of joint venturers, partners, or agents of one another. Neither party shall have the authority to create any contractual, financial, or other obligation on behalf of the other party under this Agreement. Neither party, nor any of their respective employees, managers, officers, directors, or trustees shall be construed to be, nor shall be held out by either party to be, the employee or agent of the other party.

(n) **Illegal Immigrants.** In compliance with the requirements of Tenn. Code Ann. § 12-4-124, Company hereby attests that it shall not knowingly utilize the services of an illegal immigrant in the United States and that it shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant in the United states.

(o) **No Interpretation Against Drafter.** Each party acknowledges and agrees that this is a legally binding Agreement, and that each party has had the opportunity to consult with legal counsel regarding its terms and conditions. The text of this Agreement has been developed through and after consultation with counsel for both parties, and therefore, in any construction of the terms and conditions of this Agreement, no term or condition shall be construed against either party based on that party having drafted such term or condition.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and year written below.

UT MOBILE STROKE UNIT, LLC

By:



Name: ANDREW J. BOTSCHNER
Title: CEO
Date: 6/28/16

THE UNIVERSITY OF TENNESSEE

By: DocuSigned by:
James R. Maples
2254928164FE467...
Name: James R. Maples
Title: Interim Treasurer and CFO
Date: 6/30/2016 | 6:27:40 PM CDT

EXHIBIT A

STATE OF TENNESSEE
Tre Hargett, Secretary of State
 Division of Business Services
 William R. Snodgrass Tower
 312 Rosa L. Parks AVE, 6th FL
 Nashville, TN 37243-1102

UT MOBILE STROKE UNIT, LLC
 UT MEDICAL GROUP, INC.
 STE 700
 1407 UNION AVE
 MEMPHIS, TN 38104-3641

January 27, 2016

Filing Acknowledgment

Please review the filing information below and notify our office immediately of any discrepancies.

SOS Control # :	000831447	Formation Locale:	TENNESSEE
Filing Type:	Limited Liability Company - Domestic	Date Formed:	01/27/2016
Filing Date:	01/27/2016 1:19 PM	Fiscal Year Close:	12
Status:	Active	Annual Report Due:	04/01/2017
Duration Term:	Perpetual	Image # :	B0182-8109
Business Type:	Non-Profit Limited Liability Company		
Managed By:	Member Managed		
Business County:	SHELBY COUNTY		

Document Receipt

Receipt # : 002408205	Filing Fee:	\$300.00
Payment-Check/MO - J MARTIN REGAN JR, MEMPHIS, TN		\$300.00

Registered Agent Address:
 ANDREW BOTSCHNER
 UT MEDICAL GROUP, INC.
 STE 700
 1407 UNION AVE
 MEMPHIS, TN 38104-3641

Principal Address:
 UT MEDICAL GROUP, INC.
 STE 700
 1407 UNION AVE
 MEMPHIS, TN 38104-3641

Congratulations on the successful filing of your **Articles of Organization** for **UT MOBILE STROKE UNIT, LLC** in the State of Tennessee which is effective on the date shown above. You must also file this document in the office of the Register of Deeds in the county where the entity has its principal office if such principal office is in Tennessee. Please visit the Tennessee Department of Revenue website (apps.tn.gov/bizreg) to determine your online tax registration requirements. If you need to obtain a Certificate of Existence for this entity, you can request, pay for, and receive it from our website.

You must file an Annual Report with this office on or before the Annual Report Due Date noted above and maintain a Registered Office and Registered Agent. Failure to do so will subject the business to Administrative Dissolution/Revocation.

Tre Hargett

Tre Hargett
 Secretary of State

Processed By: Darlene Baskin

ARTICLES OF ORGANIZATION
OF
UT MOBILE STROKE UNIT, LLC

FILED

A TENNESSEE NON-PROFIT LIMITED LIABILITY COMPANY
Federal Identification No. [REDACTED]

Pursuant to approval of its single member, UT Medical Group, Inc., a Tennessee nonprofit corporation, at a meeting duly convened and with approval of its Board, on the 20th day of January, 2016, and in compliance with the Nonprofit Revised Limited Liability Act of 2001, at TCA Section 48-101-701, *et seq.*, the following Articles of Organization are adopted:

- 1. The name of the Tennessee nonprofit limited liability company is:

UT MOBILE STROKE UNIT, LLC

- 2. (A) The name and complete address of the Tennessee non-profit limited liability company's initial registered agent and office located in the State of Tennessee is:

Andrew Botschner, CEO
UT Medical Group, Inc.
1407 Union Avenue, Suite 700
Memphis, Shelby County, TN 38103-5529

- (B) The name and complete address of each organizer of this Tennessee non-profit limited liability company is:

J. Martin Regan, Jr.
2900 One Commerce Square
40 South Main Street
Memphis, Shelby County, TN 38103-5529

- (C) The complete address of the Tennessee nonprofit limited liability company's principal executive office is:

UT Mobile Stroke Unit, LLC
1407 Union Avenue, Suite 700
Memphis, TN 38104
County of Shelby

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3. This Tennessee non-profit limited liability company will be single member managed, and no more than one (1) non-profit corporation may be a member of this non-profit L.L.C., in compliance with T.C.A. § 48-101-704.

4. The Federal Identification Number of this Tennessee non-profit limited liability company is: [REDACTED]

5. The fiscal year end is December 31.

6. The number of members at the date of this filing and at the time of formation of this organization is ONE (1), which is UT Medical Group, Inc., a Tennessee non-profit corporation as registered with the Tennessee Secretary of State under Control No. 130184, Federal EIN No. [REDACTED]

7. The duration of UT Mobile Stroke Unit, LLC is not limited to a specific term of years.

8. **THIS COMPANY IS A NON-PROFIT LIMITED LIABILITY COMPANY**, formed in compliance with the Non-Profit Revised Limited Liability Company Act of 2001, at TCA § 48-101-701, *et seq.*, and pursuant to TCA § 48-101-702(3)(A) and (4), this entity is to be disregarded as an entity for Federal income tax purposes and the parent non-profit corporation serving as the single member is UT Medical Group, Inc.

9. The purposes for which this Company is organized are exclusively charitable and educational within the meaning of § 501(c)(3) of the Internal Revenue Code of 1986, as amended, and the corresponding provisions of any future United States Internal Revenue Code.

The purposes for which this non-profit limited liability company has been organized are:

A. To lease, operate, manage, and work with community partners in providing a Mobile Stroke Unit; and

B. To carry out delivery of medical services, patient care activities, teaching and research activities, and such other activities on behalf of UT Medical Group, Inc. in the area of patient health care, with an emphasis on stroke victims; and, to carry out all other activities allowed under the Charter of UT Medical Group, Inc., and the Tennessee Nonprofit Corporation Act and the State of Tennessee, while at all times remaining in compliance with the requirements of an entity exempt under IRS Code Section 501(c)(3).

The indemnification provisions in Section 48-501 of Tennessee Code Annotated, as applicable to the member, directors, officers, employees and agents of UT Medical Group, Inc., the single member of this Tennessee non-profit limited liability company, shall likewise apply to the member, managers, directors, officers, employees and

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agents of this entity, pursuant to Section 48-101-705(b) of Tennessee Code Annotated. Additionally, such parties shall be indemnified and held harmless to the fullest extent permissible under the Tennessee Non-Profit Corporation Act and any amendments or supplements thereto.

10. This Company and its not-for-profit corporate single member, in compliance with the provisions of TCA § 67-5-207 are subject to the following provisions:

A. This Company and its Member are irrevocably dedicated to and operated exclusively for not-for-profit purposes; and

B. No part of the income or assets of the Member or Company shall be distributed to nor inure to the benefit of any individual; and

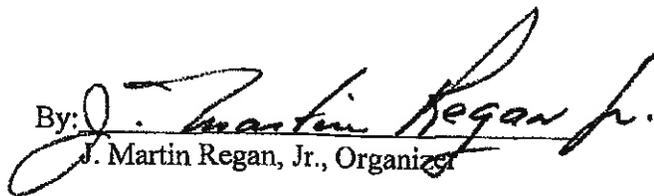
C. In the event of dissolution or other liquidation of assets, none of the property shall be conveyed to any individual for less than the fair market value of such property; and

D. All assets remaining after payment of debts and expenses shall be conveyed or distributed to UT Medical Group, Inc., so long as the recipient itself is exempt under Internal Revenue Code Section 501(c)(3), or to a designee; however, any distribution shall be made only to an organization or organizations created and operated for not-for-profit purposes similar to those of this entity which themselves are exempt as organizations described in Sections 501(c)(3) and 170(c)(2) of the Internal Revenue Code of 1986, as amended, or corresponding sections of any prior or future Internal Revenue Code, exclusively for public purposes.

11. This Company shall maintain under its Operating Agreement a conflict of interest policy which shall apply to it and to any dealings involving its member, UT Medical Group, Inc.

These Articles of Organization are approved as of this the January 20, 2016, and are authorized by its single member entity, UT Medical Group, Inc., as evidenced by its signing below, and shall be effective immediately when filed by the Tennessee Secretary of State's Office.

UT MOBILE STROKE UNIT, LLC

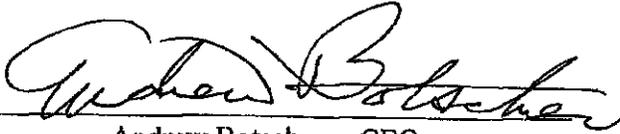
By: 
J. Martin Regan, Jr., Organizer

CONSENT TO SIMILAR NAME

AUTHORIZED AND APPROVED, effective the day and year first above written and including authorization and consent to the use of the name UT Mobile Stroke Unit, LLC:

By: **Its Single Member:**

UT MEDICAL GROUP, INC.

By: 
Andrew Botschner, CEO
Authorized Officer

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Tom Leatherwood
Shelby County Register / Archives

As evidenced by the instrument number shown below, this document has been recorded as a permanent record in the archives of the Office of the Shelby County Register.

	
16009362	
02/01/2016 - 10:40 AM	
5 PGS	
LYNDAL	1421349-16009362
VALUE	0.00
MORTGAGE TAX	0.00
TRANSFER TAX	0.00
RECORDING FEE	5.00
DP FEE	2.00
REGISTER'S FEE	0.00
WALK THRU FEE	0.00
TOTAL AMOUNT	7.00
TOM LEATHERWOOD	
REGISTER OF DEEDS SHELBY COUNTY TENNESSEE	

EXHIBIT B

OPERATING AGREEMENT

OF

**UT MOBILE STROKE UNIT, LLC
A TENNESSEE NON-PROFIT LIMITED LIABILITY COMPANY
FEDERAL IDENTIFICATION NO. [REDACTED]**

THIS OPERATING AGREEMENT is made and adopted effective as of the 20th day of January, 2016, by **UT MEDICAL GROUP, INC.** (the "Member") as the initial and sole Member of **UT MOBILE STROKE UNIT, LLC** (the "Company").

WHEREAS, the Member desires to adopt this Operating Agreement for the purpose of managing and regulating the business and affairs of the Company and the rights and privileges of its Member in accordance with the Tennessee Limited Liability Company Act and the Tennessee Non-Profit Limited Liability Company Act.

NOW, THEREFORE, in consideration of the premises and of the mutual promises, obligations and agreements contained herein, the Member, intending to be legally bound, does hereby agree as follows:

1. **Formation.** The Company was formed by the filing of the Articles of Organization with the Tennessee Secretary of State on January 20, 2016.

2. **Name and Purpose.** The name of the Company is **UT MOBILE STROKE UNIT, LLC**. The business of the Company shall be limited to carrying out exclusively the charitable purposes of **UT MEDICAL GROUP, INC.**, including to carry out delivery of medical services, patient care activities, teaching and research activities, and such other activities on behalf of **UT Medical Group, Inc.** in the area of pathology; and, to carry out all other activities allowed under the Charter of **UT Medical Group, Inc.**, and the Tennessee Nonprofit Corporation Act and the State of Tennessee, while at all times remaining in compliance with the requirements of an entity exempt under IRS Code Section 501(c)(3).

The charter provisions and bylaw provisions of **UT MEDICAL GROUP, INC.** related to charitable purpose restrictions are incorporated herein as if recited herein verbatim.

3. **Registered Office/Registered Agent.** The registered office of the Company within the State of Tennessee shall be **UT Mobile Stroke Unit, LLC, 1407 Union Avenue, Suite 700, Memphis, Shelby County, TN 38104** and the registered agent shall be **Andrew Botschner, CEO, UT Medical Group, LLC, 1407 Union Avenue, Suite 700, Memphis, Shelby County, TN 38104**.

4. **Term.** The term of the Company shall commence upon the date of filing of the Articles and shall continue until terminated by the Member.

5. Management. The Company shall be managed by the Member. UT Medical Group, Inc. shall serve as the sole member consistent with the provisions of the Tennessee Non-Profit Limited Liability Company Act. All other management of the Company shall be conducted consistent with the Bylaws of UT MEDICAL GROUP, INC.

6. Meetings of Members. Meetings may be called by the Chief Manager, or its Member, and may be held in person or by telephone, or any other electronic means. The Member may take action on written consent without holding a meeting pursuant to T.C.A. §48-223-101 *et seq.*

7. Liability of Member. The Member shall not be liable to the Company for any mistake or error in judgment or for any act of omission in such Member's or Chief Manager's capacity as a Member or Manager, including acting for or on behalf of the Company, except for acts and omissions involving intentional wrongdoing.

8. Indemnification of Members. The Company shall indemnify its Member in accordance with TCA 48-243-101 and as provided in the Article of Organization.

9. Taxable Income and Expense. All income of the Company includable for federal income tax purposes and all expenses of the Company deductible for federal income tax purposes shall be allocated to its Member.

10. Binding Effect. This Operating Agreement shall inure to the benefit of and be binding upon the party hereto and its permitted assigns.

11. Governing Law. This Operating Agreement shall be governed by the laws of the State of Tennessee.

12. Amendment. Amendments to the Operating Agreement must be by written consent of its Member.

IN WITNESS WHEREOF, the Member has adopted this Operating Agreement, to be effective as of the date first above written.

UT MOBILE STROKE UNIT, LLC

By: UT MEDICAL GROUP, INC.
Its Member

By: 
Andrew Botschner, CEO

**EXHIBIT A TO
OPERATING AGREEMENT OF
UT MOBILE STROKE UNIT, LLC**

EFFECTIVE: January 20, 2016

I. CAPITAL ACCOUNTS:

<u>Members</u>	<u>Contributions</u>
UT MEDICAL GROUP, INC.	\$10.00
<hr/>	
TOTAL	\$10.00

II. MEMBERSHIP INTERESTS:

	<u>Governance Rights</u>	<u>Financial Rights</u>
UT MEDICAL GROUP, INC.	100.0%	100.0%
<hr/>		
TOTAL	100.0%	100.0%

EXHIBIT C

**Vehicle and Medical Equipment Lease Agreement
between
The University of Tennessee
and
UT Mobile Stroke Unit, LLC**

This Vehicle and Medical Equipment Lease Agreement (hereinafter referred to as this “Agreement”), entered into effective May 1, 2016, by and between The University of Tennessee (hereinafter referred to as “University”) and UT Mobile Stroke Unit, LLC (hereinafter referred to as “Company”). University and Company are sometimes hereafter referred to individually as a “party” and collectively as the “parties.”

WITNESSETH:

WHEREAS, the University and Company are parties to a Mobile Stroke Unit Ambulance Operations and Services Agreement (the “Operations Agreement”), executed contemporaneously with this Agreement; and

WHEREAS, the University owns a mobile stroke unit ambulance, into which certain communications, medical and diagnostic equipment is integrated (the “Ambulance”); and

WHEREAS, the parties desire to set forth the terms and conditions of the University’s lease of its Ambulance to Company; and

NOW THEREFORE, in consideration of the premises, mutual covenants, and agreements contained herein and in the Operations Agreement, the receipt and sufficiency of which is hereby acknowledged and agreed to by the parties, the parties agree as follows:

**ARTICLE I
LEASED AMBULANCE AND MEDICAL EQUIPMENT**

1. Lease of Ambulance to Company. The University agrees to lease the Ambulance to Company and Company agrees to accept the lease of the Ambulance, upon the conditions and covenants set forth in this Lease Agreement.
2. Description of Ambulance and Integrated Medical and Diagnostic Equipment. The term “Ambulance” under this Agreement shall specifically refer to:
 - (a) 2016 FREIGHTLINER M2106 TRUCK (VEHICLE IDENTIFICATION NUMBER: 1FVACXDT5GHHS5119);
 - (b) SIEMENS SOMATOM SCOPE CT SCANNER (SERIAL NUMBER: 91256);

- (c) HEARTSTART MRX ALS MONITOR (SERIAL NUMBER: US00598355);
 - (d) SPENCER TRANSCRANIAL DOPPLER (SERIAL NUMBER: 15598);
 - (e) MOBILE DATA TERMINAL (MDT): CF-19ZA363CM PANASONIC; and
 - (f) RADIOS: (1-APX 7500 MP DUAL BAND MODEL; 1-APX 6500 VHF MID POWER; and 2-APX 8000 ALL BAND PORTABLE MODEL 3.5)
3. Use of Ambulance by Company and UTMG. The Ambulance shall be operated only by *bona fide* employees of University and Company or its sole member, UT Medical Group, Inc. ("UTMG"), and only for the purposes set forth in the Operations Agreement. Any use of the Ambulance by University employees may be subject to University Fiscal Policy FI0725 ("Use of University Vehicles"). Company and UTMG, and their respective employees, shall at all times also observe and adhere to all applicable local, state and federal laws and regulations.
 4. No Personal Use of Ambulance. The Ambulance shall not be used for any personal, private business, or recreational purposes by Company or UTMG, or their respective employees.
 5. Ownership. Title to and ownership of the Ambulance shall at all times be and remain in the University. Company shall have no right of property therein, except the right to use the Ambulance in accordance with the terms of this Agreement.
 6. Operating and Maintenance Costs. The University shall be responsible for the cost of all regular and scheduled maintenance for the Ambulance, including its integrated medical, diagnostic and communications equipment. Company shall be financially responsible under this Agreement for the costs and/or associated depreciation resulting from damages to the Ambulance, which is beyond normal fair wear and tear.

ARTICLE II
TERM, TERMINATION, AND AMENDMENT
OF THE AGREEMENT

1. Effective Date. This Agreement shall be effective on May 1, 2016, simultaneously with the parties' Operations Agreement.
2. Term. This Agreement shall be coterminous with the parties' Operations Agreement.
3. Termination. This Agreement may be terminated in accordance with the Operations Agreement.
4. Amendment. This Agreement may be amended only by a writing signed by both the University and Company.

ARTICLE III COMPENSATION

Any and all compensation between the parties, if any, with respect to the operation of the Ambulance shall be set forth in the Operations Agreement.

ARTICLE IV INSURANCE AND LOSS OR DAMAGE TO AMBULANCE

1. Insurance. Upon University's request, Company shall maintain at all times during the term of this Agreement an insurance policy with National Indemnity Company or another insurance carrier selected by University covering the Ambulance against loss or damage of all kinds, including but limited to its use by Company, UTMG and their employees, contractors and agents in dollar amounts as directed by University. The University may require that University be named as an additional insured on all such policies. Company shall provide a Certificate of Insurance evidencing compliance with these requirements to the University.
2. Loss or Damage. Company assumes and shall bear the entire risk of loss or damage to the Ambulance while in use by Company. No loss or damage to the Ambulance or any part thereof shall affect or impair any of the obligations of Company hereunder and this Agreement shall continue in full force and effect notwithstanding such loss or damage to the Ambulance.
3. Company's Insurance Considered Primary. In the event of loss or damage of any kind whatsoever to the Ambulance while in use by Company, the parties agree that the insurance maintained by Company shall be the primary source of coverage for such loss or damage and the University's insurance policy, or self-insurance under the Tennessee Claims Commission Act or other sources shall be secondary.
4. Indemnification by Company. Company shall indemnify, hold harmless, and, at the University's request, defend the University, the State of Tennessee, and their agents, trustees, officers, employees, and successors against any claims, damages, losses, or costs to third parties in any way arising out of, attributable to, or in connection with any act or omission of Company and its agents, directors, officers, employees, and successors, including but limited to all such claims, damages, losses, or costs arising out of the use of the Ambulance.
5. No Waiver of Sovereign Immunity. Nothing contained in this Agreement shall be deemed or construed to waive or abrogate in any way the sovereign immunity of the State of Tennessee or the University, or any official, officer, or employee of the State or University or to deprive any official, officer, or employee of the State or University of any other immunity to which the official, officer, or employee is otherwise entitled under state law. The University's liability for any claims, damages, losses, or costs to Company

and to third parties shall be subject to the terms, limits, and conditions of the Tennessee Claims Commissions Act, Tenn. Code Ann. §§ 9-8-301 et seq.

ARTICLE V MISCELLANEOUS TERMS

1. Incorporation of Other Agreements. The parties agree that the terms and conditions of the Operations Agreement are incorporated fully herein.
2. Governing Law. This Agreement is made, entered into under, and shall be construed in accordance with, the laws of the State of Tennessee.
3. Relationship of the Parties. The relationship of Company and University under this Agreement is that of independent contractor and not of joint venturers, partners, or agents of one another. Neither party shall have the authority to create any contractual, financial, or other obligation on behalf of the other party under this Agreement. Neither party, nor any of their respective employees, managers, officers, directors, or trustees shall be construed to be, nor shall be held out by either party to be, the employee or agent of the other party.
4. Illegal Immigrants. In compliance with the requirements of Tenn. Code Ann. § 12-4-124, Company hereby attests that it shall not knowingly utilize the services of an illegal immigrant in the United States and that it shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant in the United states.
5. Notices. Any notice, request, demand, or other communication required to be given hereunder shall be in writing and shall be deemed to be duly given: (1) when personally delivered to an officer of Company or the University, as the case may be; (2) when deposited in the United States Postal Service, by certified or registered mail, return receipt requested, postage prepaid; or (3) when deposited prepaid with a national overnight package delivery service for overnight delivery. Notice must be given at the respective addressees of Company and the University as shown below, or to such other address as either party shall designate by written notice to the other:

As to the University: The University of Tennessee Health Science Center
Anthony A. Ferrara
62 S. Dunlap
Suite 300
Memphis, Tennessee 38163

As to Company: UT Mobile Stroke Unit, LLC
c/o UTMG: Attention: Andrew Botschner, CEO
1407 Union Ave.
Suite 700

Memphis, Tennessee 38104

With a copy to: J. Martin Regan, Jr., Legal Counsel
Lewis Thomason
40 S. Main, Suite 2900
Memphis, TN 38103

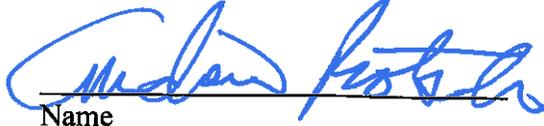
6. Assignment. Neither this Agreement nor any interest herein may be assigned, transferred, or conveyed in whole or in part.
7. No Waiver. A waiver by either party of any of the terms and conditions of this Agreement in any instance shall not be deemed or construed to be a waiver of such term or condition for the future, or any subsequent breach thereof, or of any other term and condition of this Agreement.
8. Severability. If any provisions of this Agreement shall, for any reasons, be held violation of any applicable law, and so much of said Agreement is held to be unenforceable, then the invalidity of such specific provision shall not be held to invalidate any other provision, which shall remain in full force and effect.
9. Waiver. No waiver by either party, express or implied, of any breach of this Agreement shall constitute a waiver of any right of either party under this Agreement or of any subsequent breach, whether of a similar or dissimilar nature.
10. Section Headings. The headings of the several Sections herein are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.
11. No Third Party Beneficiaries. This Agreement is solely for the benefit of the parties and is not intended to create nor shall be construed to create any right or remedy for any third party.
12. No Interpretation Against Drafter. Each party acknowledges and agrees that this is a legally binding Agreement, and that each party has had the opportunity to consult with legal counsel regarding its terms and conditions. The text of this Agreement has been developed through and after consultation with counsel for both parties, and therefore, in any construction of the terms and conditions of this Agreement, no term or condition shall be construed against either party based on that party having drafted such term or condition.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized officers as the day and date first above written.

THE UNIVERSITY OF TENNESSEE

UT MOBILE STROKE UNIT, LLC

DocuSigned by:
James R. Maples
2254328164FE467...



Name

Name

Interim Treasurer and CFO

CFO

Title

Title

6/30/2016 | 6:27:40 PM CDT

6/28/16

Date

Date



JIM STRICKLAND
MAYOR

DIVISION OF FINANCE

05/31/2016

City Contract # 33253

**UT Mobile Stroke Unit, LLC
1407 Union Ave, Ste 700
Memphis, TN 38104**

Dear Sir or Madam:

We are enclosing, herewith, an executed copy of a negotiated contract between the City of Memphis and UT Mobile Stoke Unit, LLC for the division of Fire Services.

This copy is for your files.

Sincerely,

A handwritten signature in black ink that reads "Eric Mayse". The signature is written in a cursive, flowing style.

**Eric Mayse
Purchasing Agent**

cc: City Comptroller

**“REACH MOST” PROJECT
AGREEMENT BETWEEN THE CITY OF MEMPHIS, TENNESSEE
AND
UT MOBILE STROKE UNIT, LLC**

THIS PROJECT AGREEMENT (“Agreement”) is made and entered into by and between **CITY OF MEMPHIS, TENNESSEE** principally situated in Shelby County, (“City”), acting through the **CITY OF MEMPHIS FIRE DEPARTMENT (“MFD”)** and **UT MOBILE STROKE UNIT, LLC (“Company”)**, a Tennessee non-profit limited liability company with UT Medical Group, Inc. (“UTMG”) as its sole member. City and Company shall be referred to individually as a “Party” and collectively as the “Parties”.

RECITALS:

1. Whereas, Parties to this Agreement share a common mission of improving the public health and emergency medical services by engaging in research for the purpose of discovery and making available to the public new and improved medical processes focusing on pre-hospital treatment of stroke patients;
2. Whereas, in connection with this mission, the Company desires to conduct a project titled, “REACH MOST”, Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (“Project”), as described in the protocol set forth in EXHIBIT A (“Protocol”) in cooperation with MFD, for the administration and evaluation of thrombolysis in eligible acute ischemic stroke patients in a pre-hospital environment;
3. Whereas, Company has entered into a Mobile Stroke Unit Ambulance Operations and Services Agreement (hereafter the “UT Services Agreement”) with The University of Tennessee (“UT”) on behalf of its Health Science Center (“UTHSC”), College of Medicine (Memphis) (“UTCOM”), in which Company will assist UTHSC in carrying out certain provisions of the Project. A copy of the UT Services Agreement is attached hereto as EXHIBIT B;
4. Whereas, details of the Project are more fully set forth in the grant application and award letter between The Assisi Foundation and UT, a copy of which is attached as an exhibit to the UT Services Agreement;
5. Whereas, the City acting through MFD desires to enter into this Agreement to assist Company in carrying out certain provisions of the Project;
6. Whereas, the City finds that participation in the Project by MFD will be a benefit to the City by permitting its personnel to investigate the benefits of pre-hospital diagnosis and treatment of eligible acute ischemic stroke patients.

Accordingly, the Parties, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged and agreed upon, hereby agree as follows:

1. CONDUCT OF THE PROJECT

- 1.1 City and MFD agree to use reasonable efforts to conduct the Project as an independent contractor of Company, in accordance with City and MFD policy and ethical standards, applicable laws and regulations. The Project will be supervised by Company and Principal Investigator with assistance from the MFD Investigator and associates and colleagues as required. The MFD Director, who is the Chief of the City of Memphis Fire Department, or his or her designee, shall oversee the MFD Investigator, which as of the Effective Date is Joseph Holley, M.D. Dr. Holley shall, in turn, supervise any and all other MFD associates and colleagues working on the Project.
- 1.2 In accordance with the terms hereof, MFD agrees to cooperate with Company in the Project. The Protocol may be amended in writing from time to time as mutually agreed to by the Company acting through the Principle Investigator and MFD acting through its MFD Investigator and as approved by the Institutional Review Board ("IRB") at The University of Tennessee Health Science Center ("UTHSC") in Memphis, TN.
- 1.3 MFD agrees to participate in the Project with the prior approval and ongoing review of all appropriate and necessary review authorities, which MFD represents have been obtained prior to signing this Agreement. Company shall provide the MFD with written evidence of the review and approval of the Project by the IRB prior to initiating the Project and/or shall inform MFD of the IRB's continuing review promptly after such review takes place. All volunteers shall meet the legal age and all other requirements of the State of Tennessee. City does not guarantee specific results of the Project.
- 1.4 MFD will strictly adhere to the Project and all protocols, as the same may be amended from time to time, and will not deviate from the terms and conditions of the Project and/or Protocol without the prior written consent of the Company, unless such deviation is done for the immediate safety and well-being of a Project participant.
- 1.5 Company agrees to provide at its expense, a fully equipped and licensed emergency ambulance with a CT scanner, ("Ambulance") staffed with appropriate personnel to deliver the standard of care mandated by Protocol. The personnel may consist of a physician, a registered nurse, a CT Technician and an off duty Memphis Fire Department Firefighter/Paramedic and Advanced Emergency Medical Technician who will drive the Ambulance. Company reserves the right to adjust personnel compliment as needed but must remain within State and Federal Guidelines.
- 1.6 The Principal Investigator of all research related to the Project shall be Andrei V. Alexandrov, M.D., Chairman of the Department of Neurology at the University of Tennessee Health Science Center and Semmes-Murphey Professor. Dr. Alexandrov shall also serve as the Medical Director at UT Mobile Stroke Unit, LLC.
- 1.7 Company agrees to provide training to MFD personnel participating in the Project at no cost to City. The training will take place at selected MFD Fire Stations or EMS

Administration to MFD members while on duty as approved in advance by the MFD Management and the Principal Investigator.

- 1.8 Company understands that the City has no funds budgeted or available to pay for any obligation related to this Agreement. To further clarify, all fees and expenses required to perform and manage the Project will be the sole responsibility of Company. Any expenses related to the Project that the City anticipates that the City will need to incur shall be submitted in advance to Company and UTHSC via the notice provisions of this Agreement, which shall be subject to the advance written approval of Company and UTHSC prior to the City incurring any such expenses or seeking any payments or reimbursements from Company.
- 1.9 MFD Dispatch agrees to develop a protocol ("Dispatch Protocol") for referring 9-1-1 calls presenting symptoms of ischemic stroke to Company and its Medical Director in conjunction with normal dispatch protocols.
- 1.10 The Dispatch Protocol, a copy of which is attached hereto as EXHIBIT C, provides for referring certain calls with symptoms of ischemic stroke to the Company's Ambulance which will be stationed at an MFD Fire Station. A City Emergency Medical Services ("EMS") Unit as well as other needed resources will also be dispatched.
- 1.11 City agrees to give Company the right, at no cost to Company, to park the Mobile Stroke Unit inside a mutual-agreed upon fire station, receive calls from that location and to store the Ambulance at that location during out of service times. It is the responsibility of the Company to care for the vehicle while on City property. Company's representative will work closely with the Fire Department's station Lieutenants and Battalion Chiefs to ensure the Rules and Regulations of the MFD are respected.
- 1.12 City agrees to place the Mobile Stroke Unit into its logistical route in order to deliver supplies. City will keep records of supplies used and distributed to the Mobile Stroke Unit. Company will pay the supply vendor directly to avoid cost to the City.
- 1.13 City agrees to allow the Mobile Stroke Unit to refuel at various fire stations throughout the City. Company will keep records of fuel obtained and submit to City on a monthly basis. Company will reimburse City for the fuel at market rate.
- 1.14 City agrees to include the Mobile Stroke Unit into the MFD's CAD system for dispatch and communication purposes. The City agrees to allow UT Mobile Stroke Unit, LLC, to program radios and MDT's to Fire Department frequencies.
- 1.15 Company agrees to be responsible for the cost of any damage that may occur to City property.

- 1.16 This Mobile Stroke Unit requires special charging capabilities. City agrees to have Fire Department electrician modify charging capabilities within the fire station. Company will reimburse City for the cost of this modification.

2. REPORTS AND ACCESS TO DATA

- 2.1 MFD and Company will prepare, compile and maintain complete, accurately written records, accounts, notes, reports and data related to the Project in compliance with regulations.
- 2.2. MFD shall promptly advise the Company of any regulatory inspection related to the Project or the Report and will promptly provide the Company with copies of any inspection reports.
- 2.3. MFD will promptly take any steps that are requested by the Company as a result of an audit to cure deficiencies in the Project documentation or case report forms.
- 2.4. Company and UTHSC shall have the right to use the Report and all of the underlying data, test results, information, notes, reports, analysis and the like. The City and the Company shall own their records related to the Report.
- 2.5. Notwithstanding the foregoing, electronic and printed copies of all of the data, results and Reports (without patient identifiers) and all analysis will be provided by the City acting through MFD to Company within thirty (30) days after the termination or expiration of this Agreement unless a shorter period is provided for in the Project.
- 2.6. Company shall be entitled to make copies of all documents and reports related to the Project, including but not limited to all documents that could be considered to be covered under Good Clinical Practices, and the City shall maintain and retain records for a period of three (3) years following the termination or expiration of this Agreement; and the Company shall have access to all such records during the term of this Agreement and the aforesaid three (3) year period. The documents covered under Good Clinical Practices include, but are not limited to: Training Records, Site and protocol monitoring reports during the Field training, Investigators' meeting minutes, case report forms and supporting data, any reports related to serious adverse events, reports of compiled or analyzed data for Data Safety Monitoring Board meetings, all documents related to randomization, any correspondence related to the Project, all information relating to protocol deviations, all protocols and protocol amendments followed by each Project site.
- 2.7. The foregoing provisions shall be subject to all the requirements of HIPAA and State of Tennessee statutes.
- 2.8. Company shall provide MFD all data obtained by Company in connection with the Project that is required by MFD for billing for Emergency Ambulance Services provided by MFD.

3. PUBLICATION AND CONFIDENTIALITY

- 3.1 Company reserves the right to publish the results of the Project. Company or Principal Investigator will submit the manuscript of any proposed publication to City at least thirty (30) days before publication, and City shall have the right to review and comment upon the publication. City agrees not to independently publish the results of the Project before the publication of the Company's paper, however in no event shall City be so restricted after the expiration of twelve (12) months from completion of City's performance of the Project. City shall submit the manuscript of any publication to Company and UTHSC at least thirty (30) days before publication, and Company and UTHSC shall have the right to review and comment upon the publication. In any publication by City, City shall acknowledge Company's and UTHSC's support of the Project.
- 3.2 Except as otherwise required by law or regulation, neither Party shall release or distribute any materials or information containing the name of the other Party or any of its employees without prior written approval by an authorized representative of the non-releasing Party, but such approval shall not be unreasonably withheld. Notwithstanding anything to the contrary contained herein or within any other document supplied to the City by the Company, the Contractor understands and acknowledges that the City is a governmental entity subject to the State of Tennessee Public Records Act.
- 3.3 Each Party shall hold in confidence for three (3) years after the termination of this Agreement any confidential information identified as confidential and obtained from the other Party during the course of this Agreement. Nothing herein, however, shall prevent Company or UTHSC from using any information generated hereunder for ordinary research and educational purposes of Company or UTHSC. The recipient Party's obligation shall not apply to information that:
- 3.3.1 is not disclosed in writing or reduced to writing and marked with an appropriate confidentiality legend within thirty (30) days after disclosure;
 - 3.3.2 is already in the recipient Party's possession at the time of disclosure;
 - 3.3.3 is or later becomes part of the public domain through no fault of the recipient Party;
 - 3.3.4 is received from a third party having no obligations of confidentiality to the disclosing Party;
 - 3.3.5 is independently developed by the recipient Party;
 - 3.3.6 is ethically required to be disclosed to participants because of any unforeseen risk identified by either Party during or after completion of the Project; or
 - 3.3.7 is required by law or regulation to be disclosed.

In the event that information is required to be disclosed pursuant to subsection (3.3.7), the Party required to make disclosure shall notify the other to allow that Party to assert whatever exclusions or exemptions may be available to it under such law or regulation.

4. NOTICES CONCERNING PARTICIPANT SAFETY

- 4.1 For the duration of the Project and for two (2) years thereafter (or such longer period as may be warranted by circumstances or law) the Parties shall promptly provide notice to each other of any information discovered by either respective Party through any means including but not limited to monitoring, audits, or analysis of Project results, if such information could:
- 4.1.1 affect the safety of current or former Project participants;
 - 4.1.2 affect the willingness of Project participants to continue participation;
 - 4.1.3 influence the conduct of the Project; or
 - 4.1.4 alter the IRB approval to continue the Project.

Company shall promptly notify UTHSC's IRB of any such events, if applicable. When participant safety or medical care could be directly affected by such findings, Company shall provide to Project participants a written communication of such information.

- 4.2 All communications, reports and notices required or permitted hereunder will be deemed sufficiently given if in writing and personally delivered or sent by registered or certified mail, postage prepaid, return receipt requested or by recognized overnight courier service with signature required at the addresses set forth below. Such notices to the Parties shall be given as follows:

To Company: UT Mobile Stroke Unit, LLC
c/o UTMG: Attention: Andrew Botschner, CEO
1407 Union Ave.
Suite 700
Memphis, Tennessee 38104

Copy to: J. Martin Regan, Jr., Legal Counsel
Lewis Thomason
40 S. Main, Suite 2900
Memphis, TN 38103

Copy to: The University of Tennessee Health Science Center
Anthony A. Ferrara
62 S. Dunlap
Suite 300
Memphis, Tennessee 38163

AND

The University of Tennessee Health Science Center
Andrei Alexandrov, M.D.
Principal Investigator, REACH MOST
855 Monroe
Suite 415
Memphis, Tennessee 38163

To: MFD: City of Memphis, Fire Department
Gina Sweat, Director
65 South Front Street
Memphis, Tennessee 38103

5. RELEASE, INDEMNIFICATION AND INSURANCE.

5.2. INDEMNIFICATION, INSURANCE AND LIABILITY

- 5.2.1 COMPANY SHALL AT ALL TIMES DURING THE TERM OF THIS AGREEMENT MAINTAIN COMMERCIAL GENERAL AND PROFESSIONAL LIABILITY INSURANCE POLICIES COVERING COMPANY FOR CLAIMS FOR DAMAGES RESULTING FROM THE NEGLIGENT ACTS OR OMISSIONS OF COMPANY, ITS AGENTS OR EMPLOYEES PERTAINING TO THE ACTIVITIES TO BE CARRIED OUT PURSUANT TO THE OBLIGATIONS OF THIS AGREEMENT.**
- 5.2.2 THE PARTIES ACKNOWLEDGE THAT UTHSC, CITY AND MFD ARE AGENCIES OF THE STATE OF TENNESSEE AND UNDER THE CONSTITUTION AND LAWS OF THE STATE OF TENNESSEE POSSESS CERTAIN RIGHTS AND PRIVILEGES AND ONLY HAVE SUCH AUTHORITY AS IS GRANTED TO THEM UNDER THE CONSTITUTION AND LAWS OF THE STATE OF TENNESSEE. NOTHING IN THIS AGREEMENT IS INTENDED TO BE, NOR WILL IT BE CONSTRUED TO BE, A WAIVER OF THE SOVEREIGN IMMUNITY OF THE STATE OF TENNESSEE OR A PROSPECTIVE WAIVER OR RESTRICTION OF ANY OF THE RIGHTS, REMEDIES, CLAIMS, AND PRIVILEGES OF THE STATE OF TENNESSEE.**
- 5.2.3 CITY SHALL, TO THE EXTENT AUTHORIZED UNDER THE CONSTITUTION AND LAWS OF THE STATE OF TENNESSEE, INDEMNIFY AND HOLD COMPANY, UTHSC, THEIR TRUSTEES, OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY LIABILITY, LOSS OR DAMAGE THEY MAY SUFFER AS A RESULT OF CLAIMS, DEMANDS, COSTS OR JUDGMENTS AGAINST THEM**

ARISING OUT OF THE ACTS OR OMISSIONS BY CITY REGARDING ITS PARTICIPATION IN THE PROJECT.

5.2.4 The Company shall indemnify, defend, save and hold harmless the City, its elected and appointed officials, officers and employees from and against any and all suits, claims, liabilities, damages, or losses brought for bodily injury or damage to property (including attorneys' fees) that arise or are alleged to have arisen as a result of any conduct, whether actions or omissions; whether intentional, unintentional, or negligent; whether legal or illegal; or otherwise that occur in connection with or in breach of this Agreement or in the negligent performance of the services required hereunder, by the Company, its subcontractors, agents or employees. This indemnification shall survive the expiration or termination of this Agreement. Neither the Contractor nor any employees of the Contractor shall be liable under this section for damages arising out of injury or damage to persons or property.

The Company expressly understands and agrees that any insurance protection required by this Agreement or otherwise provided by the Company shall in no way limit the Company's responsibility to indemnify, defend, save and hold harmless the City or its elected or appointed officials, officers and employees as herein required.

5.3. INSURANCE

Company represents to the City the following:

It is a Tennessee limited liability company whose sole member is UTMG, a Tennessee not-for-profit corporation. It shall provide evidence of insurance for worker's compensation and have issued such Certificates of Insurance as may be required by the City, and be in full compliance with provisions of Section 5.2.1 above; and it shall provide evidence of its being insured under a policy of commercial insurance with a combined single limit of at least \$300,000, which such insurance will be issued by a company that the State Board of Insurance has authorized to do business in Tennessee.

- 5.3.1 Evidence of insurance - Before performing any service under this Agreement, Company must provide to the MFD Investigator a certificate of commercial insurance evidencing the above coverages.
- 5.3.2 Professional Liability insurance: Company maintains policies of commercial insurance for professional liability for its employed physicians and health care providers. Company shall maintain professional liability insurance coverage for its physicians involved in the Project in at least the following amounts: \$300,000 per occurrence; \$1,500,000 annual aggregate.
- 5.3.3 Liability for all other Company personnel involved in the Project is covered by Company's general liability insurance policies. A Certificate of Insurance shall be issued in compliance with the requirements of the City.

6. COMPLIANCE WITH HIPAA

- 6.1 To the extent applicable to this Agreement, each Party agrees to comply with the restrictions applicable to the confidentiality and security of medical records as required by the Health Insurance Portability and Accountability Act of 1996, as codified at 42 U.S.C. Section 1320d ("HIPAA") and any current and future regulations promulgated hereunder, including, without limitation, the federal privacy regulations contained in 45 C.F.R. Parts 160 and 164 ("Federal Privacy Regulations"), the federal security standards contained in 45 C.F.R. Part 160, 162 and 164 ("Federal Security Regulations"), and the federal standards for electronic transactions contained in 45 C.F.R. Parts 142, 160 and 162 (the "Federal Electronic Transaction Regulations"), and the Health Information Technology for Economic and Clinical Health Act ("HITECH") contained in Title XIII, Subtitle D of the American Recovery and Reinvestment Act of 2009, as amended, as applicable, all as may be amended from time to time, and all collectively referred to herein as "HIPAA Privacy and Security Requirements", to protect the privacy and security of Protected Health Information ("PHI") in data provided under this Agreement. The Parties acknowledge that they may share PHI with one another without the authorization of any patient for purposes of payment, treatment and healthcare operations in accordance with 45 C.F.R. § 164.501.
- 6.2 Termination of this Agreement will not affect the responsibility of each Party to continue to comply with the above-mentioned requirements during the period such Party maintains any portion of such records.

7. TERM AND TERMINATION

- 7.1 This Agreement shall commence on April 1, 2016 (the "Effective Date") and shall continue in force for three (3) years, at which time, it shall automatically renew for periods of one (1) year each. Notwithstanding the foregoing, either Party may terminate this Agreement without cause by giving one hundred eighty (180) days advance written notice to the other.
- 7.2 Provisions of this Agreement which, by their nature contemplate rights and obligations of the Parties to be enjoyed or performed after the expiration or termination of this Agreement for any reason will not relieve either Party of its obligations under this Agreement previous to the date of such termination.
- 7.3 Either Party may terminate this Agreement upon a material breach of or default under this Agreement by the other Party if the non-breaching Party has served upon the breaching Party written notice describing the claimed breach or default and by giving written notice to the breaching Party of the steps required by the non-breaching Party to cure such alleged breach or default. If such alleged breach or default is not cured to the reasonable satisfaction of the non-breaching Party within thirty (30) days after such written notice is given, the non-breaching Party may terminate this Agreement by giving ten (10) days' written notice of termination to the breaching Party.

8. MISCELLANEOUS

- 8.1 The headings in this Agreement are intended solely for convenience or reference and will be given no effect in the construction or interpretation of this Agreement.
- 8.2 This Agreement, including its attached **EXHIBITS A-C**, sets forth the entire agreement of the Parties with respect to the subject matter hereof and may not be altered or amended except in writing, signed by an authorized representative of each Party hereto. In the event of any conflict between **EXHIBITS A, B or C** and the provisions of this Agreement, the provisions of **EXHIBIT B** shall govern as to any such conflict.
- 8.3 The construction and enforcement of this Agreement will be governed by the laws of the State of Tennessee, without regard to principles of choice of law. Venue shall be in Shelby County, Tennessee.
- 8.4 None of the Parties will use the names or trademarks of any other Party, nor any adaptation thereof in any advertising, promotional or other activities without prior written consent obtained from the Party whose name, trademark or the like is intended to be used in each separate case, which consent shall not be unreasonably withheld, provided, however, that the Company shall be entitled to use the names of MFD and City in connection with: (i) any regulatory or governmental filing or (ii) as otherwise required by law.
- 8.5 No waiver of any default, condition, provision or breach of this Agreement will be deemed to imply or constitute a waiver of any other like default, condition, provision or breach of this Agreement.
- 8.6 If any paragraph, term, condition or provision of this Agreement will be found, by a court of competent jurisdiction, to be invalid or unenforceable, or if any paragraph, term, condition or provision is found to violate or contravene the applicable laws of the United States, the State of Tennessee or Ordinance of the City of Memphis, then the paragraph, term condition or provision so found will be deemed severed from this Agreement but all other paragraphs, terms, conditions and provisions will remain in full force and effect.
- 8.7 Nothing contained herein will be construed as establishing an employer-employee, joint venture, or principal-agent relationship between the Parties. In addition, none of the Parties will have the right to incur any debt or expense for the account of any other Party.
- 8.8 City agrees that during the term City will not participate in a competing trial. For purposes of this Section, a trial should be deemed to compete with the Project if it calls for administration of a procedure that would compete with the Project being evaluated in the trial, to a patient population and for indications similar to those set forth in the Company's Protocol.
- 8.9 City understands that the Project being conducted by Company may be amended, from time to time, as needed or required to comply with all rules, regulations or requirements

related to clinical studies and otherwise, and shall comply with all directives of Company relating to reporting, collecting and dissemination of information and the like.

- 8.10 City may not assign this Agreement or any part of it without the written consent of the Company. If assignment is permitted then, as a condition of assignment, the assignee must agree, in writing, to be bound by the terms and conditions of this Agreement. The Company may assign any of its rights under this Agreement in its sole discretion to UTHSC or UTHSC's designee
- 8.11 This Agreement binds and benefits the Parties and their legal successors and permitted assigns; however, this provision does not alter the restrictions on assignment and disposal of assets set out in the foregoing paragraph. This Agreement does not create any personal liability on the part of any officer, agent, or employee of the City or the Company.
- 8.12 This Agreement may be executed in multiple counterparts, each of which shall constitute an original.

[Signature Page Follows.]

8.12 This Agreement may be executed in multiple counterparts, each of which shall constitute an original.

WHEREAS, the Parties hereby sign this Agreement by their duly authorized representatives set forth below. Although UTHSC is not a party to this Agreement, its signature below is required as an acknowledgement to the terms and conditions contained herein.

ATTEST/SEAL

By:

Name: Lisa Reganelli

Title: Administrative

UT MOBILE STROKE UNIT, LLC

Signed by:

By:

Name: Andrew T. Botsch

Title: CEO

ATTEST/SEAL

City Secretary

CITY OF MEMPHIS, TENNESSEE

Signed by:

Mayor

APPROVED:

[Signature]
Director Memphis Fire Department

COUNTERSIGNED BY:

[Signature] 6/1/16
City Controller, Deputy

APPROVED AS TO FORM:

[Signature]
Chief Legal Officer City Attorney
L.D. File No.

DATE COUNTERSIGNED:

ACKNOWLEDGED BY:

[Signature]
Anthony A. Ferrara
Vice Chancellor for Finance and Operations, Chief Financial Officer
The University of Tennessee Health Science Center

Date: 4.18.16

EXHIBIT "A"

PROJECT PROTOCOL

1. Purpose.

The purpose of this study is to evaluate the effectiveness and benefit of a Mobile Stroke Unit ambulance (MSU) in treating acute ischemic stroke by comparing pre-hospital diagnosis and treatment of acute ischemic using a MSU with hospital Emergency Department diagnosed and treated acute ischemic stroke.

The study will determine whether the time to tPA treatment will be shorter with comparable safety and better survival and recovery at three months using the MSU as compared to current EMS practice of transporting the patient to the emergency department for evaluation and treatment.

The Memphis City-wide Stroke Program has been developed at The University of Tennessee Health Science Center (UTHSC) in conjunction with Methodist University Hospital, Baptist Memorial Hospital, Regional One and St Francis Hospitals to provide full coverage of acute stroke victims' needs and to bring them the most effective therapies by minimizing time to treatment that maximizes survival and potential recovery with little or no disability. The treatment of ischemic stroke, which accounts for 85% of events, is highly time dependent and has been effectively treated with tissue plasminogen activator (tPA). Unfortunately, only a small percentage of potentially eligible ischemic stroke patients are evaluated in the 4.5 hours' time window from stroke symptom onset where the treatment has been shown to be effective.

Further, most of those treated are treated two or more hours after onset of stroke while the most effective results occur less than ninety minutes from stroke onset. The future of acute stroke care appears to be in treating the patient where they have had a stroke to shorten time to treatment. This approach requires a specialized MSU with a CT head scanner, mobile laboratory, and telemedicine that will allow a rapid deployment team to treat the stroke right outside the patient's home. We are implementing such a service in Memphis to offer potentially earlier stroke treatment than is currently available following the current standards of care for acute stroke.

2. Rationale.

The literature and our practical experience is that the earlier tPA is administered following a stroke, the greater the likelihood of survival with a good outcome with no or minimal residual neurological deficit. Major efforts have taken place over the past two decades to improve the time from acute ischemic stroke onset to tPA treatment.

With current hospital (emergency department) based strategies, it is unlikely that major time to treatment or percentage of eligible patients being treated will substantially increase. The European experience (and the early experience in the US) indicate that a MSU could increase both the rate of treatment and shorten the time to treatment. This success has the potential to result in substantially improved outcomes for patients with acute ischemic stroke, and dramatically modify the way that acute stroke patients are managed. However, there are gaps in

knowledge that need to be addressed to include the MSU as part of standard acute ischemic stroke treatment. Memphis (population ~654,000), a medium sized city being larger than Cleveland, and smaller than Houston with a unified city-wide stroke program, is ideal to be able to implement, evaluate and maximize the potential benefit of a MSU.

3. Study/Project Population.

> 18 both male and female with acute stroke

4. Research Design.

Non-Interventional, Prospective, Case-Cohort Study

5. Study/Project Procedures.

Prospective data collection on patients with acute stroke will include demographic, past medical history, history of present illness, National Institutes of Health Stroke Scale (NIHSS), vital signs, physical examination findings, laboratory and neuroimaging findings (CT, CTA ect.), type of treatment, symptomatic intracerebral hemorrhage (sICH) rates, discharge diagnosis, discharge disposition, clinical outcomes including mortality and modified Ranking Scale (mRS) at ninety days after event.

All abovementioned data reflect standard of care and are collected as part of existing data abstraction processes in place at Memphis hospitals receiving stroke patients from EMS for their stroke center certification required by The Joint Commission.

6. Outcome Measures.

We will determine the following outcomes:

- (a) Time to tPA treatment (symptom to bolus, minutes);
- (b) Proportion of patients treated within sixty minutes from symptom onset;
- (c) sICH rates (NIHSS worsening by four points or greater with PH1 or PH2 intracranial bleeding within 36 hours);
- (d) Mortality within ninety days from symptom onset; and
- (e) Functional recovery (mRS scores) at ninety days.

[End of Project Protocol]

EXHIBIT "B"

[Attach Copy of UT – UTMSU AGREEMENT]

EXHIBIT "C"

MOBILE STROKE UNIT DISPATCH PROTOCOL

1. a) 9-1-1 Emergency telecommunication call takers will be educated by a Communications Liaison about the Project and the intention to determine the potential clinical benefits of this program.

i) Emergency telecommunicators will be re-educated on how to recognize when a caller is describing the signs or symptoms of a possible stroke.

ii) They will additionally be educated to recognize a potential stroke case in all 9-1-1 conversations regardless of initial dispatch emergency type.

iii) Anytime a telecommunicator suspects a patient is experiencing an acute stroke the call will either be dispatched as a Code Stroke, or a message will be sent to the tactical channel radio operator indicating that new information indicates a possible stroke is in progress.

b) Memphis Fire Department radio operators will be educated on the Project and the intention to determine the potential clinical benefits of this program.

i) Any Fire Department Unit will be reminded to "upgrade" and add appropriate units to conform to at least a Code Stroke dispatch anytime he or she is informed of an apparent stroke case, regardless of the initial dispatch type.

2. The UT Mobile Stroke Unit ("MSU") will be entered into the Computer Aided Dispatch (CAD) as unit Mobile Stroke 001.

a) Members of the MSU will contact the Memphis dispatch office at 901-458-8281 to put unit Mobile Stroke 001 in-service when its availability begins and out-of-service when its availability ends.

b) When in-service the CAD will create an electronic dispatch for unit Mobile Stroke 001 for all Code Stroke calls within its pre-determined response territory. An electronic dispatch will similarly occur anytime the unit is added to an already existing run.

c) The Mobile Stroke 001 will immediately be dispatched when available.

d) The driver of the Mobile Stroke 001 unit may acquire more information by contacting the dispatch office via phone or by radio communication with other responding units.

3. The Memphis Fire Department will dispatch Mobile Stroke 001 for potential acute stroke patient calls by the fire station vocal alarm or by MFD radio on the EMS 1 frequency.

[End of Mobile Stroke Unit Dispatch Protocol]

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the Foundation in writing. Should the Foundation pursue legal enforcement of this provision, the Grantee agrees to also pay and indemnify the Foundation, in full, for attorney fees, costs, and expenses incurred.

4. The Grantee agrees that if this Grant award allows funding for the purpose of acquiring property, real or personal, which property may later be sold, deemed no longer usable by the Grantee, or no longer owned, resulting in cash proceeds or items of value, or when the Grantee ceases to operate, no longer pursues, directly or indirectly, the charitable goal which warranted the funds granted in the first instance, or at such time as the Foundation may determine such change in purpose by the Grantee, then such sums or items of value or property, at the option of the Foundation, shall be delivered to the Foundation or its designee. The Foundation is to be notified prior to any sale or disposition of assets acquired with grant funds.
5. A complete and accurate record of the funds received and expenses incurred pursuant to or in connection with this Grant must be maintained by the Grantee. The Assisi Foundation may, at its expense and on reasonable notice to the Grantee, audit or have audited the records of the Grantee insofar as they relate to the activities funded by this Grant.
6. The Foundation may monitor and conduct an evaluation of operations under this Grant, including visits by representatives of the Foundation to observe the Grantee's program procedures and operations and discuss the program with the Grantee's personnel. The Grantee agrees to cooperate fully and responsively to any inquiries by the Foundation. The Foundation is to be informed if the organization consolidates or affiliates or partners with any other organization in any management operations and other programs. The Foundation is to be informed immediately if the chief executive officer or key staff associated with the Project changes.
7. In the event that the Grantee wishes to issue a news release concerning the Grant, the text of the release should be submitted to the Foundation for review and approval not less than ten days prior to the release date. It is understood and agreed that the Foundation may include information about this Grant in its periodic public reports and press releases.
8. The Grantee shall immediately give written notice to the Foundation if, prior to receipt of all or any portion of the Grant, or during the term of the Project, the Grantee ceases to be exempt from federal income taxes. Failure to remain tax exempt from federal income taxation for the charitable purpose(s) outlined in the Grant Application shall give the Foundation the immediate right, in its sole and exclusive discretion, to terminate this Grant.
9. If the grant is intended to support a specific project or to provide general support for a specific period, any portion of the grant unexpended at the completion of the project or the end of the period shall be returned to the Foundation. By making this Grant, the Foundation assumes no responsibility to provide other or additional support for the Grantee.
10. Execution of this Grant Award Letter shall evidence that the Grantee fully accepts and agrees to be bound to strict compliance with the terms hereof.

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11. The Assisi Foundation Programs Officer responsible for this award is *Jan Young*. All correspondence to The Assisi Foundation concerning this grant should be addressed to the designated Programs Officer and reference should be made to the grant number listed on the first page of this letter.

SPECIFIC PROJECT CONDITIONS

The following Specific Project Conditions also apply to your organization's receipt and use of the Grant:

1. This renewable grant, with an initial award in the amount of Five Hundred Fifty Thousand, and 0/100ths Dollars (\$550,000.00) is restricted to partially fund the project as described in the grant proposal, Respond, Evaluate, Cure, Heal Mobile Stroke Unit (REACH MOST) dated August, 2015. These funds are restricted to the *Respond, Evaluate, Cure, Heal Mobile Stroke Unit*. These funds may be applied to areas of priority need.
2. Copies of IRS Form 990s and Audited Financial Statements for each completed fiscal year during the Grant Award period should be forwarded to the Foundation as soon as they are available.
3. A Renewal Application is due no later than August 15, 2016 submitted through the Assisi Foundation website. To apply for a renewal grant, go to the Assisi Foundation website at www.assisifoundation.org/for-grantseekers/ and click on the link to submit a Renewal Application. Log in with the user name and password (that you used to submit this application) and fill out the Renewal Application that has been provided for you, including the information requested in the Specific Project Conditions of this letter.

Please also include:

- A. Status of overall project.
- B. Copy of the IRB application filed, or to be filed with all appropriate institutions.
- C. Amounts of other funding and in-kind contributions secured for the project.

Any such Renewal Application is subject to the Foundation's de novo review of the Grantee's operations and the Project, as well as the results and use by the Grantee of the Grant funds awarded pursuant to this Grant Award Letter. Although the Foundation is hopeful that an additional grant will be merited, any additional grant awards shall be in the Foundation's sole discretion after such review and there is no assurance that additional or further grants will be awarded.

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PAYMENT SCHEDULE

The amount of Five Hundred Fifty Thousand and 0/100ths Dollars (\$550,000.00) is anticipated to be released in after receipt by the Foundation of the Grant Award Letter, executed by the Grantee, and after approval of the January report referenced in the specific project conditions above. The exact release date is subject to change by the Foundation.

This grant shall automatically expire one year from the date of this letter unless all of the conditions herein have been specifically completed, satisfied, and acceptable to the Foundation.

Please be advised that the failure to satisfy all general terms and conditions and all Specific Project Conditions (including the timely submission of any required reports in form and content acceptable to us) may delay or cancel the delivery of any grant funds otherwise payable to you or cause the grant to be repayable if the funds are not used for the sole and exclusive purpose identified and stated in your approved grant request.

Any failure by the Foundation to enforce each or all of the conditions hereof shall not be a waiver of such condition or such right.

On behalf of The Assiat Foundation of Memphis, Inc., I pledge our support and extend our best wishes for the success of this endeavor.

Sincerely,


Dr. Steven Schwab, DNSc
Executive Director

Accepted and Agreed:

Payments should be directed to:

University of Tennessee Health
Science Center

Dr. Steven Schwab
62 South Dunlap, Suite 220
Memphis, TN 38163

By: 
Dr. Steven Schwab, Chancellor

**THE ASSISI FOUNDATION OF MEMPHIS, INC.
GRANT APPLICATION COVER PAGE**



PROJECT TITLE: Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (REACH MO)

Person Responsible for Project
Name: Andrei Alexandrov
Title: Professor/Chairman; Dept. Neurology
Telephone: () ext:

Address: University of Tennessee Health Science Center
 855 Monroe Avenue; Suite 415; Memphis, TN 38163
E-mail: aalexa30@uthsc.edu

Brief description of the specific purpose for which funds are requested: (10 point font minimum)
 Memphis and the surrounding region have one of the highest death rates for stroke and severe disability. Chances of survival are greater when emergency treatment begins quickly. This project proposes a rapid stroke intervention started at the scene that reduces time to treatment. Currently, treatment for ischemic stroke is the use of tissue plasminogen activator (tPA). tPA must be administered within 3 to 4.5 hours of symptom onset. The earlier it is given the better patient outcomes. This project plans to take current state-of-the-art care for acute stroke from the emergency room/hospital setting to the stroke victim's home by building and deploying a mobile stroke ambulance that contains the equipment required to diagnose and implement treatment in the community. This project is part of a larger UTHSC Memphis City-wide Stroke program with the goal to provide comprehensive community-based stroke care to assure the best possible outcomes.

Amount Requested: \$2,109,513

Total to be raised: \$2,464,224

Name of Applicant Organization:
 University of Tennessee Health Science Center
Mailing Address: 62 South Dunlap St., Suite 220
 Memphis, TN 38163
Telephone: (901) 448-4796 ext.
Fax: ()
Website: www.uthsc.edu

Executive Director or President
Name: Steven J. Schwab, MD
Title: Chancellor, UTHSC
Telephone: (901) 448-4796 ext.
Address: 62 South Dunlap St., Suite 220
 Memphis, TN 38163
E-mail: sschwab@uthsc.edu

Type of Organization: Federal
 Public: Specify State
 Private Nonprofit County
 For Profit (General) City

Fiscal Year: 2014
From (month) July to (month) June
Tax ID: [REDACTED]
IRS Exemption Classification: 170(c)(1)

Geographic Area to be Served: Memphis region
Number of Persons Served Annually: 2,800 students
Auditing Firm: TN Comptroller of the Treasury

Date Last 990 Filed: N/A Rpt. of Treasurer filed
Date of Last Annual Report: N/A
Date of Last Audited Financial Statement: 6/30/13

Governing Officer/Board Chairman

Name: George E. Cates
Title: Trustee
Telephone: (901) 726-6061 ext.

Address: 1719 Harbert Avenue; Memphis, TN 38104
E-mail: geocates@gmail.com

Please Note: Applications will not be processed if the Determination Letter from the IRS and the last two years' IRS Forms 990 are not included. Organizations that have an independent audit must provide a copy of the last two Audited Financial Statements.

Certification and Acceptance: I certify this request has been authorized by the governing body. I certify this organization does not discriminate on the basis of sex, age, race, color, religion, nationality, or handicap. I certify the statements herein are true and complete to the best of my knowledge, and accept the obligation to comply with the terms and conditions if a grant is awarded as the result of this application.

Signature of Executive Director or President

Signature of Governing Officer/Board Chairman

Date:

Date:

January 2007

**THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER
COLLEGE OF MEDICINE
DEPARTMENT OF NEUROLOGY**

415 Link Building
855 Monroe Avenue
Memphis, Tennessee 38163
Phone: (901) 448-6199
Fax: (901) 448-7440

THE ASSISI FOUNDATION OF MEMPHIS
Assisi Application Form

Project Title: Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (REACH MOST)

Organization Name: University of Tennessee; University of Tennessee Health Science Center

Description of project (150 words)

Memphis and the Mid-South have one of the highest death rates for stroke and severe disability. Chances of survival are greater when emergency treatment begins quickly. This project proposes a rapid stroke intervention started at the scene that reduces time to treatment. Currently, treatment for ischemic stroke is the use of tissue plasminogen activator (tPA). tPA must be administered within 3 to 4.5 hours of symptom onset. The earlier it is given the better patient outcomes. This project plans to take current state-of-the-art care for acute stroke from the emergency room/hospital setting to the stroke victim's home by building and deploying a mobile stroke ambulance that contains the equipment required to diagnose and implement treatment in the community. This project is part of the larger UTHSC Memphis City-wide Stroke program with a goal to provide comprehensive community-based stroke care to assure best possible outcomes.

Amount Requested: \$2,109,513

Project Budget: \$2,464,224

Budgets

Organization Budget: FY14 is \$488,501,583

Number of Persons Served Annually: 2800 students, 2,000,000 outpatient visits

Fiscal Year: July 1 – June 30

Fiscal Year Ending Month: June

Date Audited Last Financial Statement: June 30, 2013

Organization's Auditing Firm: TN Comptroller of the Treasury, Dep. Of Audit, Division of State Audit

Date Last 990 Filed: N/A for UTHSC. The UT System produces a Treasurer's Report: "Report of the Treasurer filed 12/9/13."

Date of Last Annual Report: N/A, UTHSC does not do an annual report

Organization's Information

Tell us about your organization. Include history with inception date, mission, goals, and long-range plans. 7500 character

University of Tennessee and the University of Tennessee Health Science Center

The University of Tennessee Health Science Center (UTHSC) is the flagship statewide academic health system. In 1911, the University of Tennessee launched its Memphis campus, dedicated solely to health sciences. In 1963, the UT Graduate School of Medicine in Knoxville and in 1974, the UT College of Medicine, Chattanooga, joined the UTHSC system.

The stated *mission* of the University of Tennessee System is "through its multiple campuses and institutes, serves the people of Tennessee and beyond through the discovery, communication and application of knowledge. The System is committed to providing undergraduate, graduate and professional education programs in a diverse learning environment that prepares students to be leaders in a global society. The UT System's delivery of education, discovery, outreach and public service contributes to the economic, social and environmental well-being of all Tennesseans." Within these missions, UTHSC has a major aim to improve health for citizens of Tennessee through education, research, clinical care and public service.

Accredited by the Southern Association of Colleges and Schools, UTHSC's Memphis campus comprises six colleges – Health Professions, Dentistry, Graduate Health Sciences, Medicine, Nursing and Pharmacy. Approximately 2,800 students are enrolled at UTHSC, which offers two undergraduate programs, more than 20 graduate degrees, and seven professional programs. Advanced training in Medicine, Dentistry and Pharmacy for more than 1,100 residents and fellows is a key part of the UTHSC mission. In addition to the three major campuses – Memphis (main campus), Knoxville and Chattanooga – students, residents and fellows are found at a myriad of health-care-related facilities across Tennessee.

Within the University of Tennessee, the UTHSC mission is "to bring the benefits of the health sciences to the achievement and maintenance of human health, with a focus on the citizens of Tennessee and the region, by pursuing an integrated program of education, research, clinical care, and public service." Within the mission, the vision is "to serve as the premier State resource in bringing to bear the health sciences in the promotion and maintenance of a health society." The mission and vision are pursued by:

- Producing caring, competent, and ethical patient-focused healthcare professionals prepared to detect, treat, and prevent human disease and injury, as well as provide guidance in the achievement and maintenance of human health;
- Contributing to the discovery and development of concepts, procedures, and products for the effective detection, treatment, and prevention of human disease and injury;

- Delivering comprehensive health care services, based on evidence-based research, to citizens of Tennessee and the region;
- Serving as a resource to state agencies, elected policy-makers, professional health care organizations, on policy, practice, and scientific issues related to the achievement and maintenance of human health as well as equitable, efficient, and cost-effective delivery of health care services and products.

The *central Strategic Challenge* facing UTHSC over the next five years (2014 – 2018) is to position UTHSC as a national leader in targeted areas of excellence across missions, campuses and colleges. The **UTHSC strategic priorities** are

- Strategic Priority 1: Educate outstanding graduates who meet the needs of the state and its communities.
- Strategic Priority 2: Grow the research portfolio focusing on targeted areas.
- Strategic Priority 3: Create areas of clinical prominence while expanding outreach.
- Strategic Priority 4: Increase visibility and recognition of UTHSC contributions.
- Strategic Priority 5: Align UTHSC resources with areas of excellence.
- Strategic Priority 6: Expand and strengthen key community and other partnerships.
- Strategic Priority 7: Increase strategic integration across UTHSC.
- Strategic Priority 8: Strengthen organizational effectiveness and adaptability through focus on culture of excellence across the institution including faculty, staff and administration.

Within UTHSC, the College of Medicine (COM) represents the largest organization in the delivery of health care to Memphis and within the state. The COM in Memphis works through a multihospital system including the downtown core of Methodist University Hospital, the Regional Medical Center, LeBonheur Children's Hospital, and the Veterans Affairs Medical Center. Physicians and other health care providers are interwoven in every area of clinical care throughout the city, state and region:

- UTHSC physicians run three Level 1 Trauma Centers across the state – Memphis, Knoxville and Chattanooga – treating 12,000 cases a year and ranking in the top 5 nationally for number of cases.
- UTHSC's COM comprises the largest multi-specialty physician practice in the region (UT Medical Group) as well as the Mid-South's only multi-specialty pediatric practice (UT Le Bonheur Pediatric Specialists).
- UTHSC is the largest of four medical colleges in Tennessee. The class size is 165 versus 111 at Vanderbilt University, 80 at Meharry Medical College, and 71 at East Tennessee State University.
- UTHSC has developed a partnership with Saint Thomas Health System that will increase the presence of the COM and increase the residency training programs in Nashville.
- Faculty, residents and fellows are clinicians with privileges to see patients, provide care, and teach at all area hospitals and a broad variety of clinics and other health facilities. UT physicians and residents fully staff Regional One Health, and more than 80 percent of Le Bonheur Children's Hospital clinicians are UT-affiliated.
- With more than 100 clinical and educational sites across the state, UTHSC team members reach across the state to serve the community with competent, caring professional health care services.

UTHSC has educated and trained more than 53,000 health care professionals on three campuses across the state – Memphis, Knoxville and Chattanooga (49,000 have been educated and trained in Memphis). UTHSC consistently trains the lion's share of the State's and region's health care workforce, as well as accomplished faculty for higher education institutions. Forty percent of physicians practicing across the state and notable alumni around the world trained in the COM, which has graduated more than 13,400 since its founding; when residencies and fellowships such as surgery are considered, almost 70 percent of Tennessee physicians have trained at UT.

The organization's teaching, research and clinical activities have more than \$2.3 billion economic impact on the state. In fiscal year 2010, UTHSC was directly and indirectly responsible for approximately 21,096 jobs across the state, which generated more than \$804 million in earnings. Among the major academic units, the College of Medicine was responsible for the most job creation and more than \$2.07 billion (or 89.5 percent) of total economic contribution.

Summary

The UTHSC mission, goals and long-range plans align with the proposed project and the larger UTHSC Memphis City-wide Stroke program. UTHSC strategic priorities define our overall direction. It is clear that stroke care is an area of clinical prominence where UTHSC plans to expand its community outreach (Strategic Priority 3) and strengthen key community and other partnerships (Strategic Priority 6).

Organization's Programs

- Current programs, activities and accomplishments
- Differences from similar or competing organizations
- Timeframe in which persons are served
- Agreements or relationships with similar or competing organizations

7500 characters

University of Tennessee Health Science Center

The University of Tennessee (UT) is the major public center of higher education in the state. The University of Tennessee Health Science Center (UTHSC) in Memphis is the center for the UT health system. As the state's only public academic health science facility, UTHSC trains the majority of health care professionals for the state. UTHSC health care professionals provide more than a million days of hospital care across the state every year and over two million outpatient visits. UTHSC has approximately 18,819 full and part-time jobs based on estimates for 2010. Current efforts are expanding several of the programs into Nashville through partnership with St. Thomas Health.

The College of Medicine (COM) is the largest college within UTHSC and has 3 campuses (Knoxville, Chattanooga, and Memphis) across the state. The largest component of COM is in Memphis. The COM contains a number of medical and surgical departments that cover the spectrum of medical health care.

The Department of Neurology is within COM and consists of approximately 30 faculty members in both adult and pediatric care. The department has teaching stroke services at Methodist Hospital (MUH) with approximately 1,600 stroke patient admissions per year, Memphis VA Medical Center with approximately 100 admissions per year, Regional One Health with approximately 50 admissions. The

stroke consult service launched in July, 2014 at Baptist Memorial Hospital (BMH) is projected to evaluate and treat approximately 1,000 stroke patients per year. Within the Department of Neurology a major interest has focused on stroke and the development of a Memphis City-wide Stroke Program.

Memphis City-wide Stroke Program

The goal of the University of Tennessee Health Science Center Memphis City-wide Stroke Program is to provide a comprehensive interdisciplinary approach to community-based stroke care to assure the best possible outcomes. Dr Andrei Alexandrov was recruited in 2013 to lead the Department of Neurology physicians to provide city-wide services for acute stroke victims in greater Memphis and the adjacent Tri-State area. Dr. Alexandrov is an internationally recognized authority on stroke and was the Director of the Comprehensive Stroke Program at the University of Alabama, Birmingham. In bringing Dr. Alexandrov to Memphis, UTHSC, Methodist and Baptist Hospitals have provided major financial and personnel resources for the establishment of a unified stroke program for the community.

As of July 2014, UT Vascular Neurologists cover and attend to all stroke patient needs brought to Methodist Healthcare hospitals (11 in the area), Regional One Health (formerly The MED) and VA hospitals. In addition, daytime weekly consultative stroke service is now provided to Baptist Memorial Hospital (BMH) and its participating hospitals (19 in the area). The latter service will be expanded in one year to full-time coverage after the program's current two Vascular Neurology fellows graduate in July 2015 and join the UT faculty. St Francis hospital has a contractual agreement to consult with Methodist University Hospital (MUH) on call stroke attending physician, treat and transfer to MUH appropriate stroke patients including acute ischemic stroke and intracranial hemorrhages. We project that in addition to these in-hospital based services at flagship MUH and BHM hospitals, all hospitals in the area will be serviced by the program's team through Telemedicine/Tele-Stroke Neurology at all times. This service is now available between MUH and Methodist Germantown and it will be expanded through all Methodist system hospitals in 2015. BHM has Telemedicine system in place for all their hospitals and Baptist system plans to start transition to Telemedicine coverage by UT Stroke Neurology Program in the fall of 2014. The UTHSC Stroke Program is taking responsibility for the care of essentially all strokes that occur in the Greater Memphis region.

In addition to full time Vascular Neurology Stroke services, the multi-disciplinary team provides state-of-the-art Neuro-Endovascular Service for interventional treatment of ischemic and hemorrhagic stroke at MUH, BMH, Regional One, VA and Methodist Le Bonheur Children's hospitals. This city-wide Neuro-Endovascular service is unique, highly efficient and unparalleled anywhere else in the US since it provides coverage for the entire population of this area.

To further improve stroke care for the community, as of October 2014 the Department of Neurology and its partners are launching full-time dedicated Neuro-Critical Care Unit service at MUH, the first of its kind in Memphis and the Tri-State area.

The city-wide multidisciplinary stroke service has the following resources currently available to accomplish the above mentioned tasks and goals of the proposed project:

1. Fellowship trained or Board-certified Vascular Neurology physicians – 6 FTEs.
2. Fellowship trained or Board certified Neuro-Endovascular physicians – 5 FTEs.
3. Fellowship trained Neuro-Critical Care physicians – 3 FTEs.
4. Vascular Neurology MD fellows – 2 FTEs.
5. Neuro-Endovascular MD fellows – 3 FTEs.
6. Acute Care Nurse Practitioners – 2 FTEs.

7. Research MD fellows – 2 FTEs.

Partnerships

Both Methodist and Baptist Hospital systems combined admit over 90% of acute stroke patients in this area. Both systems identified the development of comprehensive stroke care facilities as key strategic areas, and have invested in the following to provide care of stroke patients by our multi-disciplinary team:

1. Dedicated areas in Emergency Departments with designated personnel (RNs, MDs) to take care of stroke patients brought by EMS or walk-ins.
2. Ongoing system-wide education of EMS services and Emergency Departments' personnel in stroke diagnosis and care.
3. Intermediate care Stroke Units (projected number of beds > 20 by 2015) with stroke-trained nursing personnel according to The Joint Commission criteria for specialized Stroke Centers.
4. Neuro-Critical Care Units (projected number of beds 36 by 2015) with specialized staff.
5. State-of-the-art endovascular catheterization laboratories at MUH and BHM campuses.
6. Designation by The Joint Commission of Primary (current) and Comprehensive Stroke Center levels (projected for 2015-2016) by Methodist and Baptist flagship hospitals.

The main goal for our multi-disciplinary Stroke Program at UTHSC is to provide city-wide, population-based coverage of stroke victim needs and to bring the most effective therapies to the patient by minimizing time to treatment. UTHSC, MUH and BMH are all dedicated to providing the best possible care to stroke victims in Memphis. By creating a unified stroke program across the institutions, resources are maximized to the benefit of the community.

Purpose of the Grant

Please include the following information in the purpose of the grant description:

- Project Goals and Objectives
- Activities or services
- Timeframe or timeline
- Evaluation--name of the individual or organization that will assess and report the results
- Results to measure success
- Method of evaluation
- Use of results for future planning
- Long term plans to sustain project

10000 characters

Funding Request

The *goal* of the Memphis City-wide Stroke Program is to provide full coverage of stroke victims needs and to bring them the most effective therapies by minimizing time to treatment. The future of acute stroke care is in treating the patient where they have had a stroke to shorten time to treatment. This approach requires the addition of a Mobile Stroke Unit (ambulance) that will allow a rapid deployment team to treat the stroke and to pioneer cutting edge technology and develop novel technology-based ways to treat acute stroke patients essentially at their home door-steps. The current funding request is for personnel, equipment, and a

custom-built ambulance with a CT scanner and ambulatory laboratory for the rapid treatment of acute stroke within the Memphis community.

Background

Memphis is in southeast US a region called the Stroke Belt with a high stroke incidence. Memphians are twice as likely of having a stroke as compared to other Americans, with an incidence of 1.1% per year for individuals over 65 years of age, and with 25% of victims being younger than 50 years of age.

Stroke in the US is:

- One of the 4 leading causes of death,
- The leading cause of permanent adult disability, and,
- Expensive, with an annual economic impact exceeding \$60 billion in direct care, lost productivity and caregiver financial losses. The costs are projected to more than triple over the next 15 years.

Treatment of Stroke

At least 85% of strokes are caused by blood clots within a blood vessel cutting off oxygen to the brain as opposed to 15% due to bleeding into the brain. Both result in brain cell deaths and development of functional disability. The way to discriminate the two types of strokes is by x-ray CT scan. Patients without evidence of bleeding may receive the only effective therapy approved by FDA to reverse neurological disability from stroke, a "clot-busting" medicine called tissue plasminogen activator (tPA). tPA is given intravenously within 3-4 hours after onset of stroke symptoms to dissolve clots blocking blood flow. Response to treatment is tightly time-dependent with an estimated 1.9 million brain cells dying per minute during an untreated acute stroke. However, few patients are treated within one hour, and only 15-40% arrive at the hospital early enough to benefit from treatment. Thus, less than 5% of ischemic stroke patients in the US and in Memphis are treated with tPA.

The University of Tennessee Health Science Center Stroke Program

The high stroke incidence in Memphis, led to the development of a city-wide stroke program. The program is multifaceted, with a major emphasis on acute stroke treatment to minimize mortality and disability. To provide unified early acute treatment, rapid response teams have been started at Methodist University Hospital (MUH) and Baptist Memorial Hospital (BMH) that work closely with the Memphis Fire Department and EMS to recognize and deliver acute stroke patients to the Emergency Department from Memphis and surrounding Tri-State area. Because tPA should not be given in certain conditions the average time to treatment is over 2 hours from symptom onset. Acute stroke management needs restructuring to allow for more rapid screening and treatment. Based on past data, treating within 1 hour of symptom onset, patients have over a 4 times greater likelihood of complete recovery compared to later treatment. However, this hypothesis needs rigorous testing.

To achieve a 1 hour response, several communities are using a dedicated ambulance containing an imaging unit and laboratory equipment to evaluate and treat stroke victims at home and in the ambulance. The experience has been to decrease the time from stroke onset to treatment.

Goals and Objectives

The proposal implements a Mobile Stroke Unit (ambulance) within the Memphis city-wide stroke program area to improve acute stroke treatment by maximizing the potential for rapid tPA treatment.

- **The grant proposes** a specialized ambulance for pre-hospital stroke treatment, providing all diagnostic tools and stroke medicine competence needed for therapeutic decisions at the site where paramedics pick up suspected stroke victims. Thus, in departure from current practice of stroke specialists waiting for patient arrival at Emergency Departments, the stroke team goes to the patient.
- **The grant proposes** the unit be based between MUH and BMH. By working closely with the Memphis Fire Department and EMS, the unit would be preferentially dispatched to likely stroke victims. We estimate once a phone triage system for stroke identification is implemented, 1-2 stroke patients/day will be standard.
- **The grant proposes** that the mobile unit would initially cover an area with a 10-12 mile radius from the ambulance base to allow tPA treatment in under one hour.
- **The grant proposes** that startup and maintenance costs would be covered for the first two years by extramural and philanthropic support. This allows for data collection necessary to demonstrate treatment in less than one hour, dramatically increases the chance of full recovery.
- **The grant proposes** to analyze the impact of early diagnosis based on results of head CT scan on management of strokes caused by bleeding (not eligible for tPA). For example, the program will analyze benefit of early blood pressure management in hemorrhagic stroke patients, and early notification of Neurosurgery for stroke victims with specific types of bleeding suitable for surgery (subdural and sub-arachnoid hemorrhages).
- **The grant proposes** to evaluate post-stroke health care costs. We anticipate significant cost savings in-hospital and the 3, 6, and 12 month post-stroke time period for patients receiving early tPA treatment, early blood pressure management and reduced time to Neurosurgical evaluation. A demonstration of lower costs will encourage insurance carriers to reimburse early care with tPA as an efficient use of health care dollars.
- **The grant proposes** to explore mechanisms to improve tPA implementation, including telemedicine, ultrasonography and other brain imaging methodologies. For example, we will pilot telemedicine transmitted images and ambulance-based examination of stroke patient in areas covered by free high speed wireless internet.
- **The grant proposes** to work with our community and with experts from Houston and Cleveland who have experience with this approach for acute stroke. Dr. James Grotta, Professor of Neurology, University of Texas Health Science Center, Houston, TX, will consult regarding the

implementation of a stroke ambulance as he was the first US physician to introduce this ambulance into his community.

Timeline

The project will be for three years. During year 1, the ambulance will be built, and appropriate IRB applications prepared and submitted. Approval is required prior to starting the evaluation. During years 2 and 3, the mobile stroke unit will be deployed into the community. During latter part of year 3, the initial data will be analyzed and reports prepared for publication.

Evaluation

The program evaluation will be completed by Dr. Alexandrov and Stroke Program members, and reported in a major medical journal. The UTHSC program will work with existing programs (In Houston and Cleveland) for a more comprehensive examination of the experience with stroke ambulances.

Measures to evaluate the benefit of the mobile stroke unit will be time from stroke to initiation of tPA, the proportion of patients receiving tPA, and the outcome 3 months post stroke. These are standard outcomes in acute stroke therapy studies.

To test the effectiveness of the mobile stroke unit, the study design will be sequential with one week stroke victims receiving current standard acute stroke care at MUH or BMH. On the alternate week, stroke patients will receive initial care using the mobile stroke unit. The two groups will be defined by the hours when the mobile stroke unit is operational. Statistical adjustments will be made for patient age and stroke severity. The balanced design repeated over two week periods should minimize bias. Power analyses suggests adequate power is present (Power>0.8) for the three outcomes (time to treatment, proportion treated, and outcome at 3 months) for a sample of approximately 150 patients in each group. Current tPA treatment rates at both MUH and BHM exceed 200 patients per year making a 300+ patient controlled study of Mobile Stroke Unit feasible to complete in 2 years.

Future Planning

Based on results of the program evaluation and the Houston and Cleveland experience, the program will move to improve utilization of the mobile stroke unit. Potential changes could include telemedicine to decrease the requirement for a neurologist on the unit, better integration with the existing EMS system to reduce manpower requirements. In addition, research projects will be developed to improve the effectiveness of the intervention. Examples include introduction of neurosonographic clot-busting as an adjunct to tPA (sonothrombolysis), neurosonographic imaging to diagnose stroke as the technique develops, etc. These are programs currently being developed within the stroke program.

Plans to Sustain the Project

The College of Medicine has supplied resources for the Stroke Program including strong financial commitment to every aspect of the clinical services outlined above. As the benefit is demonstrated of the mobile stroke ambulance, the stroke program will examine ways to apply parts of its resources into

the mobile program as the future of time efficient stroke care is in its deployment in the community via EMS. In addition, the stroke program is developing other grants to rigorously research the program and to integrate it into the community (see below under funding sources for specifics). The hope is that these grants will be successful and cover some costs of continuing the program.

Funding Sources

List all funding sources for this request (foundations, corporations, and others) solicited for this request for the current year, and if this is not a new project, for previous years indicate the amounts requested and status of your proposal with each one. (You may cut and paste from other documents into the box below). 3500 characters

Major source of funding for the University of Tennessee-Memphis City-wide Stroke Program is through UTHSC, MUH and BMH. Currently the resources supplied by the funders consist of:

1. Fellowship trained or Board-certified Vascular Neurology physicians – 6 FTEs.
2. Fellowship trained or Board certified Neuro-Endovascular physicians – 5 FTEs.
3. Fellowship trained Neuro-Critical Care physicians – 3 FTEs.
4. Vascular Neurology MD fellows – 2 FTEs.
5. Neuro-Endovascular MD fellows – 3 FTEs.
6. Acute Care Nurse Practitioners – 2 FTEs.
7. Research MD fellows – 2 FTEs.
8. Intermediate Care Stroke Units (up to 20 beds).
9. State-of-the-Art Neuro-endovascular Laboratories (3).
10. Neuro-Intensive Care Units (up to 48 beds).
11. Walk-in TIA Clinic (projected 6 beds).
12. Cerebrovascular Ultrasound Lab (2).

The monies committed to these programs have been more than \$7,000,000, and annual recurring costs are more than \$5,000,000

Funding commitments for the current request to implement the Mobile Stroke Unit includes the salary for a Vascular Neurologist, one Stroke fellow and one NICU Nurse/Nurse Practitioner from Methodist University Hospital.

The requested funding from the Assisi Foundation for the Mobile Stroke Unit includes the capital costs for the unit, operational costs, and additional necessary personnel including Project Manager, education of EMS, and a Senior Project Scientist. These resources will be necessary to evaluate the program and provide every other week service for the Mobile Stroke Unit, and eventually in the future transition to Telemedicine coverage of mobile services for acute stroke patients for greater Memphis and the adjacent Tri-State area.

Additional resources are being sought through other donors and granting agencies.

The Executive Dean of Medicine, Dr. David Stern, has been seeking interest from other sources for funding. Through his efforts, the program is currently looking into submitting a grant through Blue Cross Blue Shield of TN for some support.

The program is currently in the process of developing a grant for submission to PCORI that would support extending the services of the Mobile Stroke Unit with additional emphasis on educating the community about stroke and working with community organizations to advocate for stroke awareness.

Dr. James Grotta is in the process of developing an international consortium of communities with interest in using Mobile Stroke Units. He is submitting a grant for the consortium that would allow for comprehensive evaluation of the benefits of this approach to stroke treatment. The Memphis Citywide Stroke Program will be part of this consortium.

Board Financial Contribution

Financial Contribution Required: None

Total Amount Contributed Annually: \$1,016,300 for FY 14; \$29,507,066 lifetime commitment.

Current Percentage of Board Giving: 63%

Budget Information

Meeting the Challenge: Existing Commitment by the University of Tennessee College of Medicine (UT COM), Methodist University Hospital (MUH) and Baptist Memorial Hospital (BMH) for the Memphis City-Wide Stroke Program

The complexity of the acute stroke treatment has prompted the UT COM, MUH and BMH to commit the following resources to the Stroke Team. The Stroke Team is based at each hospital and is available at all times through the rapid response team when an acute stroke is brought to the hospital emergency department. All staff rotates through the rapid response team on a schedule and in addition has duties caring for other patients.

Physicians, Services and Resources (Sponsor)	COM, MUH, BMH Committed funds	Annual Reoccurring
Vascular Neurologists – 5 FTEs (MUH and BMH)	1,250,000	1,250,000
Neurocritical Care Physicians - 3 FTEs (MUH)	1,050,000	1,050,000
Intermediate Stroke Units (1 MUH, 1 BMH)	Approx. 1,000,000	500,000
Neurocritical Care Units (1 MUH, 1 BHM)	Approx. 2,000,000	500,000
Neurology Department Research Core 3 FTEs (UT)	380,000	380,000
Stroke and Neurosonology Fellows 3 FTEs (MUH, UT)	155,000	155,000
Acute Care Nurse Practitioners – 2 FTEs (MUH)	250,000	250,000
Cerebrovascular Ultrasound Equipment (MUH)	85,000	38,000
Telemedicine services (MUH, BMH)	1,000,000	1,000,000
Total	7,170,000	5,123,000

The Vascular Neurologists are all board certified and have had subspecialty training in Stroke. They are responsible for patient care of acute stroke patients at MUH and BAP where 90% of acute stroke patients are treated. They interact closely with the Emergency Department and with the Neurocritical Care and Intermediate Stroke Units in the treatment and management of all stroke patients.

The Neurocritical Care Physicians are responsible for primary medical care in the Neurocritical Care Unit. They work in collaboration with the Vascular Neurologists to maximize care for those acute stroke patients that require treatment in the neurocritical care unit.

Intermediate Stroke and Neurocritical Care Units are being supplied by MUH and BMH. The units

include the space, beds, and the equipment and supplies necessary to have the units operate. At this time, we do not have the cost estimates for the two units.

Stroke and Neurosonology Fellows are in specialty training and work under the guidance of the Vascular and Critical Care Physicians. They have completed their neurology residencies and are either board certified or board eligible in neurology.

Acute Care Nurse Practitioners work with the physicians to provide optimal care for the acute stroke patients.

Cerebrovascular Ultrasound Equipment are Doppler units used to examine blood flow primarily in the arterial circulation. The equipment contributes to the evaluation of stroke patients.

Meeting the Challenge: Required New Funding for the Mobile Stroke Unit

In addition to the resources and funding provided by UT COM, MUH and BMH to evaluate and treat stroke patients in respective hospital systems, we require funding for the Mobile Stroke Unit and its operation. The Mobile Stroke Unit will consist of all necessary diagnostic equipment, an ability to complete a stroke laboratory work-up, and have telemedicine capabilities. In addition, the Unit will be staffed with a specially trained team, including a vascular neurologist (attending physician or stroke fellow), and neuro-intensive care unit-trained nurse or acute care nurse practitioner. We estimate that approximately \$ 2,460,000 will be needed for the development of one Mobile Stroke Unit and 2 years of initial operation and evaluation.

The following table presents the costs associated with acquiring the Mobile Stroke Unit (one-time costs), the annual reoccurring costs associated with its operation (estimated for the first two years), and a column with the amount requested from the Assisi Foundation for the three years of the grant.

Year 1: Procurement and Building of the Mobile Stroke Unit

Mobile Stroke Unit Cost Estimates	Projected Cost	Partner's Investment	Request from Foundation
CereTom computer tomography (CT) scanner (Neurologica)	340,098		340,098
Ambulance (Frazerbilt)	82,000		82,000
Ambulance modifications (Frazerbilt)	51,300		51,300
Ambulance Chassis (Chevrolet)	23,000		23,000
Point of Care lab (Abbott I-STAT)	10,000		10,000
Ambulance Cot (Stryker)	9,600		9,600
Reserved loading dock space with plug in	10,795		10,795
Miscellaneous equipment/ inventory supplies	7,000		7,000
Defib/ monitor (Zoll corporation)	25,000		25,000
Consultation by Dr. James Grotta regarding MSU implementation/consortium	30,000		30,000
Senior Stroke Researcher (0.5 FTE)	123,000		123,000
Paramedic Education Program	30,000		30,000
First Year Total	741,793		741,793

Procurements for year 1

The CereTom is an 8-slice small bore portable CT scanner that delivers the highest quality Non-Contrast, Angiography, and Contrast Perfusion scans in a variety of patient location. Its combination of rapid scan time, easy to use interface and immediate image viewing make it well suited to a mobile stroke ambulance.

Frazer Ltd builds mobile clinics that are custom designed to the specific healthcare needs. The Mobile Clinic will be equipped with an independent generator, so power is available to run the CT scanner and other equipment without electrical connection. They have built the mobile stroke unit currently being used in Houston, Tx. Pricing for the unit consists of three parts: the ambulance chassis, the ambulance structure mounted onto the chassis, and the modifications to the structure to finish the unit.

Point of Care lab (Abbott I-STAT) is a portable lab unit that allows for the blood measurements required for the use of tPA.

Ambulance Cot (Stryker) is the bedding for the stroke patient during treatment and transport to the hospital.

Reserved loading dock space with plug in involves the preparation of a pad which is appropriate for the parking of the Mobile Stroke Unit.

Miscellaneous equipment/ inventory supplies include supplies for starting and maintaining an IV (e.g. needles, tubing, sterile solutions), syringes for phlebotomy, toweling, sheets, etc.

Defib/ monitor (Zoll corporation) is standard equipment during acute critical care in order to monitor vital signs of the patient and to defibrillate them if they arrest.

Consultation by Dr. James Grotta who has implemented a stroke mobile unit in Houston Texas, and currently is developing an international collaboration to evaluate the efficacy of such mobile units in the US and Europe. Dr. Grotta has worked through the details required to deploy the mobile unit. His knowledge and interaction can improve the success of the Stroke Mobile Unit in Memphis.

Senior Stroke Researcher will be responsible for the development and implementation of evaluation of the unit and the development of protocols to improve the program over time, and for the implementation of other planned research involving the Mobile Stroke Unit. During year 1, research protocols, IRB and other documents have to be developed, prepared and approved prior to deploying the unit. Years 2 and 3 will be data collection and analysis with publication.

Paramedic Education Program will be developed and implemented over the three years of the proposal. The goal is to have the Paramedics and Emergency Medical Services understand the role of the Mobile Stroke Unit, better able to identify potential strokes, and be trained in working with the specialized staff

that will be working on the unit. The better the integration of the program with EMS, the more likely the program will be successful.

Year 2: First Year of Mobile Stroke Unit Deployment

The estimated costs for the second year are consistent with the plan to have the Mobile Stroke Unit in the field on alternate weeks to allow for the comparison of the Unit with current standard of care which is EMS taking the patient to the hospital for evaluation and treatment. For the first year of deploying the unit, we plan to have a full team of physicians and nurses with the unit to establish the best protocol that maximizes the quality of diagnosis and treatment using the Unit. During the first year, the Unit initially will be deployed 12 hours per day. As experience is gained with the program, the plan will be to increase the time in the field.

The staff cost of operation of the Mobile Stroke Unit has been estimated on a per hour basis rather than as personnel needing hire. This allows for a more accurate accounting of the cost. The staffing for the unit will become an integral part of the Citywide Stroke Program and any new required staff will be added to the Citywide Stroke Program. The plan is to have all Vascular Neurology attendings, fellows rotate thru Mobile Stroke Unit service spending one week on at a time. When they are off Mobile Stroke Unit they will continue to cover MUH or BMH or telemedicine services per the team schedules. Nurses, CT technicians and driver/paramedic will be hired in collaborations with the hospitals to allow adequate coverage for the unit and to integrate the staff into the Stroke Program or Emergency Departments when not on the Mobile Stroke Unit.

Mobile Stroke Unit Cost Estimates (Personnel include Benefits at 23%)	Year 2 Expenses	Partner's Investment	Request from Foundation
tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr	124,000		124,000
Ceretom annual warranty	39,000		39,000
Ambulance Gas / maintenance / insurance/ parking	14,000		14,000
Staffing Costs for Mobile Stroke Unit (see below)	503,652	258,290	245,362
Project Manager (1 FTE)	67,600		67,600
Senior Stroke Researcher (0.5 FTE)	123,000		123,000
Paramedic Education Program	30,000		30,000

Year 2 Total 901,252 258,290 642,962

Staffing Expenses for the Mobile Stroke Unit were estimated on an hourly basis from the following calculations. For the first year of operation of the unit, a Vascular Neurologist will be assigned to the

unit. The high level of expertise will allow for the establishment of the best protocols and operational practices for the unit. By the second year of operation, a Stroke Fellow will take the place of the Vascular Neurologist and the Vascular Neurologist will be available through telemedicine. For the purpose of cost estimates, the assumption is that the Vascular Neurologist will be on the unit for the entire year.

Staffing Expenses for the Mobile Stroke Unit Year 2

	Hourly Cost Calculation	Hourly Rate
Stroke Neurologist	\$200,000/2080 hours	\$96.15 / hr
Nurse	\$100,000/2080 hours	\$48.07 / hr
CT Technician	\$50,000/2080 hours	\$24.04 / hr
Driver/Paramedic	\$50,000/2080 hours	\$24.04 / hr
Subtotal		187.49 / hr
23% Benefits		43.12 / hr
Total		230.61 / hr

The daily cost for personnel on the mobile unit when it is in operation is

For 12 hour coverage: \$2767.32

For the 12 hour coverage, this comes to \$503,652.24 per year.

BMH and MUH are paying for the Stroke Neurologist $(96.15/\text{hr} + 0.23 * 96.15) * 12\text{Hr} * 182\text{ days} =$
\$258289.67 per year

tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr. The cost of the tPA for use on the Mobile Stroke Unit. The cost is based on the price that is charged by Genetech. This price is different than the cost to the hospitals who have registered with Genetech. The stroke program may be able to obtain the medication through the hospital at their price, but this will be dependent on how the Stroke Mobile Unit is registered. The unit will be owned by UTHSC and is not eligible for lower tPA cost. If the unit can be leased to MUH and BMH, the lower hospital cost may be applicable. The Cleveland Clinic has used this approach, as their hospital and by extension their existing practice plan owns the vehicle making them eligible for a lower cost.

Medical Malpractice Insurance is not included in the costs for the year. The physicians involved with the Stroke Mobile Unit will be covered by UTHSC up to \$10,000,000 per year as part of their employment with the Citywide Stroke Program.

Ceretom annual warranty is necessary for the annual maintenance and any repairs required by the CT scanning unit.

Ambulance Gas / maintenance / insurance/ parking are the estimated costs for the operation of the Mobile Stroke Unit. The estimates are based on the current experience of this type of unit in Houston, Tx.

Project Manager is responsible for the day to day operation of the unit and for the staff. The individuals will interact with management at both MUH and BMH.

Year 3: Second Year of Mobile Stroke Unit Deployment

The cost estimates for the third year will continue to have the Mobile Stroke Unit in the field on alternate weeks to allow for evaluation of the program. During the third year, the expectation is that the unit will be deployed in the field for more 12 hours per day. This will depend on our experience during year 2. The expectation will be to move to use telemedicine with the Stroke Neurologist no longer on the unit and having the unit covered by a Stroke Fellow.

Mobile Stroke Unit Cost Estimates	Year 2 Expenses	Partner's Investment	Request from Foundation
tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr	124,000		124,000
Ceretom annual warranty	39,000		39,000
Ambulance Gas / maintenance / insurance/ parking	14,000		14,000
Staffing Costs for Mobile Stroke Unit (see below)	423,579	96,421	327,158
Project Manager	67,600		67,600
Stroke Researcher (0.5 FTE)	123,000		123,000
Paramedic Education Program	30,000		30,000
Year 2 Total	821,179	96,421	724,758

Staffing Expenses for the Mobile Stroke Unit Year 3

	Hourly Cost Calculation	Hourly Rate
Stroke Fellow	\$56,000/2080 hours	\$26.92 / hr
Nurse	\$100,000/2080 hours	\$48.07 / hr
CT Technician	\$50,000/2080 hours	\$24.04 / hr
Driver/Paramedic	\$50,000/2080 hours	\$24.04 / hr
Subtotal		\$118.26/hr
23% Benefits		27.20/hr
Total		\$145.46 /hr

The daily cost for personnel on the mobile unit when it is in operation is

For 16 hour coverage: \$2327.36

For the 16 hour coverage, this comes to \$423578.94 per year.

BMH and MUH are paying for the Stroke Fellow (26.92/hr+0.23*26.92) *16 Hr*182 days = \$96420.98 per year

Income

Income from this proposal is uncertain at this time. No income will be generated from year 1. For the second year, where the Mobile Stroke Unit is deployed, the Stroke Neurologist may be able to bill for an outpatient evaluation. Assuming 200 patients with Medicare Part B are evaluated by the Mobile Stroke Unit in Year 2, this could generate about \$40,000. Billing for year 3 where the Stroke Neurologist will be replaced by a Stroke Fellow is less certain.

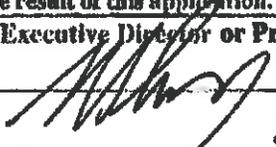
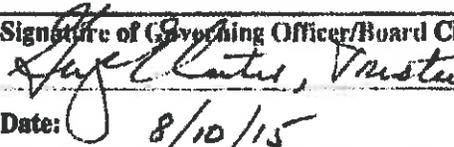
Billing for tPA is currently problematic. Medicare does not have a specific price for tPA, and hospitals receive a fixed amount for the care of the stroke patient. Currently, outpatient use of tPA is not billable.

Summary

Stroke is a major health problem in Memphis leading to significant disability and mortality. tPA has proven to be the treatment of choice for acute stroke, but has a very narrow time window for implementation to provide maximal benefit. The implementation of dedicated rapid response stroke teams at UTHSC affiliated Methodist and Baptist Hospitals are designed to improve stroke care in the Memphis community. The addition of a stroke ambulance with a CT scanner, mobile laboratory and capability to deliver tPA will further shorten the time from stroke to delivery of tPA which can lead to a fuller recovery and a better life for stroke victims.

The total estimated cost of the Memphis Citywide (excluding the Mobile Stroke Unit) for the three years where funding is being sought is \$15,369,000. This funding is being supported by UTHSC, MUH and BMH, and ignores any recoverable costs from billings. The total estimated cost for the addition of the Mobile Stroke Unit for the 3 year period including procurement is \$2,464,224 with the request for funding from the Assisi Foundation at \$2,109,513.



THE ASSISI FOUNDATION OF MEMPHIS, INC. GRANT APPLICATION COVER PAGE	
PROJECT TITLE: Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (REACH MO)	
Person Responsible for Project Name: Andrei Alexandrov Title: Professor/Chairman; Dept. Neurology Telephone: (901) 448-6971 ext:	Address: University of Tennessee Health Science Center 855 Monroe Avenue; Suite 415; Memphis, TN 38103 E-mail: aalexa30@uthsc.edu
Brief description of the specific purpose for which funds are requested: (10 point font minimum) Memphis and the surrounding region have one of the highest death rates for stroke and severe disability. Chances of survival are greater when emergency treatment begins quickly. This project proposes a rapid stroke intervention started at the scene that reduces time to treatment. Currently, treatment for ischemic stroke is the use of tissue plasminogen activator (tPA). tPA must be administered within 3 to 4.5 hours of symptom onset. The earlier it is given the better patient outcomes. This project plans to take current state-of-the-art care for acute stroke from the emergency room/hospital setting to the stroke victim's home by building and deploying a mobile stroke ambulance that contains the equipment required to diagnose and implement treatment in the community. This project is part of a larger UTHSC Memphis City-wide Stroke program with the goal to provide comprehensive community-based stroke care to assure the best possible outcomes.	
Amount Requested: \$550,000	Total to be raised: \$2,464,224
Name of Applicant Organization: University of Tennessee Health Science Center Mailing Address: 62 South Dunlap St., Suite 220 Memphis, TN 38163 Telephone: (901) 448-4796 ext. Fax: () Website: www.uthsc.edu	Executive Director or President Name: Steven J. Schwab, MD Title: Chancellor, UTHSC Telephone: (901) 448-4796 ext. Address: 62 South Dunlap St., Suite 220 Memphis, TN 38163 E-mail: sschwab@uthsc.edu
Type of Organization: <input type="checkbox"/> Federal <input checked="" type="checkbox"/> Public: Specify <input type="checkbox"/> State <input type="checkbox"/> Private Nonprofit <input type="checkbox"/> County <input type="checkbox"/> For Profit (General) <input type="checkbox"/> City	Fiscal Year: 2015 From (month) July to (month) June Tax ID: [REDACTED] IRS Exemption Classification: 170(c)(1)
Geographic Area to be Served: Memphis region Number of Persons Served Annually: 2,800 students Auditing Firm: TN Comptroller of the Treasury	Date Last 990 Filed: N/A Rpt. of Treasurer filed Date of Last Annual Report: N/A Date of Last Audited Financial Statement: 06/30/2014
Governing Officer/Board Chairman Name: George E. Cates Title: Trustee Telephone: (901) 726-6061 ext.	Address: 1719 Harbert Avenue Memphis, TN 38104 E-mail: geocates@gmail.com
Please Note: Applications will not be processed if the Determination Letter from the IRS and the last two years' IRS Forms 990 are not included. Organizations that have an independent audit must provide a copy of the last two Audited Financial Statements.	
Certification and Acceptance: I certify this request has been authorized by the governing body. I certify this organization does not discriminate on the basis of sex, age, race, color, religion, nationality, or handicap. I certify the statements herein are true and complete to the best of my knowledge, and accept the obligation to comply with the terms and conditions if a grant is awarded as the result of this application.	
Signature of Executive Director or President  Date: 8/10/15	Signature of Governing Officer/Board Chairman  Date: 8/10/15

January 2007

Table 1: Expenses from Original Grant Application to Assisi Foundation for the First Year: Construction of the Mobile Stroke Unit.

Second column lists the money that has been spent to the present

Mobile Stroke Unit Cost Estimates	Award from Foundation	Allocated
CereTom computer tomography (CT) scanner (Neurologica)	340,098	
Ambulance (Frazerbilt)	82,000	
Ambulance modifications (Frazerbilt)	51,300	
Ambulance Chassis (Chevrolet)	23,000	
Point of Care lab (Abbott I-STAT)	10,000	
Ambulance Cot (Stryker)	9,600	
Reserved loading dock space with plug in	10,795	
Miscellaneous equipment/ inventory supplies	7,000	
Defibr monitor (Zoll corporation)	25,000	
Consultation by Dr. James Grotta regarding MSU implementation/consortium	30,000	3,000
Senior Stroke Researcher (0.5 FTE)	75,000	59,380
Paramedic Education Program	30,000	

First Year Total 693,793 62,380

Table 2: Estimated Expenses for the Second Year of the Assisi Grant, the First Year of Deployment of the Mobile Stroke Unit. Table gives the expenses as estimated in our original Assisi Foundation Application, and current updates on projected costs

	Year 2 Estimated Expenses from Original Application		Current Estimated Expenses for Year 2	
	Year 2 Expenses	Request from Foundation on original application	Item	Estimated Expenses
tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr	124,000	124,000	tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr	124,000 #
Ceretom annual warranty	39,000	39,000	Siemen's CT annual Warranty	*
Ambulance Gas / maintenance / insurance/ parking	14,000	14,000	Ambulance Gas / maintenance / insurance/ parking	38,000
Staffing Costs for Mobile Stroke Unit (see below)- 23% Benefits	503,652	245,362	Staffing Costs for Mobile Stroke Unit (see below)- 33.76% Benefits	623,555
Director (1 FTE)	67,600	67,600	Director (1 FTE)	149,350
Senior Stroke Researcher (0.5 FTE)	123,000	123,000	Senior Stroke Researcher (0.5 FTE)	126,700
Paramedic Education Program	30,000	30,000	Paramedic Education Program	30,000
			Communication /Telemedicine Equipment	50,000
			Data/ITT Personnel	70,000
			Transcranial Doppler Equipment	20,000
			Multidisciplinary Oversight Committee	30,000
Year 2 Total	901,252	642,962		1,261,605

*The Siemen CT annual warranty for the first year of deployment has to be paid at the time of completion of the MSU, and is reflected in the first year expenses.

The plan is to negotiate with the hospitals to have them supply the tPA as they will receive reimbursement for this treatment from the insurers. These agreements have not been currently established.

Table 3: Projected Expenses for Four Years of the Project

	Year 1 Construction MSU	Year 2 Deployment Year 1	Year 3 Deployment Year 2	Year 4 Deployment Year 3
Mobile Stroke Unit	789,000			
tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr		124,000	124,000	124,000
CT annual warranty			73,000	73,000
Ambulance Gas / maintenance / insurance/ parking		38,000	38,000	38,000
Staffing Costs for Mobile Stroke Unit (see below)- 23% Benefits		623,555	436,300*	449,400
Consultation Dr. Grotta	30,000			
Project Manager (1 FTE)	145,000	149,350	153,400	158,400
Senior Stroke Researcher (0.5 FTE)	123,000	126,700	130,500	134,400
Paramedic Education Program		30,000	30,000	30,000
Communication /Telemedicine Equipment		50,000		
Data/ITT Personnel		70,000	72,100	74,300
Transcranial Doppler Equipment		20,000		
Multidisciplinary Oversight Committee		30,000	30,000	30,000
Total Estimated Expenses	1,087,000	1,261,605	1,087,300	1,111,500

- * The vascular neurologist on the MSU will be replaced with a stroke fellow who is being funded by the hospitals.
- Salaries are assumed to increase at 3% per year

Table 4: Sources of Funding for the Mobile Stroke Unit for the Construction and First Three Years of Operation

	Year 1 Construction MSU	Year 2 Deployment Year 1	Year 3 Deployment Year 2	Year 4 Deployment Year 3
Assisi Foundation	693,793	550,000	450,000	
Private Donor	150,000	150,000	150,000	
Durham Foundation		43,000		
Anonymous Donor		333,333	333,333	333,333
Reimbursement for Care	0	?	?	?
TOTAL Available Funds	843,793	1,076,333	933,333	333,333
Estimated Expenses	1,087,000	1,261,605	1,087,300	1,111,500
Deficit	-243,207	-185,272	-153,967	-778,167

Assisi Renewal August 13, 2015

Purpose of Funding Request Renewal Project Description

5000 characters

The current funding request is for \$550,000 for the second year of Grant Number 14-065 entitled, "Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (REACH MOST), and any adjustments for the first year grant that are found to be appropriate by the Assisi Foundation due to the increased costs for the construction of the Mobile Stroke Unit (MSU).

Over the past 9 months, thanks to the generous grant from the Assisi Foundation, we are able to begin the construction of the MSU for the city of Memphis. The Unit should be deployed by early 2016. The MSU is a specialized ambulance that will deliver acute therapy to stroke victims where they have the stroke. The unit will have a CT scanner to image the brain and all required equipment to treat the patient with tissue plasminogen activator (tPA), currently the only FDA approved treatment for acute ischemic stroke. The MSU should allow for earlier treatment (where appropriate) that will give the stroke patient a better chance for optimal recovery.

The Memphis MSU will have a state of the art CT scanner for brain imaging. We have been able to develop a MSU that has a CT scanner (Siemens Somatom Scope) which is capable of doing high resolution brain CT, CT angiography and brain perfusion. This high quality scanner has not been applied previously to an MSU application. Current MSU are using the Neurological Ceretom scanner that has lower resolution and less capability for CT angiography. The upgrade in CT scanner will allow for the capability to further improve therapy on the MSU through better imaging and put Memphis at the forefront of this approach to acute stroke therapy.

The \$550,000 request for the second year of the grant is for operational costs to deploy and evaluate of the MSU. The expenses include personnel, operations, and maintenance costs. In the first year of operation, the plan is to have a full team of personnel on the MSU. The goal is to gain experience in its operation with improvement in the protocols used in treating acute ischemic stroke in the field. The full team will initially include a stroke neurologist, nurse, CT technologist and two EMS personnel. As experience is gained through the MSU operation, we plan to evaluate whether the team can be reduced in size while increasing the use of telemedicine. The evaluation process will consist of having the MSU operate on alternating weeks to allow for comparison of the impact of using the MSU to the current standard protocol for treating acute ischemic stroke by transporting the patient to the hospital for evaluation and treatment. The comparisons will include the proportion of appropriate acute stroke patients that are treated, the time from stroke to treatment, and the outcomes at three months post stroke. A main goal is to maintain high quality of care while minimizing the costs of operation. The current request will allow for the unit to be fully staffed during the first year of operation. We are seeking funds for salaries for each of these personnel, a data manager, stroke researcher, and support staff.

The adjustment request is for up to \$160,000 for the first year of the grant for the increase in cost for building the Mobile Stroke Unit. The total cost due at completion of construction for the MSU is now \$789,000 versus the estimate in our initial submission of \$560,000. This cost includes \$650,000 for the construction of the MSU, and \$139,000 for service warranties (3 year maintenance on the ambulance, and 1 year maintenance on the CT scanner). We are required to maintain the CT warranty for an additional 2

years of operation at a cost of \$73,000 per year. We visited with the Executive Director of the Assisi Foundation to discuss the change in the design for the MSU, and that the estimated cost to build the mobile stroke unit with the current configuration was estimated at \$90,000 more than projected based on our original submission. At the time of the visit, we were unaware of the added warranties that would be required in the contract. In our original submission, \$39,000 was requested in years 2 and 3 for CT warranty, and \$14,000 for gas, insurance, and maintenance on the vehicle. The resulting deficit for the MSU construction contract after considering the available money for the first year is \$199,000. If adjusted by subtracting the CT warranty request in the original submission for year 2, the amount becomes \$160,000.

Results:

Below list the original goals and objectives of the grant. Tell how the objectives were met during this reporting period

- **Describe the current status for meeting any special terms of this grant (examples: challenges, contingencies, special conditions, etc.)**
- **Provide numbers of people served, programs provided, and/or services delivered during this reporting period**
- **Describe any unanticipated benefits and/or challenges experienced during this reporting period**
- **Describe any collaborative or cooperative efforts with individuals and organizations that affected results; this could include planning, implementing, funding and/or evaluating the project**
- **Strategies to sustain this project in the future**

32768 characters

Goals and Objectives

The *goal* of the REACH MOST project is to add a Mobile Stroke Unit (ambulance) to the comprehensive Memphis City-wide Stroke Program to provide full coverage of stroke victims needs and to bring them the most effective stroke therapies by minimizing time to treatment. The Mobile Stroke Unit (MSU) will allow a rapid deployment team to treat the stroke and to pioneer cutting edge technology and develop novel technology-based ways to treat acute stroke patients essentially at the stroke victims home door-steps. The Assisi funding allocated for the current/first year was the costs for a custom-built ambulance with a CT scanner and ambulatory laboratory that allows for the rapid treatment of acute stroke within the Memphis community. The requested funds for the second year will allow for the MSU to become operational.

The program objectives included:

- **Construction:** a specialized ambulance was to be built for pre-hospital stroke treatment, providing all diagnostic tools and stroke medicine competence needed for therapeutic decisions at the site where paramedics pick up suspected stroke victims.
- **Deployment:** the unit would reside in the community between MUH and BMH. Working closely with the Memphis Fire Department and EMS, the unit would be preferentially dispatched to likely stroke victims.
- **Catchment area:** the mobile unit would initially cover an area with a 10-12 mile radius from the ambulance base to allow tPA treatment in under one hour.

- **Funding:** that startup and maintenance costs would be covered for the first two years by extramural and philanthropic support. Subsequently, funding would be from healthcare reimbursements.
- **Evaluation:** Once deployed, data collection will allow for the evaluation of the potential to treat more patients in less time from stroke onset with the best available treatments leading to increases in the chance of full recovery.
- **Research:** Develop research utilizing the Mobile Stroke Unit. Examples: 1) the program will analyze benefit of early blood pressure management in hemorrhagic stroke patients, 2) Study whether early CT angiography and perfusion studies aid in early notification of Neurosurgery for stroke victims that requiring endovascular treatment, or with specific types of bleeding suitable for surgery (subdural and sub-arachnoid hemorrhages).
- **Economic Evaluation:** Working with the hospitals, evaluate the cost associated with the Mobile Stroke Unit and resulting post-stroke health care costs. We anticipate significant cost savings in-hospital and the 3, 6, and 12 month post-stroke time period for patients receiving early tPA treatment, early blood pressure management and reduced time to Neurosurgical evaluation.
- **Better treatment approaches:** The MSU allows the team to explore mechanisms to improve tPA implementation, including telemedicine, ultrasonography and other brain imaging methodologies.
- **Outreach:** The program plans to work with our community and with experts from Houston and Cleveland who have experience with this approach for acute stroke. Dr. James Grotta, Professor of Neurology, University of Texas Health Science Center, Houston, TX, will consult regarding the implementation of a stroke ambulance as he was the first US physician to introduce this ambulance into his community.

Objectives Met During this Reporting Period including Collaborations

The first year of the Assisi Foundation grant has been involved with the building the Mobile Stroke Unit and laying the plans for its operation. The earliest accomplishment was identifying and hiring a program director, Mr. Joseph Rike, a retired director of the Emergency Medical Service for Memphis. Resources for his position were obtained from a private donor. Mr. Rike has extensive experience with EMS operation, its personnel, and with the management of EMS operations. His knowledge and skills are proving to be invaluable in organizing and planning the deployment of the MSU when built.

Plans for the Mobile Stroke Unit have taken close to 8 months to lead to a contract. The original proposal was to build a unit similar to that fielded in Houston Tx. In November 2014, we received word that Siemens, a major builder of high quality CT and other imaging equipment was interested in placing one of their CT scanners designed for portable labs into a stroke ambulance. Working with our team, Siemens has developed a design for a Mobile Stroke Unit using their Somatom Scope Scanner. The plans for the unit are attached to this application. The contracts are being signed and the unit will be under construction. The cost for the unit has increased from the approximately \$560,000 to \$789,000. The two contracts for the MSU construction are in the attachments. The plan is for delivery in December 2015 with the unit being operational in January 2016.

Mr. Rike has worked with the state office involved with licensing to modify and develop standards that will allow for the MSU to be fielded as a specialized ambulance. Discussions have taken place with the Memphis Fire Department to house the unit in

one of their facilities at no cost to the city. As the University of Tennessee Health Science Center (UTHSC) owns the MSU, we have explored how to deploy the unit using different licensing and management bases. The plan that has developed is that UTHSC will lease the unit to the University of Tennessee Medical Group (UTMG) to operate and deploy in the community. UTMG will place the MSU in a LLC focused on the operation and management of the unit. The LLC will primarily be owned by UTMG, but may include partial ownership by Methodist University Hospital and Baptist Memorial Hospital as agreements are developed to include the MSU as extensions of the hospitals for operational and reimbursement purposes. At present, the paperwork for developing the LLC is being written by lawyers associated with UTMG.

We have been working with UTHSC staff to prepare the proposal for submission to the Institutional Review Board. A draft was sent to the foundation, along with a progress report, in January 2015. We are currently working on the protocol for operations including the standard operation procedures that will make up the manual of operations. Details on how personnel will be assigned to the MSU have not been established, but will be dependent on the LLC and hospitals. The current plan is to use personnel obtained from the hospitals. We hope that this approach will decrease costs. The operations will depend specifically on the agreements that are being developed at this time.

As part of the planning for the program Mr. Rike and Dr. Alexandrov went to Houston TX to visit with Dr. James Grotta and his team to discuss and observe the operation of their mobile stroke ambulance. In addition, Dr. Grotta visited Memphis as part of an EMS program that discussed the implementation and goals of the mobile stroke program. Currently, a program to educate the EMS community regarding the use of a mobile stroke ambulance in the care of acute stroke has been developed, and will be implemented in the near future.

Strategies to sustain future funding:

A major goal of developing the LLC through UTMG is to create a program that can be managed as a business within the medical practice associate with UTHSC. The LLC working with the hospital will lead to the ability to obtain reimbursement for the services provided. We believe that the reimbursements will include the costs of transport in a specialty ambulance, the CT scanning, and the treatment with tPA. The level of reimbursement will determine whether the Mobile Stroke Unit will be sustainable by the LLC.

We have examined the numbers of stroke patients admitted to Methodist University Hospital and found approximately 3000-3500 admissions per year from Memphis zip codes. Based on our current design for deploying the MSU, we project that the MSU could treat 300-400 subjects per year, and probably transport many more who are not eligible for tPA. Based on this type of estimation, we believe that if reimbursement approaches \$2000 per case, the MSU could cover its budget, particularly if we are able to go to a paramedic crew using telemedicine on the MSU as we plan to examine in the last year of evaluation.

Goals and Objectives:

1 to 5 **expected objective** **1050 characters**
progress of objective **1000 characters**

Goal 1:

Construction of Mobile Stroke Unit:

The main goal is the construction of a mobile stroke unit (MSU) for the city of Memphis. The unit will serve the community by bring acute stroke care from the hospital to the site where the patient had the stroke. This approach should lead to a shorter time to treating acute ischemic stroke which allows for an improved probability of a good outcome with lower levels of disability. Currently, Memphis has an outstanding Comprehensive Community-wide Stroke Program that treats larger number of acute stroke patients with tPA than other hospitals in the US. The addition of the MSU may lead to further advances in the appropriate use of tPA and intravascular procedures that have been scientifically shown to lead to better outcomes in a greater proportion of patients. The key to the treatment is to rule out cerebral hemorrhage, and to be able to give the medication within 4.5 hours of onset of the stroke. The earlier the treatment, the better the chance for a good outcome.

Progress:

Over the past year, we have been working with Siemens Corporation, a major producer of medical equipment including high quality CT scanners, to place one of their units into a mobile stroke unit. The CT unit is of a higher quality in terms of imaging capabilities than the other currently used CT in mobile ambulances that is a portable unit that is designed for mobility but with lower quality imaging. The hope is that a better imaging tool will allow for more thorough exploration of the extent and nature of the stroke with the capability of doing a complete CT angiogram and perfusion studies that can allow for a more complete care plan that includes not only tPA but also earlier planning for endovascular procedures (where appropriate) which are currently being shown to lead to better improvement in selected patients than tPA alone.

Goal 2:

Deployment and Operation of the MSU.

Once the MSU is built a plan is required for the unit to be operational in Memphis. This requires cooperation with the Memphis Fire Department Emergency Medical Services, Methodist University Hospital, Baptist Memorial Hospital, and with an organizational structure that allows for reimbursement for provided services.

Progress:

Progress has been made in the organization and planning for the deployment of the MSU. Mr. Joseph Rike, a retired director in the Memphis Fire Department EMS Services, has been hired to be the executive director. He has been working with the state in regards to licensing requirements for the specialized unit. Also, he is working with the College of Medicine, University of Tennessee Medical Group (UTMG), and Methodist University Hospital in establishing an LLC to operate the MSU within UTMG with participation of Methodist (and later Baptist Memorial Hospital). The plan will give a legal approach for the MSU to operate and interact with the Memphis EMS services, and for reimbursement for delivered care that could lead to the unit being self-sufficient by the third or fourth year of operation.

SPECIFIC PROJECT CONDITIONS

The following Specific Project Conditions also apply to your organization's receipt and use of the Grant:

1. This renewable grant, with an initial award in the amount of Six Hundred Ninety-Three Thousand, Seven Hundred and Ninety-Three and 0/100ths Dollars (\$693,793.00) is restricted to partially fund the project as described in the grant proposal, Respond, Evaluate, Cure, Heal: Mobile Stroke Unit (REACH MOST) dated August 11, 2014. These funds are restricted to the following budget items:

Item Projected Cost

CereTom computer tomography (CT) scanner (Neurologica) 340,098
Ambulance (Frazerbilt) 82,000
Ambulance modifications (Frazerbilt) 51,300
Ambulance Chassis (Chevrolet) 23,000
Point of Care lab (Abbott I-STAT) 10,000
Ambulance Cot (Stryker) 9,600
Reserved loading dock space with plug in 10,795
Miscellaneous equipment/ inventory supplies 7,000
Defib/ monitor (Zoll corporation) 25,000
Consultation by Dr. James Grotta 30,000
Paramedic Education Program 30,000
Funds to be applied toward senior researcher 75,000
Total \$693,793

2. A renewal application for Year Two and Year Three funds may be considered pending accepted and approved reports. Total available funds for Year Two, if approved, will not exceed an amount up to \$550,000. Total available funds for Year Three, if approved, will not exceed an amount up to \$450,000. (Total funding for this project if all renewal applications are approved is not to exceed \$1,693,793.)

3. Copies of IRS Form 990s and Audited Financial Statements for each completed fiscal year during the Grant Award period should be forwarded to the Foundation as soon as they are available.

4. An Interim Report is due no later than January 9, 2015; dates and report requirements for subsequent Progress Reports and/or Renewal Applications will be established after receipt of the initial report. This report should be submitted through the Assisi Foundation website and should include the status of all funds raised for the project and the status of IRB application.

5. Prior to release of any Grant Funds, the Grantee shall submit to the Foundation:

- Copy of the IRB application filed, or to be filed with all appropriate institutions.

- **Report of the status of this project and agreements with Baptist, Methodist and Regional**
One to include plans on how the mobile ambulance is to be “leased” or assigned for use

Project condition update 2500 characters

The project is moving forward as proposed in the original application. The Mobile Stroke Unit contract is currently being processed by the University of Tennessee, and we await a purchasing order for Medical Coaches and Tri-Star Industries who will work with Siemens in the installation of the CT. The expected delivery is in December 2015. At present, an LLC is being developed by UTMG for the MSU, and collaborative arrangements are being established with Methodist University Hospital (MUH) to maximize the effectiveness of the program. Once the arrangements are completed with MUH, arrangements will be developed with Baptist Memorial Hospital. An IRB application is in preparation that will allow for the evaluation of the MSU and set the stage for other research projects that will use the unit.

Discussions have begun on setting up a computer system that will allow for the collection of the data into a comprehensive stroke database that will allow for the comparison of patients treated on the MSU and within the hospitals. In addition to the database, vendors have been contacted in regard to telemedicine/ITT requirements for sending medical data to the hospital where the patient will be taken, and to transfer the CT images. This data transmission will require the MSU to have two differing systems as Methodist and Baptist use different electronic record systems.

Over the course of the year, we have continued to seek funding sources to be able to complete the development and deployment of the MSU during the planned evaluation. As will be discussed in the budget section, we continue to be short on funding. However, we have had some success in raising money from several donors. The major construction costs have been covered by your generous grant, however, the cost for construction is more than our original estimate that was based on the Houston MSU. We are short by approximately \$199,000 based on the final contract with Siemens, Medical Coaches, and Tri-Star Industries. The deficit results from \$90,000 directly in construction costs, \$66,000 for 3 year warranty on the ambulance (minus the CT unit), and \$73,000 for the first year warranty on the CT scanner. We are required to carry 3 years of warranty on the CT scanner and ambulance based on the contract.

To help with the deployment, operation and evaluation of the unit, we have been able to raise \$450,000 from a private donor (over 3 years), \$43,000 from the Durham Foundation, and \$1,000,000 (over 3 years) from an anonymous donor via the Community Foundation of Greater Memphis.

Lessons learned

State the “lessons learned” from this project

- **Explain how the lessons learned will benefit future work**
- **Provide recommendations for funders or others working in this field**
- **Explain how this project might be done differently if done again**

Lessons learned 2000 characters

During the funding period, the program has gained knowledge in the operation of EMS services by the hiring of Mr. Rike, and discussions with the leadership of Memphis

Fire Department. Mr. Rike has aided us in establishing contact with the state licensing group, changing the state rules for specialized ambulances, and detailed knowledge about the requirements for licensing an ambulance in Tennessee. Similarly, in discussions with the leadership of the College of Medicine, we have learned about the business operations of the medical groups within the college, and how to establish an appropriate mechanism for deploying the Mobile Stroke Unit within the community in a way where reimbursement is possible, and integration with the local hospitals can be achieved. At this time, we are still in the process of developing the organization and the processes for operations. Our goals are to optimize the approach to the degree possible, and then to help other groups in establishing their units. Questions still exist as to how well we will be able to be reimbursed for the provided services. However, we believe that we are establishing a mechanism that will optimize the probability for reimbursement and making the program self-sufficient.

Future plans

What is your plan for this project in the future? Briefly describe rationale for ongoing funding, expansion, replication or termination.

2000 characters

The first year of the project has been to have the Mobile Stroke Unit constructed and to develop an operational, management and business plan. The Mobile Stroke Unit will be delivered in December 2015 if the planning is on time. The next step will be to place the unit in operation in January 2016. The unit will be housed at one of the Fire Department facilities and personnel will be assigned to the MSU through the LLC and UTMG. The unit initially will be operational for 12 hours a day for a 7day week. On alternate weeks, all stroke patients will be managed based on current protocol with patients being taken to the hospital by EMS. The operation will include a plan for evaluation of the effectiveness of the MSU in increasing the availability and use of tPA in Memphis. In evaluating the MSU, we plan to specifically examine the experience in Memphis, and working with Dr. Grotta in Houston, to examine the effectiveness of MSU in multiple US cities and in Europe. By combining the experience of multiple stroke ambulances, a better understanding of the effectiveness of the approach and identification of potential improvements can better be discerned to benefit stroke victims.

The current request for continuation of funding is based on the operation and evaluation of the MSU. The enclosed budget reflects the expected costs. Notice that the evaluation costs are a small part of the expense. In the first year of operation, the current plan is to staff the unit with a stroke neurologist, a nurse, a CT technologist, and 2 EMS personnel. Over the first several years, we plan to reduce the staff on the unit as the safety of the MSU can be demonstrated (i.e. compared to similar care offered in the hospital setting by the Comprehensive Stroke team).

The long-term sustainability of the MSU will be dependent on the ability to receive reimbursements for the services provided by the MSU and the staff. Planning is currently underway to maximize the opportunity for reimbursements through the development of the LLC to operate the unit within UTMG, and in discussions with our hospital partners, Methodist University Hospital and Baptist Memorial Hospital.

Financial information

Provide actual expenses and income for the project for this reporting period, using the budget included in the original request; explain any variances from the original budget

- Include a detailed, complete accounting of how the specific grant dollars from this grant were spent**
- List all funding sources for this project; include name of funder and amount funded**
- Include a copy of your current operating budget**

32768 characters

Year 1: Procurement and Building of the Mobile Stroke Unit

Funding for year 1 of the program has been received from two generous sources. The primary funding source is the Assisi Foundation, and further funds have been received from a private donor.

Donor	Amount
Assisi Foundation	\$693,793
Private Donor	\$150,000

The money received from the private donor was used to hire an executive manager for the MSU, Mr. Joseph Rike, a retired former manager for Memphis EMS. He has made important contributions to the planning of the program and the procurement of the Mobile Stroke Unit (MSU).

Table 1 in the budget attachment presents the first year award received from the Assisi Foundation by breakdown of the expected costs associated with acquiring the Mobile Stroke Unit as originally presented by us to the Foundation (one-time costs), consultation by Dr. Grotta, a senior scientist, and paramedic education. The second column presents the money that has been currently allocated from the grant. The plan for the remainder of the first year funds is given below. (Carryover Request Attached) The remaining funds in the amount of \$631,413 from year one consists of the following:

- Equipment/Supplies - \$558,792**
- Salary & Staff Benefits - \$15,621**
- Consultation (Dr. Grotta) - \$27,000**
- Paramedic Education Program - \$30,000**

At present, the contract for construction of the MSU is in the University of Tennessee procurement process. We have gone with a different vendor and design than originally proposed to the Assisi Foundation. The cost for the MSU has increased and

details are in the attachments to this request, including the sketches showing the final product. The unit will be larger than previously planned but will contain a higher grade CT scanner that offer the opportunity for further advancements in acute stroke care within the community. The current plan is for delivery of the MSU by the end of the year. The contract requires the purchase of a three-year warranty for the Ambulance from Medical Coaches and an annual warranty on the CT Unit from Siemens. The cost for the three-year warranty on the ambulance and the first year of the CT warranty are to be paid at the time of delivery of the MSU. The resulting costs for the construction are given here.

Contract Price for the MSU

Siemens SOMATOM Scope CT Stroke Ambulance	\$296,000
Three Year Warranty Service (Ambulance)	\$ 66,000
SOMATOM Scope CT	\$354,000
One year Warranty on CT Unit	\$ 73,000
Total cost for the Unit at Completion	\$789,000

Sources of payment for Construction and Delivery of the MSU:

We currently have \$558,793 from the Assisi Foundation specifically designated for the construction. In addition, we have \$30,000 designated for Paramedic education. At this time the training money has not been required (we have moved forward with the education program with help from our partners). We propose, with your approval, to move the unspent money to the construction costs, reducing the deficit on construction to \$199,000.

Note that the deficit is largely the result of having by contract to purchase two warranties, \$139,000, needed for maintaining the unit. The purpose for including the warranties in the contract was to help compensate Siemens, Medical Coach and Tri-Star Industries for the actual cost of constructing the mobile stroke unit that has been estimated to be near 1 million dollars. Siemens interest in this project is based on having their equipment placed into an ambulance setting. As part of the contract, we will supply Siemens with information regarding the use of the scanner, and advise on needs to maximize the benefit of the CT unit in this application.

Cost for equipment maintenance was included in our initial application to the Assisi Foundation for years 2 and 3 of funding. However, we expected the maintenance contracts to be less expensive for the CT unit. We had allowed \$39,000 per year for a maintenance contract on the CT, and \$14,000 for operational/maintenance costs for the MSU. The frontloading of the maintenance for the ambulance itself was not considered, but will reduce some costs in the first 3 years of the unit deployment.

At this time, we are asking the Assisi Foundation to consider an adjustment to the first year grant to cover part or all of the unexpected additional cost in the construction of the MSU. The request is based on a discussion with Dr. Young regarding the current plans developed with Siemens, Medical Coaches and Tri-Star Industries. The added costs for the MSU consist of \$90,000 in construction and the \$139,000 for the warranties which results in the \$199,000 deficit if we are able to move the unspent EMS education money toward the construction of the MSU.

Any uncovered costs, we believe can be covered by money from the first payment from a three year grant from the anonymous donor via the Community Foundation of Greater Memphis. The money can be spent as required by the project, and had been assigned to help cover the costs of the first three years of deployment

(See Table 4 attached budget file for Funding Sources over the first 4 years of the project).

Year 2: First Year of Mobile Stroke Unit Deployment

The estimated costs are based on the plan to have the Mobile Stroke Unit in the field on alternate weeks to allow for the comparison of the Unit with current standard of care which is EMS taking the patient to the hospital for evaluation and treatment. For the first year of deploying the unit, we plan to have a full team of physicians and nurses with the unit to establish the best protocol that maximizes the quality of diagnosis and treatment using the Unit. During the first year, the Unit will be deployed 12 hours per day during the weeks it is operational.

The staff cost of operation of the Mobile Stroke Unit has been estimated on a per hour basis rather than as personnel needing hire. This allows for a more accurate accounting of the cost. The staffing for the unit will become an integral part of the Citywide Stroke Program and any new required staff will be added to the Citywide Stroke Program. The staffing will be managed through the LLC established by the UTMG group in collaboration with Methodist and Baptist Hospitals. The plan is to have all Vascular Neurology attending rotate thru the Mobile Stroke Unit. When they are off Mobile Stroke Unit they will continue to cover MUH or BMH or telemedicine services per the team schedules. Nurses, CT technicians, driver and paramedic will be hired in collaborations with the hospitals to allow adequate coverage for the unit and to integrate the staff into the Stroke Program or Emergency Departments when not on the Mobile Stroke Unit.

Table 2 in the budget attachment presents the current estimates for the expenses in the first year of operation with the estimates as given in the original application. The added costs include estimates for telemedicine, data management, and the addition of an oversight committee that will monitor the effectiveness of the MSU and assess any adverse events. The personnel costs have been updated to reflect the benefit rates utilized by UTHSC. The justification for the personnel costs are given below.

Sources of Revenue:

The current request for \$550,000 from the Assisi Foundation is for the First Year of Deployment of the MSU into Memphis. We have identified three other sources of funding for this year of operation. Here is a list of the donors:

Sources of Revenue:

	Amount
Assisi Foundation request	\$ 550,000
Private Donor	\$ 150,000
Durham Foundation	\$ 43,000
Anonymous Donor	\$ 333,333
Total	\$ 1,076,333

After considering these sources of income, we project a deficit of \$185,272. The largest part of the deficit is the cost for the tPA. If the hospitals are able to assist with the tPA (\$124,000) the budget will be more manageable.

We have two potential approaches to cover these costs: (1) establishing a reimbursement mechanism for the acute stroke care offered on the MSU. Billing seems directly possible for the transportation of the patient to the hospital, the critical care provided by the stroke neurologist, and for the CT scan and interpretation. This will be necessary for the program to be self-sustaining, and is an important part of how the management plan that is being developed between UTHSC and UTMG. (2) Use part of the funds from the anonymous donor foundation that we are currently designating for the second and third years of operation.

Justifications:

Staffing Expenses for the Mobile Stroke Unit was estimated on an hourly basis from the following calculations. For the first year of operation of the unit, a Vascular Neurologist will be assigned to the unit. The high level of expertise will allow for the establishment of the best protocols and operational practices for the unit. By the second year of operation, a Stroke Fellow will take the place of the Vascular Neurologist and the Vascular Neurologist will be available through telemedicine. For the purpose of cost estimates, the assumption is that the Vascular Neurologist will be on the unit for the entire year.

Staffing Expenses for the Mobile Stroke Unit Year 2

	Hourly Cost Calculation	Hourly Rate
Stroke Neurologist	\$200,000/2080 hours	\$96.15 / hr
Nurse	\$100,000/2080 hours	\$48.07 / hr
CT Technician	\$50,000/2080 hours	\$24.04 / hr
Driver	\$42,000/2080 hours	\$20.19 / hr
Paramedic	\$52,000/2080 hours	\$25.00/ hr
Subtotal		213.45 / hr
33.76% Benefits		72.06 / hr
Total		285.51 / hr

The daily cost for personnel on the mobile unit when it is in operation is

For 12 hour coverage: \$3426.13

For the 12 hour coverage, this comes to \$623,555 per year.

tPA \$6,000 per vial & cardene \$200 per vial or possible \$6,200/patient x 200 patients/yr. The cost of the tPA for use on the Mobile Stroke Unit. The cost is based on the price that is charged by Genetech. This price is different than the cost to the hospitals who have registered with Genetech. The current plan is for the stroke program to obtain the medication through the hospital at their price and the hospital will cover the cost from their reimbursement for the acute stroke care.

Medical Malpractice Insurance is not included in the costs for the year. The physicians involved with the Stroke Mobile Unit will be covered by UTHSC up to \$10,000,000 per year as part of their employment with the Citywide Stroke Program.

Siemen annual warranty is necessary for the annual maintenance and any repairs required by the CT scanning unit. The contract for the current year was paid at the time of delivery of the MSU.

Ambulance Gas / maintenance / insurance/ parking are the estimated costs for the operation of the Mobile Stroke Unit. The estimates are based on the current experience of this type of unit in Houston, Tx and Mr. Rike's experience with Memphis Fire Department.

Director is responsible for the day-to-day operation of the unit and for the staff. The individuals will interact with management at both MUH and BMH. Mr. Joseph Rike has been hired into this position.

Paramedic Education Program will be developed and implemented over the three years of the proposal. The goal is to have the Paramedics and Emergency Medical Services understand the role of the Mobile Stroke Unit, better able to identify potential strokes, and be trained in working with the specialized staff that will be working on the unit. The better the integration of the program with EMS, the more likely the program will be successful.

Senior Stroke Researcher will be responsible for the development and implementation of evaluation of the unit and the development of protocols to improve the program over time, and for the implementation of other planned research involving the Mobile Stroke Unit. During year 1, research protocols, IRB and other documents have to be developed, prepared and approved prior to deploying the unit. Years 2 and 3 will be data collection and analysis with publication.

Transcranial Doppler Unit is used to examine blood flow in the intracranial arterial circulation. The equipment contributes to the evaluation of stroke patients and provides one method for evaluation of blood flow.

Telemedicine Equipment is essential for the MSU to communicate CT scans, and video to the hospital, where other health care professionals can assist in the treatment of the acute stroke patients. The equipment will contribute to the ability to take the stroke neurologist off the MSU, and allow the expert to interact directly with the team in the care of the patient. The communication system that includes a wifi (or equivalent) transmitter/receiver, programs to communicate with the hospitals and EMS, and telemedicine equipment. We will need to install these items once the unit is delivered. At this time, we are not certain as to the costs. We are currently in discussions with different vendors. The cost could range from \$10,000 to \$100,000 depending on the specific requirements that need to be met. We have added an estimate for the equipment to the Year 2 budget.

Data/ITT Person is necessary as the program is dependent on computer equipment for collecting, storing, and analyzing the data, and for the CT images.

Multidisciplinary Oversight Committee will review the data that is collected, review adverse events, and outcomes to determine the overall safety of the MSU.

Summary

In the current year, thanks to the generous grant from the Assisi Foundation, we have been able to contract for the building of a Mobile Stroke Unit for the city of Memphis that should lead to improved care for acute stroke victims. The cost of the MSU was more than we had anticipated, however the unit being built will have greater capabilities than other stroke ambulances. We currently have a deficit of approximately \$199,000 related to the construction and delivery of the MSU that we hope to cover through any adjustments in the first year grant that the Assisi Foundation is willing to consider, and through money that we are to receive through the anonymous donor foundation.

The projected cost for the first year of operations is \$1,261,605 with \$1,076,333 revenue from the Assisi Foundation and our other donors designated for this year of operation. The deficit for the first year of operation can be covered by the donation from the anonymous donor foundation. However, the sustainability of the study will be dependent on being able to obtain reimbursement for the services. We are actively working at creating an organizational structure that will allow for such reimbursement. If obtainable, we believe that the Mobile Stroke Unit will be an important contributor to the treatment of stroke in Memphis.

The application to the Assisi Foundation was for a three-year project, and the plan was to continue the program following completion of the Assisi grant. We have a budget attachment that presents the projected expenses and support for the first four years of the program including the first year for construction of the MSU, and for three years of deployment within Memphis.

EXHIBIT F

