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, stoke 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]

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[1] Centers for Disease Control Division for Heart Disease and Stroke Prevention
http://nccd.cdc.gov/DHDSPAtlas/DetailedReports.aspx?AreaIds=47157&ThemeSubClassId=3&filterIds=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 percent [5]

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

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