Capital Health
Emergency Medical Services
Mobile Stroke Unit

Operations Plan

Background

Stroke is the leading cause of disability and the fifth leading cause of death in the United States. Definitive care for stroke is TPA during the first 4.5 hours. The American Heart Association/Stroke Association clearly states that rapid administration of intravenous recombinant tissue-type plasminogen activator (r-tPA) to appropriate patients remains the mainstay of early treatment of acute ischemic stroke. Data has shown that the timely restoration of blood flow in ischemic stroke patients is effective in reducing long term morbidity. For patients who meet national and international eligibility guidelines, intravenous r-tPA administration improves functional outcomes at 3 to 6 months when given within 4.5 hours of ischemic stroke onset and should be administered. Every effort should be made to shorten any delays in initiation of treatment as earlier treatments are associated with increased benefits.

Data analysis from stroke treatment shows that for every 30 minutes until restoration of blood flow there is a 12% relative risk reduction in good outcome. Further data shows that for every 10 minutes in time to treatment there is an 11% relative increased risk for an intracerebral hemorrhage.

There are currently 3 levels of care for stroke centers. An **Acute Stroke Ready Hospital** is a hospital with a dedicated stroke-focused program. Staffed by qualified medical professionals trained in stroke care. Access to stroke expertise 24/7 with the ability to perform rapid diagnostic imaging and laboratory testing to facilitate the administration for IV r-tPA in eligible patients. Acute Stroke Ready Hospitals quickly start the treatment of stroke and then transfer patients to either Primary or Comprehensive Stroke Centers.

Primary Stroke Center (PSC): Cares for patients with strokes. Uses many acute therapies (e.g. IV r-tPA) and admit patients to a stroke unit.

Comprehensive Stroke Center (CSC): Care for patients with complicated strokes (e.g. intracerebral hemorrhage or subarachnoid hemorhage) and those requiring specific interventions (e.g. surgery or endovascular procedures) and/or a dedicated Neuro Intensive Care Unit.

A Mobile Stroke Unit (MSU) is a specialized ambulance with a CT scanner, laboratory testing capabilities, specialized Staff and Tele-Video Stroke Communication (functioning in a similar manner as an acute stroke ready hospital). The MSU staff and infrastructure allows for the rapid administration of iv r-tPA.

The implementation of mobile stroke units in Germany, Houston and Cleveland have clearly demonstrated that their use reduces the time to administration of iv r-tPA by 30 minutes which potentially leads to a 11% relative increase in good outcome with no reported complications outside of standard in-hospital stroke treatment.

The goal of the MSU program is to quickly diagnose and treat an acute ischemic stroke to improve care and ultimately patient outcome.

Care Coordination

The Capital Health Mobile Stroke Unit, under the management and control of Capital Health's Capital Institute for Neurosciences and Emergency Medical Services (EMS) departments, will be servicing Mercer County. Hospitals involved in the Mercer County MSU program include Robert Wood Johnson University Hospital -Hamilton, Saint Francis Medical Center and University Medical Center Princeton at Plainsboro.

An advisory consortium consisting of clinical representatives from each of these facilities has been formed for the purpose of planning the implementation and operations of the MSU. Goals include seamless coordination with and transition to area stroke centers and emergency departments,. The participating consortium hospitals will be involved with the development of protocols, including those determining where acute, time-sensitive, ischemic or hemorrhagic stroke patients will be transported. American Heart Association Guidelines – 2015, and other best practice standards of care, will be used as the basis for these protocols.

NJ Department of Health and Senior Services Office of Emergency Medical Services Prehospital Stroke Guidelines (see attached; Procedure: #6) state that patients with acute stroke symptoms should be transported to a designated stroke center with notification to the receiving facility.
In accordance with these regulations, patients will be transported to the appropriate stroke center.

Licensing

Capital Health intends to obtain Department of Health OEMS licensing for the MSU for the following three service levels: BLS, MICU, and SCTU. Additionally, Capital Health has applied for licensure for the MSU as a hospital based-offsite ambulatory care facility for mobile CT on the license of Capital Health System at Fuld (CHRMC.).

Staffing

The MSU will be staffed by a Specialty Care Transport Unit (SCTU) nurse (RN), Mobile Intensive Care Unit (MICU) paramedic and a CAT Scan Technologist. All MSU staff will receive additional training specific to the MSU operations and protocols. The MSU nurse and paramedic will both obtain NIHSS certification. In addition to training for MSU staff, the MSU Team will meet with and provide training/orientation with regional

hospital Emergency Department (ED) staff, Advanced Life Support (ALS) staff, Basic Life Support (BLS) staff and area first responders, in order to ensure seamless care coordination between the MSU and other local providers.

Timing

The MSU will be in service January 3, 2017.

Dispatch Criteria and Concept of Operations

The Mercer County Emergency Services Communication Center (Dispatch Center) currently provides the dispatch for ALS services in 100% of Mercer County. The Dispatch Center will be asked to simultaneously dispatch the MSU when they dispatch ALS to the State of New Jersey Office of Information Technology Emergency Medical Dispatch guide cards for stroke or worst headache assignments.

The MSU will be dispatched to these assignments, along with BLS and ALS services. We intend to utilize the on-site BLS and ALS staff to assist in expediting the treatment process in the MSU. Each provider will perform pre-scripted actions under the coordination of the MSU Team Leader, the nurse. The physician responsible for the patient will be the Capital Health Regional Medical Command physician.

For patients meeting the CH EMS pre-hospital stroke alert protocol (attached), patients will be placed on the MSU stretcher for assessment and treatment inside the MSU. The vehicle will remain parked, and crew members, except the CT Technologist, should exit the vehicle during the two minutes it takes to complete the CT. Lead shield aprons shall be worn by any providers remaining in the patient compartment, who should position themselves six feet away from the scanner (The distance from the CT to the rear door is over 8 feet). Once the patient is placed into the MSU, a non-contrast CT scan of the head will be performed while the nurse initiates a call to the teleneurology-neurovascular service.

The MSU RN and Teleneurologist will perform an NIH stroke scale evaluation, as well as review the necessary inclusion/exclusion criteria for an iv r-tPA candidate (see below). Upon completion of the CT scan, the team will continue the treatment protocol. The CT Technologist will transmit the image to the Teleneurology service and the CH PACS server. The image will also be copied to a CD by the CT Technologist in the event that the patient is transported to a stroke center other than CHRMC. The CT scan will be interpreted by the teleneurologist and read by a Capital Health radiologist

Should the teleneurologist find that the patient is a candidate for TPA, the recommendation for TPA administration will be relayed to the Medical Command physician. The Medical Command physician will order TPA, or any other treatment/medication, for the patient. The MSU will provide the transport to the stroke center.

ALS Interface

Capital Health Emergency Medical Services is the licensed ALS provider for Mercer County. All CH ALS personnel will receive training on their roles and responsibilities when the MSU arrives on the scene. Once the MSU arrives on the scene and assumes care of the patient, the ALS unit will be made available to be dispatched to other assignments.

BLS Interface

CH will provide training to all area BLS services who wish to continue to participate in the care of these patients once the MSU arrives on the scene and assumes care of the patient. These BLS providers will be trained on their roles and responsibilities when the MSU arrives on the scene.

While the MSU will provide the patient transport to the hospital, BLS will be able to assist with patient care at the scene, and when needed, during transport to the hospital.

Once the MSU arrives on the scene and assumes care of the patient, the BLS unit will be made available to be dispatched to other assignments.