

**Stroke Systems of Care  
Study Committee Report  
(S\*26)**

**Submitted to the Governor and General Assembly of South Carolina**

**November 30, 2010**



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## **Glossary**

**American Society of Hypertension (ASH):** ASH is the largest U.S. professional organization of scientific investigators and health care professionals committed to eliminating hypertension and its consequences. The Society serves as a scientific forum that bridges current hypertension research with effective clinical treatment strategies for patients.

**BAC:** The Brain Attack Coalition (BAC) is a group of professional, voluntary and governmental entities dedicated to reducing the occurrence, disabilities and death associated with stroke. The goal of the Coalition is to strengthen and promote the relationships among its member organizations in order to help stroke patients or those who are at risk for a stroke.

**BRFSS:** The Behavioral Risk Factor Surveillance System (BRFSS) is the world's largest, on-going telephone health survey system, tracking health conditions and risk behaviors in the United States yearly since 1984. Currently, data is collected monthly in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam.

**CMS:** The Centers for Medicare & Medicaid Services (CMS) is a branch of the U.S. Department of Health and Human Services. CMS is the federal agency that administers the Medicare program and monitors the Medicaid programs offered by each state.

**Effective Coverage:** Coverage that would give you maximum benefits for minimal costs.

**Emergency Medical Dispatch/9-1-1 (EMD):** Tasked with the gathering of information related to medical emergencies, the provision of assistance and instructions by voice, prior to the arrival of Emergency Medical Services (EMS), and the dispatching and support of EMS resources responding to an emergency call.

**EMS:** A type of emergency service dedicated to providing out-of-hospital acute medical care and/or transport to definitive care, to patients with illnesses and injuries which the patient, or the medical practitioner, believes constitutes a medical emergency.

**GWTG:** Get With The Guidelines (GWTG) is the American Heart Association's evidence-based quality improvement initiative, utilized to effect treatment with best practice guidelines.

**HFAP:** The Healthcare Facilities Accreditation Program (HFAP) is one of only three national voluntary accreditation programs authorized by the Centers for Medicare and Medicaid Services (CMS) to survey hospitals for compliance with the Medicare Conditions of Participation and Coverage.

**Ischemic stroke:** Ischemic strokes occur as a result of an obstruction within a blood vessel supplying blood to the brain. The underlying condition for this type of obstruction is the development of fatty deposits lining the vessel walls. This condition is called atherosclerosis.

**JNC 8:** The Eighth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, developed by the National Heart, Lung, and Blood Institute, is an integrated set of cardiovascular risk reduction guidelines for adults using state-of-the-art methodology.

**Morbidity:** The total number of cases of disease present in a population at a given time.

**Mortality rate:** Rate of death expressed as the number of deaths occurring in a population of a given size within a specified time interval.

**Neuro Interventional:** An accredited medical subspecialty specializing in minimally invasive image-based technologies and procedures used in diagnosis and treatment of diseases of the head, neck, and spine.

**Primary Stroke Center:** A Primary Stroke Center is a hospital that has met certain requirements established by The Joint Commission. These requirements are based on the Brain Attack Coalition recommendations for specialized stroke care.

**TJC:** The Joint Commission (TJC), formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), is a private sector United States-based not-for-profit organization. The Joint Commission operates accreditation programs for a fee to subscriber hospitals and other health care organizations. The Joint Commission accredits over 17,000 health care organizations and programs in the United States.

**tPA:** Tissue plasminogen activator; a preparation of this enzyme is produced by genetic engineering and used to dissolve clots blocking coronary arteries in heart attack and cranial arteries in certain cases of stroke.

**Vascular Neurologist:** Specializes in cerebrovascular disorders and stroke patients. Vascular neurologists are the primary researchers for causes and treatments of strokes in the field, and they're also the primary educators. They typically work with stroke patients after the initial stroke, during their rehabilitation and during preventative stages of treatment.

## **Executive Summary**

South Carolina has consistently had one of the highest stroke death rates in the nation. In 2009, 13,337 people were treated for stroke in South Carolina hospitals, for a total cost of \$559,190,500. African Americans in South Carolina are 53 percent more likely to die from stroke than the White population.

Despite successes in delivering effective new therapies, significant obstacles remain in ensuring that scientific advances are consistently translated into clinical practice. In many instances, these obstacles can be related to a fragmentation of stroke-related care caused by inadequate integration of the various facilities, agencies, and professionals that should closely collaborate in providing stroke care. It is critically important to look carefully at how the distinct components can be better integrated into systems of stroke care.

The South Carolina General Assembly ratified Joint Resolution S\*26, establishing a Stroke Systems of Care Study Committee, on April 30, 2009. The South Carolina Stroke Systems of Care Study Committee was charged with developing a plan for a statewide stroke system of care which must include, among other things, an urgent response system, coordination of treatment, methods for evaluating the impact of strokes in our state, a strategy to reduce stroke disparities among minorities and underserved populations, and public awareness programs for stroke education.

The South Carolina Stroke Systems of Care Study Committee was comprised of 18 members representing organizations and health care disciplines involved in stroke treatment and prevention. Membership and the committee chair were approved by the SC DHEC Board on August 13, 2009. The Committee met from October 2009 until November 2010 to identify barriers, gaps, and recommendations to improve the system of care in SC.

### **Barriers and Gaps**

Significant racial and geographic disparities in stroke deaths and disability exist in South Carolina. Treatment for stroke is inadequate in many rural areas of our state. The public has a limited understanding of stroke symptoms and the importance of calling 9-1-1 to avail of effective treatments that are time-sensitive.

Many S.C. residents live more than 100 miles away from the nearest Primary Stroke Center, requiring over 2 hours and 25 minutes EMS transport time. The state does not have regulation that designates hospitals for stroke care. Utilization of tele-health services is inadequate in South Carolina. Medicaid provides limited coverage of tele-health services, but private insurance does not.

In South Carolina, only 14% of stroke patients currently receive post-acute inpatient rehabilitation services. Barriers to stroke rehabilitation care in S.C. include access to coverage, access to care, access to stroke resources, and lack of coordination of care.

Moreover, understanding the true burden of stroke in South Carolina is impossible without a stroke registry. Improving the system of care depends on it.

**Recommendations Summary (priority recommendations are listed in bold)**

1. Support evidenced-based policy and systems changes which promote stroke prevention such as increasing the number of hypertension specialists in SC. Support campaigns to enhance public education and awareness of stroke. Provide resources to implement strategies to reduce stroke treatment disparities.

**2. Establish hospital designation based on level of stroke care through designation by DHEC so that EMS can transport patients to the most appropriate facility. Fund a full-time position, to be managed through DHEC's EMS Division, to establish and monitor regulations relating to hospital designation.**

**3. Ensure tele-health coverage through both public and private insurance providers.**

4. Ensure adequate coverage by private and public payers (including Medicaid) to provide stroke rehabilitation in free-standing interdisciplinary rehabilitation hospitals and home health based on need.

5. Offer tax credits, or limited state income tax, for stroke rehabilitation professionals in underserved areas including physiatrists, physical therapists, occupational therapists, and speech therapists.

**6. Establish a statewide stroke registry, which will capture and link data on pre-hospital, hospital, and rehabilitation services.**

**7. Establish a statewide stroke steering committee to evaluate implementation, adherence, and continuous improvement of the recommended changes.**

**8. Establish a full-time position, to be managed through DHEC's Heart Disease and Stroke Prevention Division, to implement the state stroke plan.**

The Committee respectfully recommends that the General Assembly take the necessary steps needed to implement these recommendations, and thereby improve the state stroke system of care. Failure to act will result in a system which remains fragmented and South Carolina will continue to suffer a higher than national stroke burden.

## Plan Implementation Cost

The cost for one year to support priority recommendations is projected at \$456,200.

## Burden of Stroke

**South Carolina has consistently had one of the highest stroke mortality rates in the nation.** Our state is one of the states in the “Stroke Belt” and had the highest or second highest mortality rate since 1983. However, in 2005, South Carolina dropped to the 5<sup>th</sup> highest mortality rate in the nation, for all 51 states, including D.C. and excluding Puerto Rico, and remained at that same ranking in 2007.

### **Stroke is the third leading cause of death in South Carolina, resulting in 2,387 deaths during 2008.**

- Stroke, or cerebrovascular disease, is the third leading cause of death in South Carolina.
- Stroke mortality rates in South Carolina have decreased by 42 percent from 1999 to 2008.
- In 2008, the age-adjusted stroke mortality rate for the state was 49.8 per 100,000 population. **Though the rate has been decreasing, South Carolina remains above the national average.** In 2007, US mortality was 42.185 per 100,000.
- South Carolina has reached the Healthy People 2010 goal of 50 stroke deaths per 100,000 population in 2008.

- South Carolina has consistently had one of the highest stroke mortality rates in the nation.
- African Americans in South Carolina are 53 percent more likely to die from stroke than the White population.
- In 2009, 13,337 people were treated for stroke in South Carolina hospitals, for a total cost of \$559,190,500.

African-American South Carolinians have higher stroke death rates than do White South Carolinians.

- In fact, **African Americans in South Carolina are 53 percent more likely to die from stroke than the White population.** This disparity in death rates has persisted over time. African-American men have the highest age-specific mortality rates for stroke up to age 85.

Younger adults are being impacted by stroke both nationally and in South Carolina. According to the Behavioral Risk Factor Surveillance System (BRFSS), the world’s largest ongoing telephone health survey system, which tracks health conditions and risk behaviors in the United States, 47% of stroke survivors surveyed in 2009 were under the age of 65. Young stroke survivors also comprised 45% of the stroke visits to Emergency Departments and 38% of hospitalizations during 2009.

Unfortunately, young adults are dying from stroke. In 2008, 20% of stroke deaths in South Carolina were among individuals under the age of 65. Nationally in 2007 (latest year available), 14.7% of stroke deaths were under the age of 65.

Deaths due to stroke in South Carolina vary by counties (please refer to Age-Adjusted Mortality Rates map on page 17). The ten counties with the highest three-year (2006-2008) age-adjusted mortality rates were Allendale (85.5), Orangeburg (85.2), Bamberg (79.4), Williamsburg (75.9), Lee (69.6), Dillon (67.4), Barnwell (67), Laurens (66.6), Dorchester (65.2), and Darlington (63.9).

The ten counties with the lowest three-year (2006-2008) age-adjusted mortality rates were Beaufort 28.7, Jasper 35.8, McCormick 40.6, York 41.6, Pickens 42.3, Clarendon 42.5, Lancaster 45.3, Marlboro 45.7, Horry 46, and Greenwood 46.8.

The economic burden for stroke is significant. **In 2009, 13,337 people were treated for stroke in South Carolina hospitals, for a total cost of \$559,190,500.**

- Stroke hospitalizations included 9,690 Whites, 4,297 African Americans, and 258 “Others,” which includes Hispanic, American Indian, Asian, and all other racial/ethnic groups.
- More than 50% (54.7%) of stroke hospitalization charges were paid by Medicare. Private insurance covered 25.9% of charges, 10.6% were self-pay/indigent, and 8.9% were covered by Medicaid or other government support.
- More than 50% (54.6%) of stroke Emergency Department visit charges were paid by Medicare. Private Insurance covered 27.7% of charges, 12.7% were self-pay/indigent, and 3.8% was covered by Medicaid or other government support.
- The devastating cost of stroke is not widely appreciated and includes: loss of wages, loss of productive years, cost to the state for follow-up care and disability, long-term care, quality of life and caregiver burden.

Major advances have been made during the past several decades in stroke prevention, treatment and rehabilitation. Despite successes in delivering effective new therapies, significant obstacles remain in ensuring that scientific advances are consistently translated into clinical practice. In many instances, these obstacles can be related to a fragmentation of stroke-related care caused by inadequate integration of the various facilities, agencies, and professionals that should closely collaborate in providing stroke care. **It is critically important to look carefully at how the distinct components can be better integrated into a stroke system of care.**

A stroke system should strive to optimize the overall effectiveness of the system and each of its individual components.

## **Developing a State Plan for Stroke**

The South Carolina General Assembly ratified Joint Resolution S\*26, establishing a Stroke Systems of Care Study Committee, on April 30, 2009. The South Carolina Stroke Systems of Care Study Committee was charged with developing a plan for a statewide stroke system of care which must include, among other things, an urgent response system, coordination of treatment, methods for evaluating the impact of strokes in our state, a strategy to reduce stroke disparities among minorities and underserved populations, and public awareness programs for stroke education (see Conceptual Model on page 11).

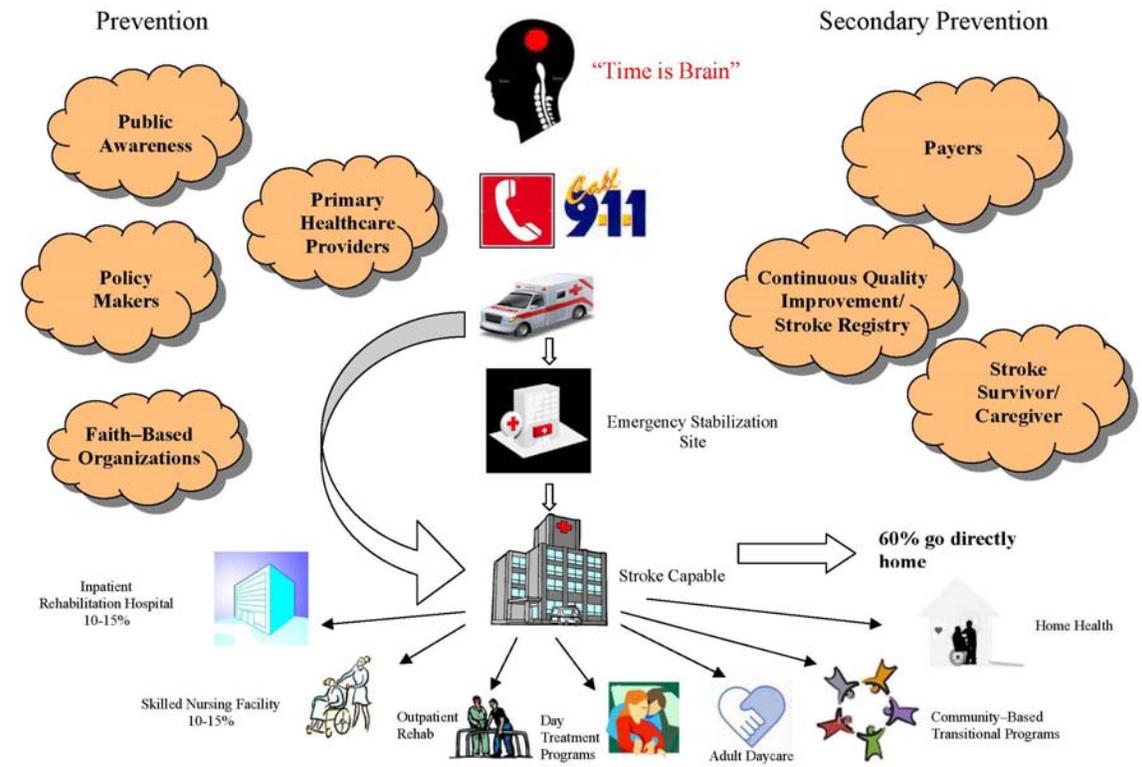
The nomination process for the members of the Committee for positions where a specific organization was not indicated in S\*26 included solicitation to the professional association most closely associated with the position. Letters requesting nominations and CVs were disseminated to identified organizations from DHEC's Deputy Commissioner of Health Services.

A nomination review committee, comprised of leadership from the former (voluntary) South Carolina Stroke Systems Task Force, met to review and approve the slate of nominations to be presented to the South Carolina Department of Health and Environmental Control Board for final review and approval.

The South Carolina Stroke Systems of Care Study Committee (see committee list on pages 12-14) was comprised of 18 members representing organizations and health care disciplines involved in stroke treatment and prevention. Membership and the committee chair were approved by the SC DHEC Board on August 13, 2009.

The first Stroke Systems of Care Study Committee meeting was held on October 9, 2009. From that point forward, the full committee met six times to 1) review relevant research and literature, 2) interface with experts from the various stroke system components, and 3) establish committee guidelines and subcommittee deliverables. Four subcommittees met on multiple occasions to assess the state system of care and to develop recommendations for the State Plan. Subsequently, the recommendations were presented to the full committee for review and approval. 4) Experts in the stroke field were identified as external reviewers and provided valuable recommendations which were reviewed and incorporated into the final state plan as approved by the committee.

## South Carolina Stroke Systems of Care Conceptual Model



This conceptual model depicts an ideal system of care. A person recognizes signs and symptoms of a stroke, calls 9-1-1 and Emergency Medical Services are activated. EMS, recognizing stroke symptoms, transports the patient to the nearest Stroke Capable Hospital. In the event a Stroke Capable Hospital is not located within a reasonable distance, the patient is transported to the nearest Emergency Stabilization Site for initial evaluation and rapid transfer to an appropriate level of care. Rehabilitation following stroke may occur in a variety of settings from an Inpatient Rehabilitation Hospital to a Community-Based Transitional Program. Prevention is critical in decreasing the burden of stroke through efforts to 1) increase *Public Awareness* of signs and symptoms and stroke risk factors; 2) educate *Policy Makers* and advocating for systems change; 3) support *Primary Healthcare Provider* education and treatment of risk factors to guidelines; and 4) engage *faith-based organizations*. Secondary Prevention efforts are of equal importance following stroke to prevent recurrent stroke and involve key stakeholders such as *payers*, the *stroke survivor* and their *caregivers*, and *continuous quality improvement* efforts, including the *stroke registry*.

## Committee Members and Nominating Organizations

Name, Title, Employer	Position on Committee	Nominating Organization
Robert Adams, M.S., M.D., Director, MUSC Stroke Center, University Eminent Scholar, Director SC Stroke Center of Economic Excellence ( <b>Committee Chair</b> )	Neurology	SC Medical Association
Edward Jauch, M.D., M.S., F.A.C.E.P., F.A.H.A., Associate Professor, Division of Emergency Medicine and Department of Neurosciences, MUSC ( <b>Committee Vice Chair</b> )	American Stroke Association	AHA/ASA
Stoney Abercrombie, M.D., Professor, Family Medicine, MUSC DME & Program Director, AnMed Health	Family Medicine	South Carolina Academy of Family Physicians
Deborah Bridgeman, R.N., B.S.N., Stroke Clinical Case Manager, Spartanburg Regional Healthcare System	Registered Professional Nurse	SC Nurses Association
Dilantha B. Ellegala, M.D., Assistant Professor, Director of Comprehensive Cerebral Neurovascular Program and Co-Director for the MUSC Stroke Program	Neurosurgery	SC Medical Association
Richard Foster, M.D., Senior Vice President, SC Hospital Association	SC Hospital Association	South Carolina Hospital Association

Stacy Fritz, Ph.D, P.T., Clinical Assistant Professor, University of South Carolina, Arnold School of Public Health	Licensed Physical Therapist	American Physical Therapy Association SC Chapter
Rodney Harrison, M.D., F.A.C.C., Clinical Assistant Professor of Internal Medicine at the University of South Carolina School of Medicine, SC Heart Center	Cardiology	SC Chapter American College of Cardiology
Peter Hyman, M.D., Medical Directory of Emergency Services, McLeod Regional Medical Center	Emergency Medicine	SC College of Emergency Physicians
Mark McDonald, M.D., F.A.A.P., Pediatric Intensivist Palmetto Health Children’s Hospital	Pediatrics	SC Chapter of the American Academy of Pediatrics
Nowa Omoigui, M.D., M.B.B.S., M.P.H., F.A.C.C., Associate Professor of Medicine and Director of the Division of Cardiovascular Disease, USC; Cardiovascular Care Group, PA	Minority Health Issues Physician	Palmetto Medical, Dental & Pharmaceutical Association
James Rogers, F.A.C.H.E., Regional Vice President, HealthSouth Corporation	Administrator of an acute stroke rehabilitation facility	SC Hospital Association
Sheri Seigler, R.N., B.S.N., Director of Hospital Programs, SC Office of Rural Health	Representative from Office of Rural Health	South Carolina Office of Rural Health

Charles (Doug) Silk, NREMT-P, QI Training Coordinator, Piedmont Medical Center EMS Division	Emergency Medical Services Provider	SC Emergency Medical Services Association
Alzono W. Smith, Director, DHEC Office of EMS/Trauma	DHEC Office of EMS/Trauma	DHEC
Nancey Trevanian Tsai, M.D., Assistant Professor MUSC Department Neuroscience, Associate Director Roper Rehab Hospital	Rehabilitation Medicine	SC Medical Association
Aquilla S. Turk, D.O., Associate Professor, Department of Radiology and Radiological Science, Interventional Neuroradiologist, MUSC	Neuroradiology	SC Medical Association
Lisa F. Waddell, M.D., M.P.H., Deputy Commissioner for Health Services, DHEC	DHEC - Deputy Commissioner for Health Services	DHEC

# South Carolina Stroke Systems of Care Study Committee Assessment and Recommendations

## Public Awareness, Education, Prevention and Disparities

**Commission and Deliverables:** Assessment of the current state of public awareness, education, prevention, and treatment disparities of stroke in SC and recommendations including:

- Development of methods to promote greater stroke prevention
- Development of a public education and awareness program on the signs and symptoms of stroke
- Identification of a strategy to reduce stroke treatment disparities among minorities, rural, and under-insured populations.

### **Assessment of state’s current status, resources and gaps:**

2009 BRFSS data reflects that 17.9 percent of South Carolinians recognize all correct stroke warning signs and reportedly would call 9-1-1 if someone were possibly having a stroke. Data from that same year depicts that 10 percent of African-American South Carolinians recognize all correct stroke warning signs and reportedly would call 9-1-1 if someone were possibly having a stroke.

Significant racial and geographic disparities in stroke deaths and disability exist in South Carolina. Treatment for stroke is inadequate in many rural areas of our state.

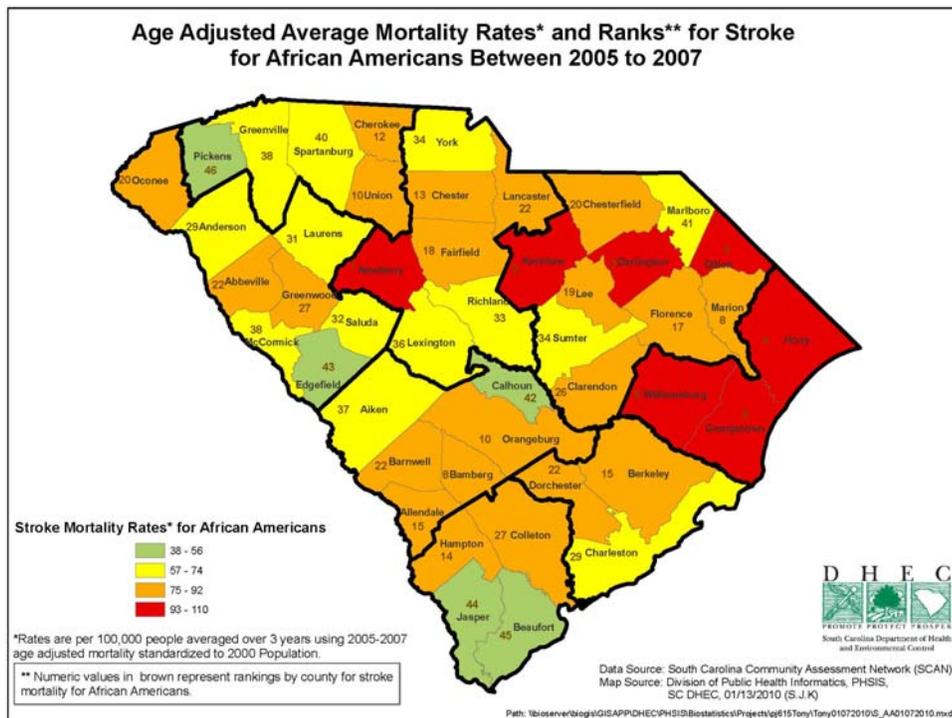
Knowledge of stroke signs and symptoms is crucial because “time is brain.” It is crucial that the public recognizes and rapidly responds to signs and symptoms of stroke. Treatment is available for dissolving blood clots in the brain, but must be administered within a few hours of symptom onset. Tissue plasminogen activator (tPA) is a thrombolytic agent (clot-busting drug). It is approved for use in certain patients having a stroke. The drug can dissolve blood clots, which cause most strokes. Strokes caused by blood clots are known as ischemic strokes. tPA is the only drug approved by the U.S. Food and Drug Administration for the acute (urgent) treatment of ischemic stroke.

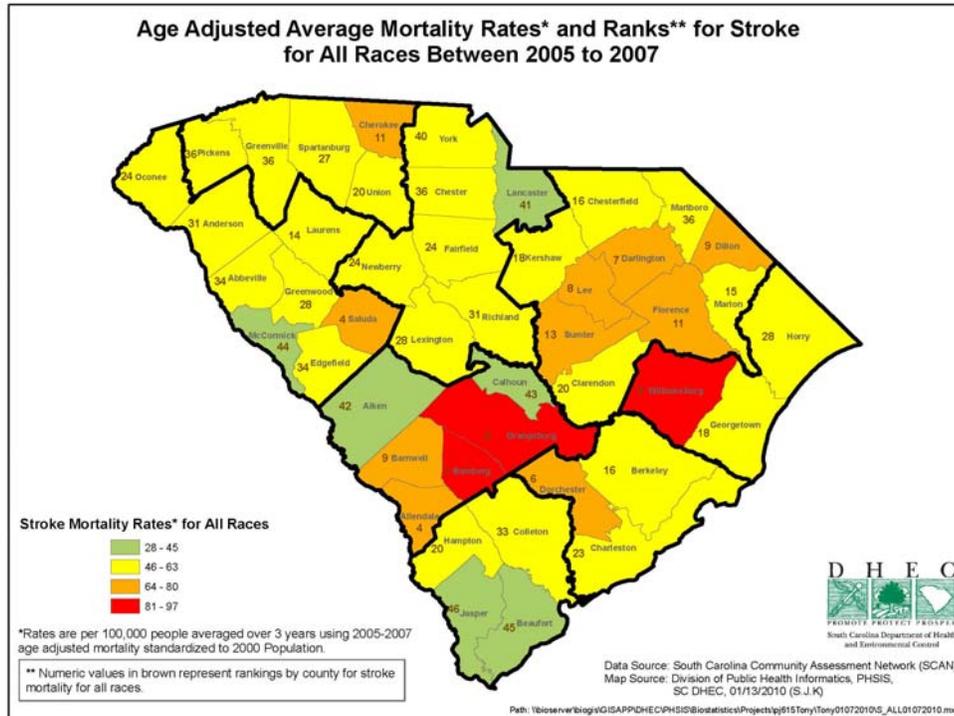
Disparities are evident not only in recognition of stroke warning signs, but also in hospitalization and mortality rates. Although mortality rates for all populations declined for the past decade, the mortality gap between African Americans and Whites is significant. The South Carolina 1999 stroke mortality rates for African American and White populations were 118.6 and 76.2 per 100,000 respectively. In 2008, stroke mortality for African Americans and Whites decreased to 67.9 and 44.4 per 100,000, respectively. **While mortality rates are improving for both Whites and blacks, African-Americans are 53 percent more likely to die from stroke than Caucasians in South Carolina.** One way to quantify health

disparity is to calculate the relative rate of hospitalization or mortality between two subpopulation groups. African-Americans have died due to stroke at a higher rate than Whites, and are also experiencing an increase in hospitalization due to stroke. While the mortality rate ratio of African Americans to Whites decreased from 1.56 in 1999 to 1.53 in 2008, from 1999 to 2008, the rate ratio for stroke hospitalization of African Americans to Whites rose from 1.07 to 1.22.

Each year more than 15,650 South Carolinians suffer from a stroke, and 15-30% remain permanently disabled. More than 107,000 South Carolinians and their families live with the disabling effects of stroke. Around half of the stroke survivors in South Carolina are younger than 65 years of age. The younger stroke victims in S.C. die at nearly twice the national rate. In 2009, there were more than 14,000 hospitalizations and 4,000 emergency department visits due to stroke that cost in excess of a half billion dollars in direct costs.

Significant racial and geographic disparities in stroke morbidity and mortality exist in South Carolina. African Americans have a 40% higher age-adjusted stroke hospitalization and Emergency Department visit rate and are 53% more likely to die from stroke than the White population. In 2009 the average cost for stroke hospitalization for African Americans was \$8,500 higher than for Whites. Age-adjusted stroke hospitalization rates were about 10% higher in rural counties<sup>1</sup> for 2008 and 2009. African American South Carolinians living in rural counties had a higher percentage of stroke incidence and a 17% higher stroke death rate than those living in urban counties. In 2009, hospital charges for stroke in rural counties amounted to about \$158 million.





Several resources and gaps relative to the education, awareness and prevention of stroke and stroke disparities in S.C. were identified. They include the following:

- The S.C. Department of Health and Environmental Control’s (DHEC’s) Heart Disease and Stroke Prevention program implemented a limited media and communication strategy to address stroke in the state. The resources are very limited federal funds, thus falling short of the reach and frequency necessary for an effective comprehensive multi-media stroke prevention campaign. Consequently, the current awareness strategy primarily promotes awareness of the signs and symptoms of stroke and the importance of calling 9-1-1.
- The National Institute of Neurological Disorders and Stroke (NINDS) developed a comprehensive awareness campaign to help educate the public about the symptoms of stroke and the importance of getting to the hospital quickly. The campaign includes outreach to consumers and health care professionals using mass media, grassroots outreach, partnerships, and community education. These materials are being used in a limited capacity in S.C., in partnership with the EMS community.

It is critical that the public recognize the onset of stroke symptoms and use 9-1-1 since treatments are time-sensitive. Patients must get to the appropriate facility quickly.

- The American Heart Association/American Stroke Association developed two cultural health community-based heart disease and stroke prevention initiatives, designed to capture the energy and culture of the African American community in order to facilitate the delivery of an effective stroke prevention message. These community-based stroke awareness initiatives have been implemented in SC, through collaboration with DHEC and the AHA/ASA.
- While the efforts above have been implemented, gaps to increase awareness still remain. Therefore, work should continue towards leveraging resources through public and private partnerships to fully identify and implement effective evidence-based programming for increasing awareness and use of 9-1-1.
- The management of risk factors is always more cost effective than treating the devastating consequences of stroke. Hypertension is the single most important modifiable risk factor for ischemic stroke, and people with hypertension have three to four times the risk of developing heart disease than those without high blood pressure. High blood pressure contributes to 30 percent of heart disease deaths each year. One out of every three adults in South Carolina has high blood pressure; this is also true for women and African Americans.

The DHEC HDSP Program and the American Society of Hypertension (ASH) Inc., Georgia and Carolinas Chapter, partner to provide continuing medical education for S.C. physicians designed to support increased knowledge and compliance with current hypertension control guidelines. This training encourages and prepares physicians to become certified as Hypertension Specialists through an annual examination process by ASH, Inc. Physicians certified as hypertension specialists can function as local or regional consultants for complex and difficult to manage hypertension cases, and can advise regarding treatment guidelines and outcomes improvement. To date, over 1,251 S.C. providers have received training in these courses. S.C. leads the nation in the number of ASH Certified Hypertension Specialists per capita, with 50 physicians certified.

A main objective is the infusion of hypertension specialists into primary care addressing risk factor control in this population. The program targets clinicians at different levels of training from students, residents, and fellows, to practitioners young and old. Both large practice groups as well as small rural practices are included. The program has targeted rural high risk geographic areas with the goal of training a hypertension specialist in each county. The hypertension specialist credential is promoted through education programs, primarily continuing medical education.

The certified hypertension specialist is a credential from ASH. The credential is based on the successful completion of a board examination. The incentives for primary care physicians to become a specialist include referrals and recognition as specialty care. In addition, in SC the credential is recognized by BlueCross BlueShield with a financial award of \$5,000. ASH is working with CMS and other third-party payers to also recognize the hypertension specialists. ASH is also working on the national level to have the Hypertension Specialist recognized as a medical specialty. On a state level, the ASH Chapter is working with Medicaid for recognition of the credential.

- In addition to hypertension, risk factors for stroke include: smoking, diabetes, obesity, physical inactivity, unhealthy diet, high sodium intake, and excessive alcohol use. Initiatives to address these risk factors are ongoing in the state, and should continue to be supported.
- The DHEC HDSP Program provided support to the DHEC EMS Division to provide advanced stroke training for EMS and Emergency Department providers. More than 1,553 providers have been trained since 2003.
- Currently, there are only nine Primary Stroke Centers in SC. The Joint Commission certification requires the centers to do community education, but only once each year. The depth and breadth of stroke awareness and education efforts varies by center. Examples of prevention efforts include: stroke educational packets provided to all patients; visible displays of stroke prevention materials throughout the hospital; sponsorship of quarterly community health screenings that include individualized education regarding stroke and risk factors, cholesterol and blood pressure screenings; and seminars and lecture series related to stroke for the community and health care professionals.
- Get With The Guidelines (GWTG) is the American Heart Association's evidence-based quality improvement initiative, utilized to effect treatment with best practice guidelines. This program is used within South Carolina hospitals as a secondary prevention tool. GWTG is currently utilized by 17 hospitals and an outpatient tool has recently been released.
- Various divisions within DHEC engage the faith-based community to promote the adoption of healthy policies and healthy lifestyles which reduce the burden of heart disease and stroke. DHEC county health departments are engaging faith-based organizations, health systems, and other partners to create alliances that address health inequities among the high-risk African-American population through heart disease and stroke prevention risk factor reduction.

- The South Carolina Primary Health Care Association (SCPHCA) is a membership organization that supports the state’s federally qualified community health centers. Many of the state’s uninsured and underinsured are served in these primary care centers. The SCPHCA hosts regular seminars for the centers’ clinical staff. Up to date information regarding stroke is provided during these professional development seminars.
- Epidemiological data and information on stroke in SC is limited and needs to be more comprehensive. The BRFSS, an annual telephone survey of randomly selected adults, provides self-reported information about stroke survivors but lacks critical clinical information. Mortality data files are an important source of information but limited only to persons who had died of stroke. From hospitalization databases, we can learn more about the experience of a stroke patient at an acute facility setting. However, we need to obtain more comprehensive quality of care information that is currently not being collected.

**Recommendations:**

1. Support evidenced-based policy and systems changes which promote stroke prevention:
  - a. Promote public policy which addresses reduction in sodium consumption.
  - b. Support measures (including Medicaid recognition of the Hypertension Specialist credential) to increase the number of certified hypertension specialists to support increased knowledge and compliance with current hypertension control guidelines.
2. Support campaigns to enhance public education and awareness of stroke:
  - a. As funding is identified and secured, implement a comprehensive multi-media stroke prevention campaign to the general public with enhanced emphasis during Stroke Awareness Month.
  - b. Enlist hospitals within the SC Stroke System of Care to enhance reach of public education programs in their areas of influence.
3. Provide resources to implement strategies to reduce stroke treatment disparities:
  - a. Support measures to improve adherence to best practice guidelines for prevention and treatment of stroke in primary care settings by providing Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC) provider education.
  - b. Remove economic barriers to effective anti-hypertensive medications for individuals who have difficulty accessing them.
4. Provide resources for a comprehensive stroke registry which will further our understanding of the disparities, impact, and cost of stroke throughout the continuum of care.

### **Economic Impact**

Preventive care including hypertension treatment has been shown to be both more cost effective and to prevent adverse outcomes than no treatment. A Georgia study (Rein, et.al, 2006) reported that overall costs, including **cost of preventive treatment and cost of treatment for adverse events was from 12% to 25% below the costs of no preventive treatment, and the number of heart attacks and strokes with preventive treatment was predicted to be half of those with no treatment.** The authors found that implementation of their heart attack and stroke prevention program resulted in both lower costs and greater potential health benefits than no treatment.

**In 2009, the cost of hospitalization and emergency visits for stroke in SC was more than \$550 million.** Currently the direct and indirect cost of stroke care in SC among Medicaid and Medicare beneficiaries is estimated to be in excess of \$193 billion using the CDC's CVD Cost Calculator model (Reference: <http://www.cdc.gov/chronicdisease/resources/calculator/index.htm>). **By using the preventive model similar to the Georgia's pilot site intervention of providing preventive treatment, South Carolina could lower the expected stroke care cost between \$23 (12%) and \$48 billion (25%) annually statewide.**

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## **Urgent Response System**

**Commission and Deliverables:** assessment of the current state of the Urgent Response System and recommendations including:

- The development and implementation of an urgent response system that is built on the Primary Stroke Center model as designated by The Joint Commission's Primary Stroke Systems model to develop a statewide system of care which will provide appropriate care to stroke patients in the timeliest manner possible;
- Recognition and implementation of a standardized stroke triage assessment tool that will be used by all certified Emergency Medical Service (EMS) personnel and for the education of prehospital and hospital health care providers on the signs and symptom of stroke;
- Assessment of the capacity of emergency medical services system and hospitals to deliver recommended treatments in a timely manner;
- Coordination with state trauma regions for the purposes of coordinating the delivery of stroke care within those regions.

### **Assessment of state's current status, resources and gaps:**

- 100 percent of state has 9-1-1 coverage (landline); 92% of population is covered by Phase II / wireless E911. Dispatch systems in S.C. are voluntary; not all counties have adopted an Emergency Medical Dispatch (EMD) program. Dispatch systems operate independently within each county. Some are operated by the Sheriff's department, some are public safety departments and some are shared with EMS. There is currently no statewide guidance as to what is the priority of EMD. At any one time there are approximately 400 EMD providers working statewide. In order to standardize the EMD, legislation would have to be passed.
- The S.C. Department of Health and Environmental Control's Heart Disease and Stroke Prevention Division has developed an 8-hour comprehensive cardiovascular disease and stroke curriculum for 9-1-1 telecommunicators, available statewide.
- In 2005, the SC EMS Medical Control Committee recommended that all SC EMS providers be trained in Advanced Stroke Life Support / Cincinnati Stroke Scale. Continuous education, including training with new protocols and tools, is imperative to strengthen the capacity of the urgent response system. The EMS System at a state level is coordinated by the South

During the process of the study committee and urgent response system subcommittee meetings, protocols for EMS treatment, transport, and triage and were developed and submitted to the EMS Medical Control Committee. They were subsequently approved, and have been implemented.

Carolina Department of Health and Environmental Control (DHEC). DHEC has been granted authority, by the state legislature, to develop, implement, and monitor state EMS regulations. (S.C. Code of Laws Section 44-61-30. Title 44=Health, Chapter 61=Emergency Medical Services. DHEC, with the advice of the EMS Advisory Council shall develop standards and prescribe regulations for the improvements of EMS.)

- SC EMS is submitting data to the National EMS Information System (NEMSIS) through their agreement with the EMS Performance Improvement Center (EMSPIC) which is located within the Department of Emergency Medicine at the University of North Carolina at Chapel Hill. This investment in the South Carolina EMS infrastructure brings the EMS data and performance improvement tools currently implemented in North Carolina to the state of South Carolina. The Stroke EMS Toolkits within South Carolina will provide a modern web-based interface to promote quality EMS service delivery, resource management, and patient care. Data collected and maintained within this new South Carolina EMS Data System will provide valuable insight to identify, evaluate, and drive local and state EMS initiatives in areas such as education, operations, resource allocation, advocacy, policy, and finance. The use of these toolkits provides guidance through proven performance indicators to improve and optimize patient care at the local EMS System and community level. All 208 licensed EMS agencies, located within South Carolina, are actively submitting live data to the Pre-hospital Medical Information System (PreMIS), an electronic medical record for pre-hospital services. With high volume EMS agencies submitting data, the current incoming events represent nearly 100% of the population in South Carolina. In addition, the quality and amount of data being collected places South Carolina among the top EMS systems in the nation submitting data to PreMIS. Important first steps have taken place to link pre-hospital data with in-hospital/outcome data. Sustaining this linkage through a stroke registry infrastructure will support meaningful use across the continuum of care.
- The Urgent Response subcommittee explored the similarities with how the trauma system is structured, funded, and regulated. While trauma is also an emergent situation, it is structured and funded in a way that is not particularly compatible with the stroke system of care.
- Currently, South Carolina has some of the components necessary for emergency response to stroke, but as of yet, there is not a coordinated urgent response system that ensures every patient receives the most appropriate and timely response to stroke every time.
- **During the process of the stroke study committee and urgent response system subcommittee meetings, protocols for EMS stroke treatment and transport**

It is critical that S.C. have a statewide stroke system of care that ensures patients arrive rapidly at the most appropriate facility. Time is brain!

**(to include triage and destination plans for EMS) were developed and submitted to the EMS Medical Control Committee. They were subsequently approved, and have been implemented. DHEC's Division of EMS and Trauma will develop curriculum and train staff as appropriate specific to these protocols.**

**Recommendations:**

Several recent studies have reinforced the importance of early activation and utilization of the of the 9-1-1 Emergency Medical Service system in the treatment of acute stroke. Most importantly, studies have shown that selective triage and transport to the highest level of local stroke care is the most important aspect in the treatment of acute stroke. Working with regional stroke hospitals, EMS personnel should be trained to identify acute stroke and make the necessary destination decisions for patients with suspected stroke.

1. Utilize statewide EMS reporting to perform quality improvement processes through National EMS Information System (NEMSIS) to ensure adherence to triage and transport protocols (please see Appendix F).
2. EMS should be represented on an ongoing statewide stroke steering committee to evaluate implementation, adherence, and continuous improvement of the recommended changes.
3. The committee recognizes that establishment of state regulation for Emergency Medical Dispatch (9-1-1) is a need. Ideally, DHEC would regulate Emergency Medical Dispatch (9-1-1) for uniformity and quality assurance. The committee recommends that implementation be deferred at this time, due to the complexity of providing this regulatory function in addition to the current limitation of state resources:
  - a. Provide an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke. At this point, further evaluation and study is needed for implementation before final recommendations are made regarding a 9-1-1 dispatcher certification program.
  - b. Collaboration between stroke experts within the state and DHEC EMS services to create and distribute training materials on EMD related to stroke.
4. EMS Dispatch Protocols  
The statewide stroke steering committee will look at this recommendation as the system evolves. Any future consideration of this recommendation would require a regulatory mandate with funding to support implementation and oversight. This would include:

- a. Providing an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke
- b. Promoting training for EMD related to stroke

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## **Hospital-Based Stroke Treatment Subcommittee Recommendations**

**Commission and Deliverables:** assessment of the current state of Hospital-Based Stroke Treatment and recommendations include:

- Development of methods in which systems will be evaluated and monitored to demonstrate the impact on the burden of stroke in South Carolina;
- Compilation and assessment of peer-reviewed and evidence-based clinical research and guidelines that provide or support recommended treatment standards;
- Creation of criteria for the designation of acute stroke capable hospitals within the state of South Carolina;
- Recommendations for policy and legislative changes that may be needed including appropriations, designation of facilities based on stroke treatment capabilities, and program development and implementation based on national standards.

### **Assessment of state’s current status, resources and gaps:**

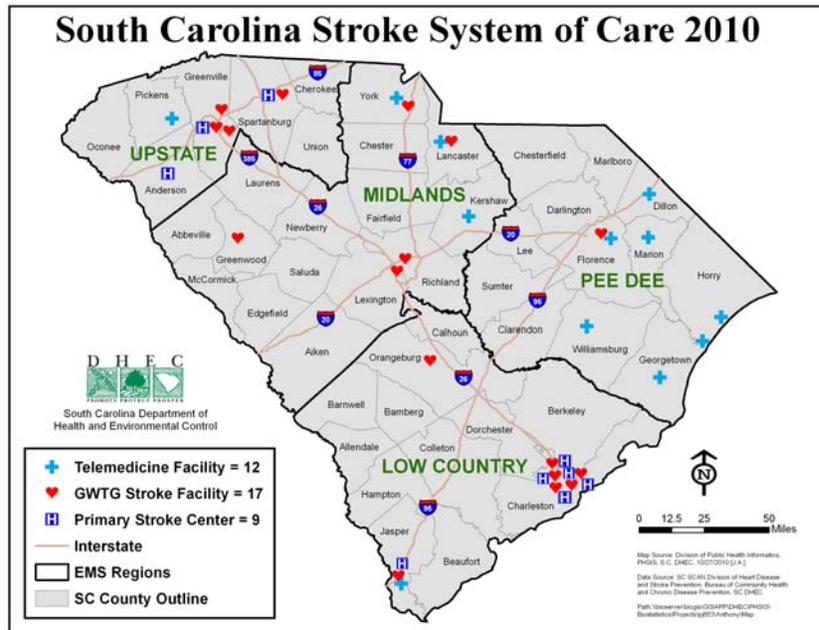
#### **Resources:**

The state has 67 acute care hospitals, including three federal hospitals. Of these, nine are Primary Stroke Centers, of which eight are certified by The Joint Commission (TJC) and one by Healthcare Facilities Accreditation Program (HFAP). South Carolina has four geographic regions, as defined by the SC EMS Division. The following table and map show the distribution of the various centers:

Many S.C. residents live more than 100 miles away from the nearest Primary Stroke Center, requiring a 2 hour and 25 minute EMS transport time.
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	Midlands	Pee Dee	Upstate	Lowcountry
Comprehensive Stroke Center (Level I)	0	0	0	1
Primary Stroke Centers (Level II)	0	0	3	6
Telemedicine	3	7	1	1
Get With The Guidelines-Stroke	5	1	4	7
Hospitals preparing for Primary Stroke Center Certification	5	1	1	1

Of the nine designated Primary Stroke Centers, one has Neuro Interventional Specialties which adheres to the recommendations for Comprehensive Stroke Centers by the Brain Attack Coalition, 17 Hospitals are using Get With The Guidelines Stroke program; 12 are Acute Stroke Capable Hospitals (Telemedicine hospitals); and eight are preparing to become Primary Stroke Centers.



## **Gaps:**

There are approximately 20 American Board of Medical Specialties (ABMS) certified vascular neurologists in South Carolina, but these physicians are not optimally distributed across the state to treat the more than 13,000 strokes in S.C. each year.

- The state does not have regulation that requires hospitals to have a stroke plan of care. Hospitals providing stroke care range from large academic centers, which have substantial stroke capacity to Critical Access Sites with limited access to comprehensive stroke care.
- Inexperienced facilities that have not made an institutional commitment to acute stroke care are reluctant to administer tPA, nor can they provide timely neurological and radiological expertise on demand. When systems of care are fragmented and there are gaps in service availability, many eligible patients who could receive tPA unfortunately do not.
- Utilization of tele-health services appears generally low in South Carolina and elsewhere. Medicaid provides limited coverage of tele-health services, but private insurance does not cover tele-health. Without insurance coverage, patients in rural areas may not receive the best possible care. Tele-health is defined as the use of interactive audio, video, or other telecommunications technology by a health care provider to deliver health care services within the scope of the provider's practice at a site other than the site where the patient is located. Stroke-enabled (Level III) hospitals invest their own resources for telemedicine infrastructure support. This is a tremendous resource for the public, that does not require public funds to satisfy critical gaps in the stroke system of care in rural areas of the state where access to comprehensive stroke care is extremely limited.
- South Carolina does not have a centralized statewide stroke registry.

## **Recommendations:**

1. All hospitals in S.C. should be required by DHEC to submit a formal plan for stroke care to DHEC which details their compliance with the recommendations outlined in the following levels of stroke designation and promulgate to the community a formal plan for the care of stroke patients that arrive through the Emergency Department or are discovered in hospital. DHEC shall have the responsibility of designating all sites and will classify each hospital into one of

the four distinct levels as indicated below based on national AHA/ASA recommendations and updated as necessary.

2. The four levels should be:

a. Level I Stroke Hospital/Comprehensive Stroke Center (CSC) based on the Brain Attack Coalition (BAC) recommendations.

- i. The Acute Stroke Team is led by a neurologist, a neurosurgeon or another qualified healthcare professional with experience and expertise in treating patients with cerebrovascular disease
- ii. Members of the Acute Stroke Team are available on a 24 hours/day, 7 days/week basis
- iii. Organized Emergency Department with written pathway for rapid identification and management of the acute stroke patient
- iv. Brain imaging of the head should be completed, read and interpreted within 45 minutes of arrival
- v. Clinical laboratory services
- vi. 24/7 stroke call and capability for tPA for eligible patients
- vii. 24/7 endovascular call and capabilities for endovascular therapy for eligible patients
- viii. 24/7 neurosurgery call
- ix. Neuro-intensive care unit and neuro-intensivist provider availability
- x. Stroke registry and quality improvement process

A coordinated system of stroke care reduces disability through time-sensitive administration of Tissue Plasminogen Activator (tPA) for eligible patients.

b. Level II Stroke Hospital/Primary Stroke Centers meeting the The Joint Commission or equivalent certification as recommended by AHA/ASA qualifications or potentially those of other certifying bodies that may be granted “deemed status” by DHEC for this purpose.

- i. The Acute Stroke Team is led by a neurologist, a neurosurgeon or another qualified healthcare professional with experience and expertise in treating patients with cerebrovascular disease
- ii. Members of the Acute Stroke Team are available on a 24 hours/day, 7 days/week basis
- iii. Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
- iv. Brain imaging of the head should be completed, read and interpreted within 45 minutes of arrival
- v. Clinical laboratory services
- vi. Capability for tPA for appropriate patients
- vii. Stroke registry and monitoring of harmonized measures

c. Level III Hospital/Stroke Enabled Centers. This level is able to deliver urgent evaluation and care which includes meeting TJC standards for use of thrombolytics, but lacks the capacity to meet one or more of the other critical standards used to define a Primary Stroke Center.

- i. The Acute Stroke Team is led by a qualified healthcare professional with experience and expertise in treating patients with cerebrovascular disease
- ii. Members of the Acute Stroke Team are available on a 24 hours/day, 7 days/week basis
- iii. Emergency Department 24 hours a day with physician or physician extender and nursing staff trained in neurologic care on-site 24 hours a day
- iv. Brain imaging of the head should be completed, read and interpreted within 45 minutes of arrival
- v. Clinical laboratory services
- vi. Telestroke video/conferencing capabilities
- vii. 24/7 stroke call with capabilities for tPA therapy for eligible patients
- viii. Written plans established in advance to ensure orderly transition from Level III Stroke Hospital to specialized stroke care facility when appropriate (Level II or I)

d. Level IV Hospital/Emergency Stabilization Sites. These hospitals are referred to as “Non-Stroke Hospitals” in SC EMS Protocol 34b – Stroke Destination Determination.

- i. Basic stroke evaluation plan but unable to provide acute treatment
- ii. A rapid transfer plan to a Stroke Enabled Center, Primary Stroke Center, or Comprehensive Stroke Center should be in place for those stroke patients that arrive by private vehicle or are discovered in hospital
- iii. This site serves as a support site which may be bypassed in the EMS plan
- iv. These sites will not be considered as a destination for stroke patients except under unusual circumstances, for example, an EMS transport time of more than 60 minutes

It is important that centers capable of effective stroke treatment be designated, so that EMS can transport the patient to the facility with the appropriate level of care.
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3. DHEC will be the designating body of all hospitals in S.C. for stroke care. Where established national certification exists through The Joint Commission or equivalent, DHEC will designate centers based on certifications granted by those certifying bodies. As nationally recognized designations become available at more

comprehensive and less comprehensive levels, those designations will replace any processes being facilitated by the state.

The DHEC Division of EMS & Trauma shall establish and maintain regulations to recognize hospitals based on currently available national certification programs. For the levels of care for which national certification processes do not exist, established best practice recommendations will be followed for regulation by the Division of EMS and Trauma. These hospital designations will be published on the DHEC website, enabling EMS transport to designated facilities. A full-time position should be funded, managed through the DHEC EMS Division to establish and monitor regulations relating to hospital designation.

4. Insurers shall not exclude a service for coverage solely because the service is provided through tele-health and is not provided through face-to-face consultation or contact between a health care provider and a patient for services appropriately provided through tele-health.

5. A centralized statewide stroke registry is essential for understanding and improving the stroke system of care. The registry would collect critical data on in-patient stroke treatment in order to improve quality of care.

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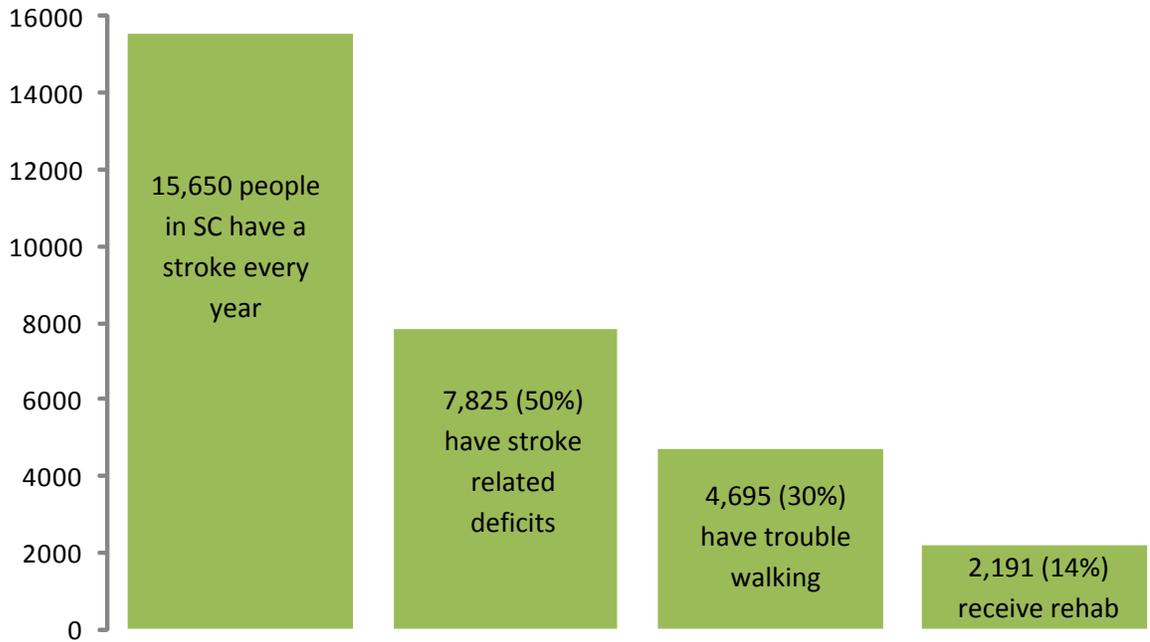
## **Rehabilitation**

**Commission and Deliverables:** assessment of the current state of Stroke Rehabilitation and recommendations including:

- Development of methods to promote greater, more effective rehabilitation after stroke
- Compilation and assessment of peer-reviewed and evidence-based clinical research and guidelines that provide or support recommended treatment standards

### **Assessment of state's current status, resources and gaps:**

Stroke is a **leading cause** of severe, long-term disability in the US, and SC rates are higher than many other states. Annually around 15,650 South Carolinians suffer a stroke and about 50% of patients (7,825 patients) have resultant deficits (weakness of one side) from a stroke and approximately 30% (4,695) cannot walk unaided. **However, in SC only about 2,500 patients (14%) currently receive post-acute inpatient rehabilitation services.**



DHEC and the American Heart Association with support from the Committee collaborated on the “S.C. Stroke Rehabilitation Programs and Services Resource Guide,” which provides awareness for the public and providers on statewide resources for post-acute stroke services in SC. The document provides information listed by county covering the following topics: (1) Comprehensive Inpatient Rehabilitation Facility Programs, (2) Skilled Nursing Facilities, (3) Home Care Facilities, (3) Community-Based Exercise Programs, (4) Stroke Support Groups and links to additional national and statewide resources. A dissemination plan is underway to assure stroke survivors and care partners are aware of available rehabilitation services throughout the state.

Intensive rehabilitation helps improve function post stroke, increasing the likelihood that the stroke survivor will return to previous functional levels and become once again a productive member of society. Despite the benefits of rehabilitation, there are four significant barriers to stroke rehabilitation care in SC:

The number of people under age 65 who have been hospitalized for stroke has grown from 33% of all reported strokes in S.C. in 1999 to 38% in 2009.

- **Access to Coverage:** The most significant barrier to stroke rehabilitation in SC is limited access for those who have Medicaid, are underinsured or uninsured.

Currently, Medicaid, and some private insurers, do NOT cover inpatient rehabilitation services. This is a state optional Medicaid service.

Due to the relatively young age of SC stroke survivors (those typically covered by Medicaid), this significantly limits access to care, limits functional return, and increases the risk for secondary disability including subsequent strokes. **The number of people under age 65** who have been **hospitalized** for stroke has grown from 33% of all reported strokes in SC in 1999 to **38% in 2009**. Without rehabilitation, these individuals may lose the potential to return to their previous functional capacity. This impacts the state's young stroke population from pediatric stroke survivors to those in the most fiscally productive years of life.

The devastating cost of stroke is not widely appreciated and includes: loss of wages, loss of productive years, cost to the state for follow-up care and disability, long-term care, quality of life and caregiver burden.

- **Access to Care:** There is a shortage of rehabilitation specialists in the state (rehabilitation physiatrists, occupational, physical, and speech therapists) especially in rural areas.
- **Access to Stroke Resources:**
  - Currently there needs to be an increase in awareness and utilization of resources to provide patients with information following a stroke, including but not limiting to prevention of secondary stroke.
  - There has been a great deal of needed emphasis on preventive stroke education. However, of the more than 795,000 people per year in the US that have a stroke, 185,000 (23%) are recurrent strokes.
  - Addressing these barriers could decrease costs long term by decreasing secondary impairment and return hospitalization following stroke and increasing productivity of the stroke survivor. The Clinical Practice Guideline for Management of Adult Stroke Rehabilitation Care states that “Secondary prevention is fundamental to preventing stroke recurrence, as well as coronary vascular events.” Therefore both **secondary prevention and early intensive rehabilitation** is critical.
- **Lack of Coordination of Care:** There is a lack of coordination of care across the continuum which is related to limitations in access to care. This needs to be addressed by the overall Stroke Systems of Care.

## Recommendations:

1. Ensure adequate coverage by private and public payers (including Medicaid) to provide stroke rehabilitation in free-standing interdisciplinary rehabilitation hospitals and home health based on need.
2. Offer tax credits, or limited state income tax, for stroke rehabilitation professionals in underserved areas including physiatrists, physical therapists, occupational therapists, and speech therapists. Also, increase utilization of tele-health facilitated rehabilitation to increase services in rural and underserved communities.
3. Provide support for a comprehensive, statewide needs assessment for rehabilitation services needed within the state, which may include the following components: stroke-specific vocational counseling and training, adaptive driving assessment and training, supportive counseling, community-based transitional programs, day treatment programs, and stroke support groups.
4. Consider funding for resources to educate patients about secondary stroke risk.
  - a. Including and maintaining a comprehensive website with printable materials that includes information across the continuum of care including acute stay to home modifications and community resources.
  - b. Produce an informational video for hospitals or other facilities to use on patient education channels to educate patients and caregivers with stroke about their rehabilitation and their risk of subsequent strokes. Development and implementation will be a priority of the HDSP designated staff coordinator overseeing the stroke systems of care state plan.
5. Appoint a rehabilitation expert to participate in the ongoing stroke steering committee to assess how well South Carolina is meeting the targets and whether measures to increase rehabilitation access and resources are having a positive impact.

Rehabilitation improves function post-stroke, helps people return to work and prior level of functioning, and improves quality of life.

## Economic Impact:

The recommendations could decrease costs long term by decreasing secondary impairment, recurrent strokes, and return hospitalization following stroke and increasing productivity of the stroke survivor.

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## South Carolina Stroke Registry

Stroke registries are developed and utilized to collect information about stroke care. A registry is a systematic collection of data pertaining to stroke patients that can include pre-hospital, emergency department, inpatient hospital and rehabilitation data. In other words, registries are used to measure, track, and improve the quality of care and access to care for stroke patients from the onset of symptoms through treatment, rehabilitation and recovery from a stroke.

The data in the registry is analyzed and used to improve the entire system of care for stroke patients. The stroke registry is a partnership between providers and hospitals to improve the quality of stroke care and ultimately reduce the incidence of new strokes and recurrent strokes; and reduce death and disabilities from strokes.

Despite having one of the worst stroke death rates in the country, S.C. lacks a stroke registry to help gain the crucial information necessary to reduce the burden of stroke, deaths, and disability from strokes.

### **Recommendations:**

1. The committee strongly recommends implementing a statewide stroke registry, which would capture data on pre-hospital, hospital and rehabilitation services. This will markedly improve our surveillance of stroke. With this enhanced surveillance capability, the system will be able to meaningfully engage partners and stakeholders, providers at the EMS (pre-hospital), hospital, and rehabilitation levels of care, as well as in our communities. At the very minimum, the registry should:

- Be developed on a platform based on nationally available stroke registry tools that are based on nationally recognized, evidence-based guidelines (such as Get With The Guidelines - Stroke, developed by the American Heart Association / American Stroke Association).
- Provide a platform for critical data linkages throughout the continuum of stroke care, enabling statewide pre-hospital medical records to be linked with hospital medical records and ultimately rehabilitation services.
- Include mandatory participation by all hospitals.
- Include the following measures, at a minimum:
  1. Deep Vein Thrombosis (DVT) Prophylaxis
  2. Discharged on Antithrombotic Therapy

3. Patients with Atrial Fibrillation Receiving Anticoagulation Therapy
4. Thrombolytic Therapy Administered
5. Antithrombotic Therapy By End of Hospital Day Two
6. Discharged on Statin Medication
7. Dysphagia Screening
8. Stroke Education
9. Smoking Cessation / Advice / Counseling
10. Assessed for Rehabilitation

- Protect information that could identify the stroke patient in accordance with the administrative policy of DHEC.
  - Have sufficient financial resources to support staffing and operations.
2. In order to assure the development, implementation, oversight and continuous quality improvement, there should be a Data Oversight / Registry Taskforce charged with:
    - Recommending a list of data elements for inclusion in the registry
    - Analyzing data generated by the registry on stroke response and treatment
    - Identifying potential interventions to improve stroke care in geographic areas or regions of the state
    - Providing recommendations to the DHEC for the improvement of stroke care and delivery

## **Stroke Plan Implementation**

The committee strongly recommends the establishment of an ongoing statewide stroke steering committee to evaluate implementation, adherence, and continuous improvement of the plan recommendations. A full-time position should also be established, and managed through DHEC's Heart Disease and Stroke Prevention Division, to implement the state stroke plan.

## Plan Implementation Costs

**DHEC Heart Disease and Stroke Prevention FTE (annual projected cost):** includes salary, fringe, in-direct, fixed costs and operating expenses. Staff member to reside within the DHEC Heart Disease and Stroke Prevention Division to implement the Stroke State Plan recommendations as endorsed in the General Assembly; staff will manage, coordinate and provide oversight to stroke systems of care ongoing committee activities.....\$75,600

**Cost of ongoing statewide stroke steering committee:**  
quarterly meeting expenses .....\$5,000

**DHEC EMS Division FTE (annual projected cost):** includes salary, fringe, in-direct, fixed costs and operating expenses. Staff member to reside within the DHEC EMS Division to coordinate the development of regulation for stroke hospital designation; implementation of hospital designation processes and monitoring; review of hospital stroke plans of care and work with hospitals to ensure compliance with regulation; and coordinate with Heart Disease and Stroke Prevention program as it relates to the Stroke State Plan.....\$75,600

**Stroke Registry (annual projected cost):** includes salaries and fringe cost of two staff (stroke registry coordinator and a data manager); stroke data oversight advisory meetings; stroke data acquisition, subcontracted extraction and linkage activities; indirect, fixed costs and operating expenses. Staff members to reside within DHEC’s Bureau of Community Health and Chronic Disease Prevention to collect, compile, provide quality control, and analyze stroke-related events; prepare annual report, fact sheets and information pertinent to the state stroke plan.....\$300,000

**Total Cost.....\$456,200**

## Appendix A

### References

#### **Summary of peer-reviewed and evidence-based clinical research and guidelines that provide or support subcommittee recommendations:**

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- b. *American Heart Association. Heart Disease and Stroke Statistics. Update 2010.*
- c. *American Heart Association/American Stroke Association; Acute Stroke Designation Advisory Committee; Recommendations for Hospitals in the Stroke System of Care; August 12, 2008; Committee Members: Robert Adams, MD, Chair, Edward Jauch, MD, Melissa Maitin-Shepard, Joe Acker, EMTP, MPH, Dana Leifer, MD, Jeffrey Ranous, Mark Alberts, MD, Robert O'Connor, MD, Anna Rodriguez, Colin Derdeyn, MD, Lee Schwamm, MD, Mark Schoeberl, Anthony Furlan, MD, Tim Shephard, PhD, RN, Wendy Segrest, Larry Goldstein, MD, Richard Zorowitz, MD, Richard Hughes, MD, Khosrow Heidari.*
- d. *Anderson BE, Rafferty AP, Lyon-Callo S, Fussman C, Reeve, M. Knowledge of Tissue Plasminogen Activator for Acute Stroke Among Michigan Adults. Stroke 2009;40;2564-2567*
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- f. *Duncan P, Zorowitz R, Bates B, Choi J, Glasberg JJ, Graham GD, Katz RC, Lamberty K, Reker D. Management of Adult Stroke Rehabilitation Care: A Clinical Practice Guideline. Stroke. 2005;36:e100.*
- g. *Effectiveness of primary and comprehensive stroke centers: PERFECT stroke. Stroke. 2010 Jun;41(6):1102-7. Epub 2010 Apr 15.*
- h. *Guidelines for Stroke Center Development; Stroke 2001;32;816-818.*
- i. *Implementation Strategies for Emergency Medical Services Within Stroke Systems of Care/A Policy Statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council/September 2007.*

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- l. ORS, generated by Chronic Disease Epidemiology and Evaluation, DHEC.
- m. *Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension* - at [www.iom.edu/reports](http://www.iom.edu/reports).
- n. *Prevention Works: CDC Strategies for Heart-Healthy and Stroke-Free America* - CDC website.
- o. *Quality improvement in acute stroke: the New York State Stroke Center Designation Project*. *Neurology*. 2006 Jul 11;67(1):88-93.
- p. *Recommendations for the Establishment of Stroke Systems of Care - Recommendations from the American Stroke Association's Task Force on the Development of Stroke Systems*; *Stroke*, 2005.
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- r. Rein DB, Constantine RT, Orenstein D, Chen H, Jones P, Brownstein JN, et al. *A cost evaluation of the Georgia Stroke and Heart Attack Prevention Program*. *Prev Chronic Dis* [serial online] 2006 Jan [date cited]. Available from URL: [http://www.cdc.gov/pcd/issues/2006/jan/05\\_0143.htm](http://www.cdc.gov/pcd/issues/2006/jan/05_0143.htm).
- s. Schmid AA, Rittman M. *Fear of falling: an emerging issue after stroke*. *Top Stroke Rehabil* 2007;14(5):46-55.
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- u. *Update to the AHA/ASA Recommendations for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack*; May 2008.

v. *VA/DoD Clinical Practice Guideline for the Management of Stroke Rehabilitation in the Primary Care Setting. Version 1.1. Prepared by the Management of Stroke Rehabilitation Working Group; 2003.*

Data sources:

1. CDC WONDER
2. SC DHEC SCAN
3. ORS SC Hospital Discharge Dataset
4. ORS ED Visit Dataset

## Appendix B

S\*26

### **S\*0026(Rat #0022) Joint Resolution, By Jackson and Rose**

Similar(H 3372)  
A JOINT RESOLUTION TO ESTABLISH THE STROKE SYSTEMS OF CARE  
STUDY COMMITTEE TO  
DEVELOP A PLAN FOR A STATEWIDE STROKE SYSTEM OF CARE, WHICH  
MUST INCLUDE,  
AMONG OTHER THINGS, AN URGENT RESPONSE SYSTEM, PUBLIC  
AWARENESS PROGRAMS FOR  
STROKE EDUCATION, PREVENTION, AND REHABILITATION, METHODS FOR  
EVALUATING THE  
IMPACT OF STROKES IN THIS STATE, RECOGNITION AND  
IMPLEMENTATION OF A  
STANDARDIZED STROKE TRIAGE ASSESSMENT TOOL, A STRATEGY TO  
REDUCE STROKE  
DISPARITIES AMONG MINORITIES AND UNDERSERVED POPULATIONS,  
POLICY CHANGES THAT  
MAY BE NEEDED, COORDINATION OF TREATMENT, AND DESIGNATION OF  
ACUTE STROKE  
HOSPITALS; AND TO PROVIDE THAT THE STUDY COMMITTEE IS  
ABOLISHED UPON  
SUBMISSION OF ITS REPORT TO THE GENERAL ASSEMBLY NO LATER  
THAN DECEMBER 1,  
2010. - ratified title

12/10/08 Senate Prefiled

12/10/08 Senate Referred to Committee on Medical Affairs

01/13/09 Senate Introduced and read first time SJ-84

01/13/09 Senate Referred to Committee on Medical Affairs SJ-84

03/24/09 Senate Committee report: Favorable with amendment  
Medical Affairs SJ-7

03/25/09 Scrivener's error corrected

03/25/09 Senate Committee Amendment Adopted SJ-16

03/25/09 Senate Read second time SJ-16

03/25/09 Senate Unanimous consent for third reading on next  
legislative day SJ-16

03/26/09 Scrivener's error corrected

03/26/09 Senate Read third time and sent to House SJ-9

03/31/09 House Introduced and read first time HJ-23

03/31/09 House Referred to Committee on Medical, Military,  
Public and Municipal Affairs HJ-24

03/31/09 House Recalled from Committee on Medical, Military,  
Public and Municipal Affairs HJ-71

04/02/09 House Read second time HJ-41  
04/02/09 House Unanimous consent for third reading on next  
legislative day HJ-44  
04/03/09 House Read third time and enrolled  
04/30/09 Ratified R 22  
05/07/09 Became law without Governor's signature  
05/15/09 Effective date 05/07/09

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## VERSIONS OF THIS BILL

[12/10/2008](#)  
[3/24/2009](#)  
[3/25/2009](#)  
[3/25/2009-A](#)  
[3/26/2009](#)  
[3/31/2009](#)

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### S. 26

**NOTE: THIS COPY IS A TEMPORARY VERSION. THIS DOCUMENT WILL REMAIN IN THIS VERSION UNTIL PUBLISHED IN THE ADVANCE SHEETS TO THE ACTS AND JOINT RESOLUTIONS. WHEN THIS DOCUMENT IS PUBLISHED IN THE ADVANCE SHEET, THIS NOTE WILL BE REMOVED.**

(R22, S26)

**A JOINT RESOLUTION TO ESTABLISH THE STROKE SYSTEMS OF CARE STUDY COMMITTEE TO DEVELOP A PLAN FOR A STATEWIDE STROKE SYSTEM OF CARE, WHICH MUST INCLUDE, AMONG OTHER THINGS, AN URGENT RESPONSE SYSTEM, PUBLIC AWARENESS PROGRAMS FOR STROKE EDUCATION, PREVENTION, AND REHABILITATION, METHODS FOR EVALUATING THE IMPACT OF STROKES IN THIS STATE, RECOGNITION AND IMPLEMENTATION OF A STANDARDIZED STROKE TRIAGE ASSESSMENT TOOL, A STRATEGY TO REDUCE STROKE DISPARITIES AMONG MINORITIES AND UNDERSERVED POPULATIONS, POLICY CHANGES THAT MAY BE NEEDED, COORDINATION OF TREATMENT, AND DESIGNATION OF ACUTE STROKE HOSPITALS; AND TO PROVIDE THAT THE STUDY COMMITTEE IS ABOLISHED UPON**

**SUBMISSION OF ITS REPORT TO THE GENERAL ASSEMBLY NO LATER  
THAN DECEMBER 1, 2010.**

Whereas, stroke is the third leading cause of death in South Carolina resulting in 2,284 deaths and 14,002 hospitalizations that cost \$395.8 million in 2006; and

Whereas, South Carolina is among a group of southeastern states with high stroke death rates commonly referred to as the "Stroke Belt"; and

Whereas, the highest stroke rates within the State are clustered in counties along the Interstate 95 corridor, known as the buckle of the "Stroke Belt", in which the African-American population is in excess of the state's average and are forty-six percent more likely to die from a stroke than Caucasians in South Carolina; and

Whereas, stroke does not discriminate as to age and strikes young people, including infants and children; and

Whereas, South Carolina ranked fifth in stroke mortality among the states and the District of Columbia in 2005; and

Whereas, urgent stroke care, inclusive of drugs that dissolve blood clots, otherwise known as thrombolytics, has been shown to improve stroke outcome; and

Whereas, time limits for the use of thrombolytics make it critical that the patient be taken to the appropriate stroke treatment center; and

Whereas, science has concluded that fragmentation of the health care delivery system frequently results in suboptimal treatment, safety concerns, and inefficient use of health care resources and, accordingly, recommends the establishment of a coordinated system of care that integrates preventive and treatment services and promotes patient access to evidence-based care; and

Whereas, the fragmented approach to stroke care that exists in South Carolina fails to provide an effective, integrated system for stroke prevention, treatment, and rehabilitation because of inadequate linkages and coordination among the fundamental components of stroke care, which may be well developed but often operate in isolation; and

Whereas, the problem of access to coordinated and time sensitive stroke care is exacerbated in rural underserved areas due to inadequate access to neurological expertise; and

Whereas, it is in the best interest of this State and its residents to convene a study committee to conduct a review of state resources and make recommendations for the establishment of a seamless system of care for stroke patients throughout South Carolina.  
Now, therefore,

Be it enacted by the General Assembly of the State of South Carolina:

**Stroke Systems of Care Study Committee created**

SECTION 1. (A) There is created the Stroke Systems of Care Study Committee composed as follows:

- (1) one physician actively involved in stroke care from each of the following fields:
  - (a) neurology;
  - (b) neuroradiology;
  - (c) neurosurgery;
  - (d) pediatrics;
  - (e) emergency medicine;
  - (f) rehabilitation medicine;
- (g) internal medicine, general practice, or family practice actively involved in stroke care; and
- (h) cardiology;
- (2) one emergency medical services provider actively involved in direct stroke care;
- (3) one registered professional nurse actively involved in direct stroke care;
- (4) one licensed physical therapist actively involved in direct stroke care and research;
- (5) one representative of the South Carolina Office of Rural Health;
- (6) one physician or representative of an organization actively involved in addressing minority health issues;
- (7) one representative of the South Carolina Hospital Association;
- (8) one administrator of an acute stroke rehabilitation facility;
- (9) one representative from the American Stroke Association;
- (10) the Deputy Commissioner of the South Carolina Department of Health and Environmental Control, Health Services Division, or his designee; and

- (11) the Director of the South Carolina Department of Health and Environmental Control Emergency Medical Services, or his designee.
- (B) The South Carolina Board of Health and Environmental Control shall appoint the members and the Chairperson of the South Carolina Stroke Systems of Care Study Committee.
- (C) Vacancies occurring on the committee must be filled in the same manner as the original appointment.
- (D) The study committee shall accept committee staffing and coordination under the authority of the Department of Health and Environmental Control.
- (E) Members of the study committee shall serve without mileage, per diem, and subsistence.

**Committee to develop plan; contents of plan**

SECTION 2. (A) The study committee shall develop a plan for a statewide stroke system of care using the resources of both the public and private sectors incorporating flexibility to best fit the needs of each region or locality. The plan must address, but is not limited to:

- (1) development and implementation of an urgent response system that is built on the Primary Stroke Center model as designated by the joint commission's Primary Stroke Systems model to develop a statewide system of care that will provide appropriate care to stroke patients in the timeliest manner possible.

For purposes of this section, the joint commission is the independent, not-for-profit organization that accredits and certifies more than 15,000 health care organizations and programs in the United States, formerly known as the Joint Commission on Accreditation of Healthcare Organizations. Joint commission accreditation and certification is recognized nationwide as a symbol of quality that reflects an organization's commitment to meeting certain performance standards;

- (2) development of methods to promote greater stroke prevention and more effective rehabilitation after stroke;
- (3) development of methods in which systems will be evaluated and monitored to demonstrate the impact on the burden of strokes in South Carolina;
- (4) development of a public education and awareness program on the signs and symptoms of stroke;

- (5) recognition and implementation of a standardized stroke triage assessment tool that will be used by all certified EMS personnel and for the education of prehospital and hospital health care providers on the signs and symptoms of stroke;
  - (6) identification of a strategy to reduce stroke and stroke treatment disparities among minority, rural, uninsured, and underinsured populations;
  - (7) recommendations for policy and legislative changes that may be needed including appropriations, designation of facilities based on stroke treatment capabilities, and program development and implementation based on national standards;
  - (8) compilation and assessment of peer-reviewed and evidence-based clinical research and guidelines that provide or support recommended treatment standards;
  - (9) assessment of the capacity of the emergency medical services system and hospitals to deliver recommended treatments in a timely fashion;
  - (10) coordination with the state trauma regions for the purposes of coordinating the delivery of stroke care within those regions; and
  - (11) creation of criteria for the designation of acute stroke capable hospitals within the State of South Carolina.
- (B) The study committee shall meet as often as is necessary and shall convene no later than sixty days after the effective date and at a time at least a majority of the members have been appointed. The study committee shall submit its report electronically to the General Assembly and the Governor no later than December 1, 2010, at which point the study committee will dissolve.

**Time effective**

SECTION 3. This joint resolution takes effect upon approval by the Governor.

Ratified the 30th day of April, 2009.

Became law without the signature of the Governor -- 5/7/09. -- T.

## Appendix C

### Minutes of S.C. Board of Health and Environmental Control Meeting August 13, 2009

The S.C. Board of Health and Environmental Control met on Thursday, August 13, 2009, at 10:00 a.m. via conference call in the S.C. Department of Health and Environmental Control Board Room, 2600 Bull Street, Columbia, S.C. (Attachment 0-1)

The following members were in attendance:

- Paul C. Aughtry, III, Chairman  
Member-at-large
- Edwin H. Cooper, III, Vice-Chairman  
1st District
- Steven G. Kisner, Secretary  
3rd District
- Henry C. Scott  
2nd District
- M. David Mitchell, MD  
4th District
- Glenn A. McCall  
5th District
- Coleman F. Buckhouse, MD  
6th District

Also in attendance were C. Earl Hunter, Commissioner, Carlisle Roberts, Jr., General Counsel, Lisa Longshore, Clerk, department staff and guests. (Attachment 0-2)

Mr. Aughtry stated notice of this meeting has been provided to all persons, organizations and news media, which have requested notification, as required by Section 30-4-80(e) of the South Carolina Code of Laws.

***Item 1: Consideration of Board Minutes – July 9 minutes - For Approval (Attachment 1-1)***

***Dr. Buckhouse moved, seconded by Mr. McCall, to approve the minutes as submitted for the July 9 meeting. Approved.***

Item 2: Monthly Award for Excellence for August 2009 (Attachment 2-1)

Commissioner Hunter recognized the following recipients:

- **Commissioner's Office** – CARS to SIPS Conversion Team (John Marcucci (BFM), Hope Ramsey (BFM), Rick Reher (BIS), Greg Fowler (BIS));
- **Environmental Quality Control** – Infectious Waste Inspection Team (Kim Clyburn, Margie Davis, Arlene Wilkes, and Leslie Yasinsac);
- **Health Regulation** – Abigail James;

- **Health Services** – Mary-Kathryn Craft;
- **Region 1 Public Health Office** – Ann Smith, RN;
- **Region 2 Public Health Office** – Todd Liveright;
- **Region 3 Public Health Office** – Larry Estridge;
- **Region 4 Public Health Office** – Jenni Brown;
- **Region 5 Public Health Office** – Denise Cone, Debbie Lotz, Toni O’Cain and Kathryn Zeigler-Gramling;
- **Region 6 Public Health Office** – Mary Thomas;
- **Region 7 Public Health Office** – Lathia “Beverly” Brown;
- **Region 8 Public Health Office** – Multi-state Learning Collaborative-3 (MLC-3) Tobacco Collaborative Team (Sheila Silon, RN, Janice Foster, Teresa Debouch, RN, Gail Temple, RN, Karen Oehring, RN, Gale Brazell, RN, LaWanda Stewart, Johnelle Gooden, Karen Burke, Cassandra Shark, Deqanda Green, Jenny Aquilar-Diaz, Gerri Buhler, RN, Crystal Ferguson, Tammy B. Washington, Terry McCrary, RN, Wanda Mixon, Berneta Grant, Lilean Ramirez, Kathy Goen, RN, Matt Petrofes, Debbie McCoy, LMSW, Westley Byrne, Dr. PH, NP, Susan Eviston, Nick Davidson, T. Gale Parker, Linda Summerall, RN, MSN, Sandy Polite.

The Board extended its thanks to all recipients.

***Item 3: Request for a third six-month extension of Certificate of Need SC-07-36 issued to Bamberg County Memorial Hospital for the construction of a fifty-nine (59) bed replacement hospital with two (2) operating rooms (ORs), endoscopy suite, radiology department with a CT scanner and mobile MRI one day/week (Attachment 3-1)***

Ms. Beverly Brandt, Director, Bureau of Health Facilities and Services Development, gave a status of the project to date.

***Dr. Buckhouse moved, seconded by Mr. Scott, to find that Bamberg County Memorial Hospital has demonstrated substantial progress and to approve an additional six-month extension to implement Certificate of Need SC 07-36. Approved.***

***Item 4: Public Hearing and Request for Final Approval - Proposed Amendments of Regulation 61-62, Air Pollution Control Regulations and Standards, to Revise Regulation 61.62.60, South Carolina Designated Facility Plan and New Source Performance Standards, Regulation 61-62.72, Acid Rain and Regulation 61-62.63, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories, State Register Document No. 4070, Legislative review is required (Attachment 4-1)***

Mr. Robbie Brown, EQC Director of Air Planning, Development and Outreach, presented this item. The Department proposes to amend R. 61-62, by removing Federal

requirements from the existing regulations due to decisions of the Court of Appeals to vacate rules. The Department proposes to amend R. 61-62.60 and R. 61-62.72 by removing all provisions of the State CAMR regulation. The Department also proposes to amend R. 61-62.63, by removing all provisions of the aforementioned MACT rules published in the Federal Register May 16, 2003, and September 13, 2004. A public hearing was conducted. (Attachment 4-2)

***Mr. Scott moved, seconded by Mr. McCall, to find for the need and reasonableness of the proposed regulation and approve it for submission to the Legislature for review. Approved.***

A verbatim transcript of these proceedings is included as part of the permanent record. (Attachment 4-3)

***Item 5: Public Hearing and Request for Final Approval – Proposed Amendment of Regulation 61-58, State Primary Drinking Water Regulations, State Register Document No. 4079, Legislative review is not required (Attachment 5-1)***

Mr. Doug Kinard, Director, Division of Drinking Water Protection, presented this item to the Board. The US Environmental Protection Agency (USEPA) promulgated a final rule in the Federal Register at 40 CFR Parts 141 and 142 on October 10, 2007 known as Lead and Copper: Short Term Regulatory Revisions and Clarifications. The rule is intended to make minor changes in sampling procedures and lead service line replacement requirements and enhance public education requirements under the Lead and Copper Rule. As required by Section 1413 of the Safe Drinking Water Act (SDWA), the State must revise its public drinking water program to include regulations that are no less stringent than the federal requirements in order to retain primary enforcement responsibility for the public drinking water supervision program. Since the changes presented in this item are required by changes to the National Primary Drinking Water Regulations, they do not require approval by the state legislature. A public hearing was conducted. (Attachment 5-2)

***Dr. Buckhouse moved, seconded by Dr. Mitchell, to find for the need and reasonableness of the proposed regulations and approve them for publication in the State Register. Approved.***

A verbatim transcript of these proceedings is included as part of the public record. (Attachment 5-3)

***Item 6: Proposed Amendments to Regulation 61-62.1, Definitions and General Requirements, and the South Carolina Implementation Plan (SIP), Legislative review is required (Attachment 6-1)***

Mr. Brown presented this item. The United States Environmental Protection Agency (EPA) promulgated a final rule referred to as the Air Emissions Reporting Requirements (AERR) in the *Federal Register* on December 17, 2008. Pursuant to its authority under section 110 of Title I of the Clean Air Act (CAA), the EPA has long required SIPs to

provide for the submission by states to the EPA of emission inventories containing information regarding the emissions of criteria pollutants and their precursors. The purpose of the AERR is to harmonize reporting requirements under the NOx SIP Call, Clean Air Interstate Rule (CAIR), and Consolidated Emissions Reporting Rule (CERR). It also removes and simplifies some existing emissions reporting requirements, which the EPA believes are not necessary or appropriate; allows states to better track changes in source emissions, shutdowns, and startups over time by using the 40 CFR 70 definition of major source for point source reporting; deletes a requirement for states to report biogenic emissions; and offers states the option of reporting emissions for certain source categories. The Department proposes to amend Regulation 61-62.1, *Definitions and General Requirements*, and the South Carolina State Implementation Plan (SIP) to make the necessary revisions to comply with the new Federal emissions reporting requirements. The Department is also proposing to amend state level reporting requirements to facilitate the collection of more detailed process level emissions inventory data (to include hazardous air pollutants (HAP) data) to insure that the National Emissions Inventory (NEI) maintained by the EPA contains the best available data.

***Mr. Kisner moved, seconded by Dr. Mitchell, to grant initial approval to publish a Notice of Proposed Regulation in the State Register to provide opportunity for public comment, to hold a staff conducted informational forum, to receive and consider comments, and allow staff to proceed with a public hearing before the Board. Approved.***

***Item 7: Administrative and Consent Orders issued by Environmental Quality Control (Attachment 7-1)***

Robin Stephens, Assistant to the Deputy Commissioner, Environmental Quality Control stated twenty-nine (29) orders had been issued with penalties of \$120,510.

***The Board accepted this item as information.***

***Item 8: Administrative Orders, Consent Orders and Sanction Letters issued by Health Regulation (Attachment 8-1)***

Mr. Ken Moore, Health Regulation Liaison, stated three (3) actions had been taken with a penalties of \$3,000.

***The Board accepted this item as information.***

***Item 9: Orders issued by the Office of Ocean and Coastal Resource Management (Attachment 9-1)***

Rheta Geddings, Director External Affairs and Enforcement, Ocean and Coastal Resource Management, stated four (4) actions had been taken with penalties of \$5,700.

***The Board accepted this item as information.***

***Item 10: Administrative and Consent Orders issued by the Bureau of Environmental Health (Attachment 10-1)***

Mike Longshore, Director of Enforcement and Regulatory Development, Bureau of Environmental Health, stated twenty-one (21) actions had been taken penalties of \$8,500. ***After discussion, the Board accepted this item as information.***

***Item 11: Handling of Request for Final Review requiring action by September 10, 2009 (RFR Docket No. 09-RFR-60 through 09-RFR-68) (Attachment 11-1)***

Mr. Roberts stated that Docket No. 09-RFR-66 and 09-RFR-67 had been withdrawn. Mr. Aughtry asked if anyone wished to conduct review conferences on any of the pending Requests for Review.

***Mr. Cooper moved, seconded by Dr. Buckhouse, to conduct a final review conference on Docket No. 09-RFR-65, Northeast Columbia Diagnostic Imaging d/b/a Innervision MRI and Imaging v. SCDHEC and to decline to conduct Final Review Conferences on the remaining requests. Approved.***

***Item 12: Agency Affairs***

***Appointment of Members and Chairperson for the South Carolina Stroke Systems of Care Study Committee (Attachment 12-1)***

Ms. Joy Brooks, Health Systems Coordinator, Heart Disease and Stroke Prevention Division, reviewed the legislative mandate requiring the establishment of this committee with the charge of the following: developing a plan for a statewide stroke system of care which must include, among other things, an urgent response system, coordination of treatment, methods for evaluating the impact of strokes in our state, a strategy for reducing stroke disparities among minorities and underserved populations, and public awareness programs for stroke education. The Committee is to be comprised of 18 members representing organizations and health care disciplines involved in stroke treatment and prevention.

***Dr. Buckhouse moved, seconded by Mr. Cooper, to approve the nominations and committee chairperson as presented. Approved.***

Mr. Aughtry asked Mr. Kisner to give an update on the status of the Savannah River Water Study Committee.

Commissioner Hunter gave updates on H1N1 and the budget.

***Item 13: Legal Report***

Mr. Roberts asked for an executive session, in order to update the Board about matters in litigation.

***Mr. Scott moved, seconded by Dr. Mitchell, to go into Executive Session for discussion of matters in litigation under the attorney-client privilege. Approved.***

While in Executive Session, no actions were taken.

***Mr. Scott moved, seconded by Dr. Mitchell, to adjourn. Approved.***

All referenced attachments are made a permanent part of these minutes.

Respectfully submitted,  
Steven G. Kisner Secretary of the Board

Minutes approved this 17th day of September 2009.

ATTEST:  
Paul C. Aughtry, III  
Chairman

## Appendix D

### GUIDELINES FOR THE STROKE SYSTEMS OF CARE STUDY COMMITTEE

#### I. PURPOSE

To develop a plan for a statewide Stroke System of Care, which must include, among other things:

- A. An urgent response system;
- B. Public awareness programs for stroke education, prevention, and rehabilitation;
- C. Methods for evaluating the impact of strokes in the state;
- D. Recognition and implementation of a standardized stroke triage and assessment tool;
- E. A strategy to reduce stroke disparities among minorities and underserved populations;
- F. Policy changes that may be needed;
- G. Coordination of treatment; and
- H. Designation of acute stroke hospitals

This report will be submitted to the General Assembly no later than December 1, 2010.

#### II. SCOPE OF ACTIVITIES

The study committee shall develop a plan for a statewide stroke system of care using the resources of both the public and private sectors incorporating flexibility to best fit the needs of each region or locality. The plan must address, but is not limited to:

- A. development and implementation of an urgent response system that is built on the Primary Stroke Center model as designated by The Joint Commission's Primary Stroke Systems model to develop a statewide system of care which will provide appropriate care to stroke patients in the timeliest manner possible.
- B. development of methods to promote greater stroke prevention and more effective rehabilitation after stroke;
- C. development of methods in which systems will be evaluated and monitored to demonstrate the impact on the burden of stroke in South Carolina;
- D. development of a public education and awareness program on the signs and symptoms of stroke;
- E. recognition and implementation of a standardized stroke triage assessment tool that will be used by all certified EMS personnel and for the education of prehospital and hospital health care providers on the signs and symptoms of stroke;
- F. identification of a strategy to reduce stroke and stroke treatment disparities among minority, rural, uninsured, and underinsured populations;
- G. recommendations for policy and legislative changes that may be needed including appropriations, designation of facilities based on stroke treatment capabilities, and program development and implementation based on national standards;
- H. compilation and assessment of peer-reviewed and evidence-based clinical research and guidelines that provide or support recommended treatment standards;
- I. assessment of the capacity of the emergency medical services system and hospitals to deliver recommended treatments in a timely fashion;
- J. coordination with the state trauma regions for the purposes of coordinating the delivery of stroke care within those regions; and
- K. creation of criteria for the designation of acute stroke capable hospitals within the State of South Carolina.

### III. ORGANIZATION

- A. Membership shall be by appointment by the DHEC Board and consist of 18 members. The Stroke Study Committee must be composed of representatives of the following disciplines nominated by the following organizations.

- 1. Neurology, SC Medical Association

2. Neuroradiology, SC Medical Association
3. Neurosurgery, SC Medical Association
4. Pediatrics, SC Chapter of the American Academy of Pediatrics
5. Emergency Medicine, SC College of Emergency Physicians
6. Rehabilitation Medicine, SC Medical Association
7. Family Medicine, South Carolina Academy of Family Physicians
8. Cardiology, South Carolina Chapter American College of Cardiology
9. Emergency Medical Services Provider, SC Emergency Medical Services Association
10. Registered Professional Nurse, SC Nurses Association
11. Licensed Physical therapist actively involved in direct stroke care and research, American Physical Therapy Association, SC Chapter
12. Representative from the SC Office of Rural Health, SC Office of Rural Health
13. Physician involved in addressing minority health issues, Palmetto Medical, Dental, and Pharmaceutical Association
14. South Carolina Hospital Association, SC Hospital Association
15. Administrator of an acute stroke rehabilitation facility, SC Hospital Association
16. American Stroke Association, AHA/ASA
17. SC DHEC- Deputy Commissioner Health Services Division, SC DHEC
18. SC DHEC- Director, Division of EMS and Trauma, SC DHEC

- B. The South Carolina Department of Health and Environmental Control Board shall appoint the members and the Chairperson of the South Carolina Stroke Systems of Care Study Committee.
- C. Vacancies occurring on the committee must be filled in the same manner as the original appointment.
- D. The study committee shall accept committee staffing and coordination under the authority of the Department of Health and Environmental Control.

- E. Members of the study committee shall serve without mileage, per diem, or subsistence.
  
- F. The Chair will be appointed by the DHEC Board from the 18 nominated appointees. A Vice-chair will be elected from the members (of the committee) from the members voting and present, providing a quorum is present.
  - 1. The Chair shall preside at meetings of the committee and assign appropriate activities to subcommittees. He will serve as lead author and reviewer of the final state plan to be submitted to the Governor and General Assembly by December 1, 2010.
  
  - 2. The Vice-Chair shall assume the duties of the Chair in his absence.
  
  - 3. A quorum must be present to transact business. A quorum is defined as fifty percent, plus one (at least 10 members) members.
  
  - 4. No Secretary will be elected. The staff of DHEC's Heart Disease and Stroke Prevention Division will carry out those functions ordinarily assumed by a secretary. These shall include:
    - a. Notification of meetings and actions of the committee.
  
    - b. The preparation of minutes of each meeting and the preservation of same
  
    - c. Special distribution of approved material to the members of the committee.
  
    - d. The compilation of reports from the committee to the Governor and General Assembly.
  
  - 5. Subcommittee Chairs shall render reports at each meeting apprising the full committee of findings and recommendations.

- a. The Chair shall appoint each of the members to one or more subcommittees to actively participate in the comprehensive assessment and final development of the state plan. The subcommittee chair shall be a member of the Study Committee and responsible for convening their subcommittee members and reporting to the committee at large on a regular basis. Expertise from members outside of the committee may be engaged at the direction of the subcommittee chair.
- b. Ad hoc committees will be appointed as necessary and chaired by a committee member.
- c. Subcommittee chairs shall be appointed by the Chair of the Study Committee.
- d. Subcommittee chairs will call meetings of their subcommittees as needed.
- e. Subcommittee Chairs will assume responsibility for the overall function of their subcommittees and will make necessary recommendations to facilitate that function.
- f. Support will be made available to subcommittees by DHEC's HDSP and AHA/ASA.

G. Meetings:

1. The agenda will ordinarily consist of the following order of business:
  - a. Call to order
  - b. Roll call
  - c. Freedom of Information Act
  - d. Old business
  - e. New business
  - f. Adjournment
2. The Stroke Systems of Care Study Committee reserves the right to enter into Executive Session.

3. Agenda items for consideration should be forwarded to DHEC's HDSP Division, or to the Chair, 30 days prior to each meeting in order to allow their dissemination to the members for review prior to the time of the meeting.
4. Attendance/Proxy Voting: proxy votes must be submitted for any meeting which the appointed member is unable to attend. Attendance will be reviewed by the Chair.
5. Conflict of Interest: Committee members shall avoid any conflict between their own respective personal, professional, or business interest and the interest of the committee. Such person shall give notice of such interest or relationship and will thereafter refrain from voting on the particular issue in which he/she has a conflict of interest.

Revised 10-07-09

## Appendix E

**South Carolina  
Stroke Systems of Care Study Committee  
SC Department of Health and Environmental Control  
1777 St. Julian Place, Columbia, SC 29204  
1st Floor McNeely Conference Room  
October 9, 2009  
10:00 a.m. – 3:00 p.m.**

### AGENDA

- |  |   |
|--|---|
| I. Call to Order                                 | Robert Adams, MD, Chair   |
| II. Roll Call                                    | Joy Brooks, SC DHEC   |
| III. Freedom of Information Act                  | Joy Brooks  |
| IV. Welcome and Introductory Remarks             | Commissioner Earl Hunter  |
| V. S* 26: Stroke Systems of Care Study Committee | Senator Darrell Jackson   |
| Sponsors' Remarks                                | Rep. Joseph Jefferson   |
| VI. Stroke Survivor Story                        | Craig and Cathedra Miller   |
| VII. Stroke Systems of Care Overview             | Robert Adams  |
| VIII. Introductions of Committee Members         | Robert Adams  |
| IX. Stroke Systems of Care: Best Practices       | Jeffrey Ranous<br>National Advocacy Department<br>American Heart Association /<br>American Stroke Association |
| X. New Committee Business                        | Robert Adams  |
| XI. Adjourn                                      | Robert Adams  |

The next meeting will be held on December 9th in the McNeely Conference Room, 1777 St. Julian Place,

10am – 3pm

POINT-OF-ORDER: Non-members must be recognized by the Chair before addressing the committee.

**South Carolina  
Stroke Systems of Care Study Committee  
Heritage Building  
1777 St. Julian Place  
1<sup>st</sup> Floor McNeeley Conference Room  
October 9, 2009  
10:00 a.m. – 3:00 p.m.**

**Members Present**

**Present**

Robert Adams, MD, Chair  
Stoney Abercrombie, MD  
Richard Foster, MD  
Deborah Bridgeman, RN  
Stacy Fritz, PhD  
Rodney Harrison, MD  
Mark McDonald, MD  
James Rogers, FACHE  
Charles (Doug) Silk, NREMT-P  
Alonzo Smith  
Nancey Tsai, MD  
Aquilla Turk, DO  
Lisa Waddell, MD

**Members Absent**

Dilantha Ellegala, MD  
Peter Hyman, MD  
Nowa Omoigui, MD  
Edward Jauch, MD  
Sheri Siegler, RN

**DHEC/AHA Staff**

Carolyn Bivona  
Mike Bobo  
Mike Byrd  
Joy Brooks  
Khosrow Heidari  
Janayah Hudson  
Earl Hunter  
Debra James  
Tony Lee  
Kay Lowder  
Jeff Ranous  
Teresa Robinson  
Yarley Steedly

**Visitors Present:** Shannon Bruning, Corinne Hilbert, Senator Darrell Jackson, Craig Miller, Cathedra Miller, Lynn Murray, Mike Peredes, and Antjuan Seawright.

**Roll Call:** Ms. Brooks conducted roll call.

**Freedom of Information Act:** Ms. Brooks read the Freedom of Information Act.

**Welcome and Introductory Remarks:** DHEC Commissioner Earl Hunter gave the welcoming remarks about this inaugural meeting of the South Carolina Stroke Systems of Care Study Committee.

**S\*26: Stroke Systems of Care Study Committee Sponsors' Remark:** South Carolina State Senator Darrell Jackson gave a legislative point of view as to why this committee is needed. He told his own personal story about why this is so important to him; his father has suffered several strokes and he saw the impact that good medical care had on his life. Senator Jackson has been in contact with several other states that have told him they are

eagerly awaiting the outcome of this committee's work, so they might be able to replicate the findings throughout the nation.

**Stroke Survivor Story:** Craig and Cathedra Miller from Charleston, S.C. gave their personal stroke survivor story that frames what the committee is doing in a personal light. Mr. Miller was a relatively young African-American male who had been diagnosed with diabetes and blood pressure problems but his doctor was satisfied with his numbers so much so he was taken off his medication a year previous to his stroke. He was very active, running three times a week, and the morning of his stroke, he ran three miles. His stroke happened in church about six years ago, when he started feeling different, then others noticed him, ushered him outside of the service, and called an ambulance. Even though he was able to answer all the questions the Emergency Medical Technicians (EMTs) asked him, and able to walk, the EMTs took him to the hospital and admitted him. Mrs. Miller told her story from the caregivers' point of view. At first she didn't know what was going to happen and was very frustrated with the physician he had at the time. Mr. Miller was in the hospital for several days, and didn't have the classic signs of a stroke survivor – no droopy mouth or slurred speech, but his left arm and leg were paralyzed and he could not walk. One of the biggest challenges for stroke survivors is rehabilitation; family support is key. He was in rehab for approximately six months, four hours a day, four days a week. They are dedicating their lives to getting the message out and have initiated several fundraising events supporting stroke awareness.

**Stroke Systems of Care Overview:** Dr. Adams gave a slide presentation on the recommendation for establishing the Stroke Systems of Care Study Committee. This included the purpose, prevention regimens, and documented how EMS should be involved. Treatment and rehabilitation steps were outlined, as well as quality improvement issues. Dr. Adams highlighted the statistics in the S.C. Stroke Burden Report and the statewide stroke initiatives for prevention and pre-hospital providers. He discussed the statewide stroke quality improvement initiatives and identified the steps the state has taken to ensure that a comprehensive plan for a statewide stroke system of care will be submitted to the Governor and General Assembly by December 2010. A copy of Dr. Adams' PowerPoint presentation, ASA Recommendations for Establishment of Stroke Systems of Care and related resources are included in each member's committee notebook.

**Introductions of Committee Members:** All members present identified themselves and gave an abbreviated description of their qualifications and specialties. Detailed biographies are included in each member's committee notebook. Dr. Tsai stated in her introduction that S.C. is the only state that does not have a rehabilitation-training program.

**Stroke System of Care Best Practices:** Jeffrey Ranous from Milwaukee, Wisconsin and working out of Dallas, Texas with the American Heart Association/American Stroke Association National Advocacy Department discussed the political obstacles of the Stroke Systems of Care in other parts of the country. He helps facilitate discussion at state and local levels on how policy can play a role in developing systems and helping further those issues with our mission in cardiovascular disease. Pre-hospital and hospital are areas of focus for policy work across the country. He acknowledged the group had already brought up a number of things in removing barriers in the pre-hospital setting: Emergency Medical Dispatch making sure there are dispatch criteria that are being used across the state uniformly, and quality assurance that the dispatchers are being able to triage the calls effectively. This will enable the dispatchers to get the calls out in such a way that EMS won't have to take valuable time when they arrive on scene to do triage and assessment. Some states have been looking into improvements in the E911 system (Enhanced 911 can identify addresses when calls are made), the development of transportation protocols and general improvements within the EMS systems, i.e. training requirements of EMS, standardization of EMS triage tools, and a data collection piece, as NEMIS is very good for S.C. Identification of certified primary stroke centers is crucial for rural locations; if not accessible, then telemedicine or acute stroke-capable facilities need to be identified. Other important pieces that states are dealing with are data capture, continuous quality improvement, and the development of a stroke registry to not only provide data for surveillance across the states, but more importantly, provide data that can drive outcomes.

Florida, Maryland, New Jersey and Massachusetts created their own state certification programs by taking in consideration other state's brain attack coalition recommendations of what should be a primary stroke center. There are not enough resources to be effective when states have certified the primary stroke centers. Mr. Ranous acknowledged that states certify other areas and have been successful with them but this is an area that is labor and resource intensive and would most likely have to depend on the legislature to make sure enough funds are available to be effective.

*Dr. Waddell stated she would contact Pam Dukes, Deputy Commissioner for Health Regulations, to come and talk with the group about the certifications that DHEC performs currently.*

*Dr. Adams stated that S.C. would benefit from a centralized location for the collection and supervision of the certifications of accredited facilities.*

**New Committee Business:** Reviewed committee appointees' roles and responsibilities, including reporting back to their respective associations, attendance requirements, signing conflict of interest forms, election of a vice-chair, proxy ballots, assignment of subcommittees and directives regarding subcommittee charge. Committee guidelines are included in members' notebooks.

Next meeting is December 9, 2009 in the McNeely conference room from 10:00 am – 3:00 pm.

Meeting adjourned.

**South Carolina  
Stroke Systems of Care Study Committee**

**SC Department of Health and Environmental Control  
1777 St. Julian Place, Columbia, SC 29204  
1st Floor McNeely Conference Room  
December 9, 2009  
10:00 a.m. – 3:00 p.m.**

**AGENDA**

- |  |  |
|--|--|
| I. Call to Order                       | Robert Adams, MD, Chair                          |
| II. Roll Call                          | Joy Brooks, SC DHEC                              |
| III. Freedom of Information Act        | Joy Brooks                                       |
| IV. Review and Approval of Minutes     | Robert Adams                                     |
| V. Emergency Medical Dispatch Overview | Steve McDade, President, SC<br>EMS Association   |
| VI. EMS Stroke Protocols               | Dr. Edward DesChamps, SC<br>EMS Medical Director |
| VII. DHEC Health Regulations Overview  | Pam Dukes, SC DHEC                               |
| VIII. New Committee Business           | Robert Adams                                     |
| Election of Co-Chair                   |  |
| Subcommittee Overview                  |  |
| Timeline for the Plan                  |  |
| IX. Adjourn                            | Robert Adams                                     |

The next meeting will be held on **March 19th** in the McNeely Conference Room, 1777

St. Julian Place, 10 am – 3pm

POINT-OF-ORDER: Non-members must be recognized by the Chair before addressing the committee.

**South Carolina  
Stroke Systems of Care Study Committee  
Heritage Building  
1777 St. Julian Place  
1<sup>st</sup> Floor McNeeley Conference Room  
December 9, 2009  
10:00 a.m. – 3:00 p.m.**

**Members Present**

**Present**

Robert Adams, MD, Chair  
Deborah Bridgeman, RN  
Stacy Fritz, PhD  
Rodney Harrison, MD  
Peter Hyman, MD  
Edward Jauch, MD  
DesChamps  
Mark McDonald, MD  
James Rogers, FACHE  
Sheri Siegler, RN  
Charles (Doug) Silk, NREMT-P  
Alonzo Smith  
Aquilla Turk, DO  
Lisa Waddell, MD

**Members Absent**

Stoney Abercrombie, MD  
Dilantha Ellegala, MD  
Richard Foster, MD  
Nowa Omoigui, MD  
Nancey Tsai, MD

**DHEC/AHA Staff**

Stacia Bell  
Carolyn Bivona  
Joy Brooks  
Mike Byrd  
Betsy Crick  
Dr. Edward  
  
Pam Dukes  
Khosrow Heidari  
Janayah Hudson  
Debra James  
Greg Kitchens  
Tony Lee  
Kay Lowder  
Teresa Robinson  
Jeff Thordahl

**Visitors Present:** Shannon Bruning, Tina Cronin, Corinne Hilbert, Lynn Murray, and Dr. Jim Walker.

**Roll Call:** Ms. Brooks conducted roll call.

**Freedom of Information Act:** Ms. Brooks read the Freedom of Information Act.

**Review and Approval of Minutes:** October 2009 Meeting Minutes were approved.

## **Emergency Medical Dispatch Overview:**

Steve McDade, President, SC EMS Association

- When calls come in to dispatchers, they begin with vital point or specific questions to ascertain the highest level of care needed.
- Dispatchers know which team of EMS staff would be better able to help at the different levels of care needed.
- Guideline questions have to be approved by Medic Control or the physician of the county.
- Dispatcher systems in SC are still voluntary; not all counties have adopted an EMD program.
- Dispatch systems operate differently in each county. Some by the Sheriff's department, some are public safety departments and some are split with EMS.
- Dispatchers have to be certified by one of several different national vendors.
- A 40-hour class is all that is needed to bring some SC centers up to the level of other states. Mr. McDade suggested that could be accomplished by having the SC Police Academy add another week to their 911-telecommunication training because all telecommunicators have to attend that course within the first year of training.
- The EMD Manager (or his designee) monitors a random selection of calls (standards require 7-10%) and they target certain calls (i.e. cardiac arrest or stroke) to make sure appropriate questions were asked and correct procedures were followed.
- There is currently no statewide guidance as to what is the priority of EMD.
- At any one time there are approximately 400 EMD workers working statewide.
- It was suggested there should be a mechanism in place to offer feedback, either good or bad for the EMD; Mr. Smith stated that in the future there would be.
- It was also suggested that it would be helpful to come up with a continuity of care - some kind of system that could follow patients through all the levels of care.
- Mr. McDade acknowledged that if this committee could come up with a statewide standard of EMD, everyone involved would embrace it.
- In order to standardize the EMD, legislation would have to be passed.

## **EMS Stroke Protocols:**

Dr. Edward DesChamps, SC EMS Medical Director

- None of SC's stroke protocols are mandated; by design they are guidelines.
- Passed around a "Suspected Stroke" handout (currently in the revision stage, could take six months or longer to approve, if you want changes, now is the time to do it).
- Presently use the Miami Emergency Neurologic Deficit (MEND) Pre-Hospital Checklist and the Reperfusion checklist – medics complete this form.
- A problem EMS and emergency room officials have noted is that they need to have a "buy-in" from attending neurologists in the hospitals.
- Local Medical Control responsibilities include overseeing a local EMS agency, which sets and approves the drugs and pharmaceutical agents that are used and recommended, setting and approving protocols and pre-hospital standing orders

that specific local service can utilize, and involvement in the education of the medics at all levels and do the QA, QI, and/or PC/PA type of review.

- If the dispatcher notes anything to do with a stroke, or if patients even suspect stroke – they should indicate symptoms, otherwise the dispatcher’s responsibility is to get the best possible EMS team to the patient and then to the appropriate hospital.
- In order to make the best EMS possible, regulatory authority over dispatch would be mandatory – but because of budgetary shortfalls, this could not be possible – they do not have the manpower to oversee it, to QI, and to keep it active.
- Education is another key point, especially in mandating triage and bypass guidelines.
- DHEC regulates EMS.
- Local hospitals determine if they will activate their cath lab or not – the local EMS director can recommend but does not have authority to demand it.

### **DHEC Health Regulations Overview**

Pam Dukes, Deputy Commissioner for Health Regulations, SC DHEC

- Distributed a handout entitled “SC Trauma and Perinatal Systems,” comparing the differences between the two.
- The Trauma system is a fragile system because of low funding - \$28 million is needed -the first year of funding, they received \$4 million plus \$2 million in one-time funding.
- All funding DHEC receives for trauma is passed through to hospitals, physicians and the top 10 county EMS providers and councils except for 2.5% (pays one staff member and some operating expenses).
- Hospitals are supposed to be inspected yearly, but because of budget cuts, it happens approximately every two years.
- DHEC estimates that it costs between \$1,200 - \$1,400 to do an in-state inspection.
- The ACS estimates that it costs between \$15,000 – \$20,000 to do an out-of-state inspection.
- The only way DHHS gets involved is by individual patients getting Medicaid.
- DHEC licenses every hospital and regulates all nursing homes in the state.
- One-third of all hospitals have a trauma designation, two-thirds do not.
- There are operational guidelines to allow EMS to take the sickest patient to the nearest hospital with a physician, with or without a trauma designation. Most of the state is covered with a 30-minute drive to a designated trauma site.
- The global protocol authority, indicating which patients go to which facility, was developed by the Trauma Advisory Committee. On the local level, it is worked out by the service in conjunction with the local medical physician as to which facility is most appropriate.
- Physicians who are sometimes far removed from those providers control the Medical Control at the local level in the rural areas of the state.
- Pam Dukes will try to estimate what it would cost to get 40 of the state’s 60 hospitals up to the level of a trauma designated stroke center.

## **New Committee Business**

**Election of Vice-Chair:** Edward Jauch, MD was unanimously elected.

### **Subcommittee Overview:**

Descriptions and deliverables of each subcommittee were distributed and should be placed in each committee members' guidebooks. Support staff for each subcommittee were identified and introduced.

The following subcommittee members and chairs were suggested:

#### **1. Urgent Response System**

- Peter Hyman, MD
- Edward Jauch, MD – Chair
- Charles (Doug) Silk, NREMT-P
- Alonzo W. Smith

#### **2. Public Awareness, Education, Prevention, and Disparities – Chair - TBD**

- Stoney Abercrombie, MD
- Mark McDonald, MD
- Nowa Omoigui, MD
- Sheri Siegler, RN
- Lisa Waddell, MD

#### **3. Rehabilitation**

- Stacy Fritz, PhD - Chair
- James Rogers, FACHE
- Nancey Tsai, MD

#### **4. Hospital-Based Stroke Treatment**

- Robert Adams, MD – Chair
- Deborah Bridgeman, RN
- Dilantha Ellegala, MD
- Richard Foster, MD
- Rodney Harrison, MD
- Aquilla Turk, DO

All four subcommittees are to consider the last element as required in the legislation, **Policy, Advocacy, Legislation, and Program Evaluation** in their work. Dr. Tony Lee with DHEC's Division of HDSP, Khosrow Heidari with DHEC's Division of

Epidemiology, and Yarley Steedly with the AHA will be available to assist all subcommittees.

- Dr. Adams and staff will work on a suggested template for the subcommittees.
- Ideally, each subcommittee will come up with three to five meaningful, high-impact, prioritized recommendations.
- Dr. Adams asked if Yarley Steedly and the staff support would work together to get the last five similar reports that have been prepared, i.e. epilepsy, and examine them to see how big they are and what became of them after they were presented to the Legislature.

**Timeline for the Plan:**

- Each subcommittee needs to come to the next meeting with some recommendations and have the chair or a subcommittee member highlight their first draft to the full committee.
- Dr. Adams reminded everyone that the next meeting was very important and if someone would not be able to attend, they need to send someone in their place.
- Another meeting will be held sometime in May 2010.
- The summer months (June and July) will be used to get some external review of the recommendations – suggested the state of Maryland as one possibility.

Dr. Adams asked if everyone could check their calendars and get back with the staff to see if March 19 would be an acceptable next meeting date for all.

Subcommittees were asked to meet as soon as the formal meeting ends.

Next meeting is tentatively planned for March 19, 2010 in the McNeely conference room from 10:00 am – 3:00 pm.

Meeting adjourned.

**South Carolina  
Stroke Systems of Care Study Committee**

**SC Department of Health and Environmental Control  
1777 St. Julian Place, Columbia, SC 29204  
1st Floor McNeely Conference Room  
March 19, 2010  
10:00 a.m. – 3:00 p.m.**

**AGENDA**

- |   |                                    |
|---|------------------------------------|
| <b>I. Call to Order</b>   | <b>Robert Adams, MD,<br/>Chair</b> |
| <b>II. Roll Call</b>  | <b>Joy Brooks, DHEC</b>            |
| <b>III. Freedom of Information Act</b>  | <b>Joy Brooks</b>                  |
| <b>IV. Review and Approval of Minutes</b>   | <b>Robert Adams</b>                |
| <b>V. Review of Subcommittees' charge,<br/>Introduction of Presentations of Subcommittee<br/>Findings and Recommendations</b> | <b>Robert Adams</b>                |
| <b>VI. Urgent Response System Subcommittee Presentation</b>   | <b>Edward Jauch, MD</b>            |
| <b>VII. Public Awareness, Education, Prevention,<br/>and Disparities Subcommittee Presentation</b>                            | <b>Stoney<br/>Abercrombie, MD</b>  |

**VIII. Rehabilitation Subcommittee Presentation**

**Stacy Fritz**

**IX. Hospital-Based Stroke Treatment Subcommittee  
Presentation**

**Robert Adams**

**X. Discuss Compilation of State Plan**

**Robert Adams**

**XI. Review of Timeline for Internal and External  
Review and Submission**

**Robert Adams**

The next meeting will be held on **May 7, 2010** in the McNeely Conference Room,  
1777 St. Julian Place, 10am – 3pm

**South Carolina  
Stroke Systems of Care Study Committee  
Heritage Building  
1777 St. Julian Place  
1<sup>st</sup> Floor McNeeley Conference Room  
March 19, 2010  
10:00 a.m. – 1:15 p.m.**

**Members Present**

Stoney Abercrombie, MD

Stacy Fritz, PhD

Edward Jauch, MD, Chair  
James Rogers, FACHE

Sheri Siegler, RN  
Aquilla Turk, DO

**Members Present by Proxy**

Robert Adams, MD, Present via  
teleconference with Dr. Richard Foster, MD  
via teleconference (Jauch as proxy)  
Deborah Bridgeman, RN with Maggie Bobo as  
proxy  
Peter Hyman, MD with Dr. Jauch as proxy  
Charles (Doug) Silk, NREMT-P, with  
Schanen Lyons as proxy

Alonzo Smith with Greg Kitchens as proxy  
Lisa Waddell, MD with Dr. Abercrombie as  
proxy

**Members Absent**

Dilantha Ellegala, MD  
Rodney Harrison, MD  
Mark McDonald, MD  
Nowa Omoigui, MD  
Nancey Tsai, MD

**DHEC/AHA Staff Present**

Stacia Bell  
Carolyn Bivona  
Joy Brooks  
Rhonda Chatham  
John Costupoulas  
Betsy Crick  
Khosrow Heidari  
Janayah Hudson  
Stephanie Huston  
Debra James  
Teresa Robinson  
Yarley Steedly

**Visitors Present:** Kelly Inghand, Schawen Lyons, Lynn Murray, Dr. Souvik Sen, Iris Smith, Alissa Thebarga, and Janet Walker.

**Call to Order:** Dr. Jauch presided.

**Roll Call:** Ms. Brooks conducted roll call.

**Freedom of Information Act:** Ms. Brooks read the Freedom of Information Act.

**Review and Approval of Minutes:** December 2009 Meeting Minutes were approved.

**Reviewed the Subcommittees' charge and the members of each subcommittee.**

- See "Stroke Systems of Care Study Committee Subcommittee Description and Deliverables" document in each members notebooks.

## **DRAFT RECOMMENDATIONS BY SUBCOMMITTEES**

### **Hospital-Based Stroke Treatment Subcommittee Recommendations: Presented by Dr. Adams**

1. All hospitals with emergency rooms are required to have a plan for stroke treatment on file with DHEC. The community will be informed of the contents of the plan. Everyone has a plan and everyone participates in one of the four following tiers, which are based on the institution's infrastructure and commitment:
  - Comprehensive: ICUs staffed by personnel in advanced neuro-critical care, radiological, surgical, and research capabilities
  - Primary Stroke Centers are well defined by TJC and HFAP accreditation agencies. A handout entitled "TJC and HFAP Accreditation Summaries" was distributed during the presentation
  - Acute Center: Can deliver services with telemedicine capabilities
  - Emergency or referral site: Needs to have an awareness of stroke
2. DHEC will perform bi-annual evaluations on all hospitals unless something changes in their capabilities, at which time the hospital can request an evaluation earlier than scheduled.

Questions for future consideration:

- How will all the free-standing health emergency departments and urgent care centers be incorporated into the system?
- Did the subcommittee look at or recommend GWTG for performance measures and/or data collection? It was discussed that there should be a standard registry and GWTG has a tool that could be used, it was noted that some rural facilities do not participate in GWTG and therefore do not capture this necessary data.
- What kind of information would one collect and who will absorb costs for fiscal impact statement?
- What kind of data are we currently collecting?

**Urgent Response System Subcommittee Recommendations:  
Presented by Dr. Jauch**

1. State 9-1-1 Service

- Establish a voluntary 9-1-1 dispatcher certification program
- Provide an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke (voluntary use)
- Create and distribute training materials on the EMD related to stroke

2. EMS Dispatch Protocols

- Provide an EMD protocol to all dispatch agencies related to stroke (voluntary use)
- Create and distribute training materials on the EMD related to stroke
- Recommend future consideration of SC DHEC oversight of dispatch centers

3. EMS Triage Assessment Tool

- Develop a South Carolina specific tool for the on-scene assessment of potential stroke patients (SCENE Tool)
- Develop and provide education on the on-scene tool
- Ensure compliance with current American Stroke Association (ASA) / ECC guidelines
- Utilize statewide EMS NEMSIS II reporting to perform quality improvement processes to ensure adherence SCENE Tool use and suitability of tool

4. EMS Treatment Protocol

- Develop and distribute suspected stroke protocol for statewide use
- Ensure compliance with current ASA / ECC guidelines

5. EMS Transport and Triage Protocol

- Develop SC specific triage protocol utilizing the recommendation of the Hospital Based Stroke Treatment subcommittee identifying the 4 levels of stroke care capability facilities
- Identify non-stroke centers, work on integrating these sites into system of care with locals
- Consider developing recommendations for scene activation of air medical services in areas not served by stroke centers
- Require DHEC to send the list of all stroke enabled hospitals and primary comprehensive stroke centers as defined by DHEC to all licensed EMS providers
- Ensure compliance with current ASA / ECC guidelines
- Utilize statewide EMS reporting to perform quality improvement processes to ensure adherence to recommendations

6. Different levels of hospital care:

- Level 1 = Comprehensive Stroke Center
- Level 2 = Primary Stroke Center
- Level 3 = Stroke Enabled (telemedicine) Hospital
- Level 4 = Non Stroke Centers

**Public Awareness, Education, Prevention, and Disparities Recommendations:**

**Presented by Dr. Stoney Abercrombie**

1. Stroke Prevention

- Support “Give Me Five for Stroke”
- More HTN specialists in SC
- Speaker’s Bureau
- Enhance community education by Primary Stroke Centers
- NCQA Health/Stroke Certification for primary care practices

2. Public Education and Awareness Programs

- Develop & implement a comprehensive multi-media stroke prevention campaign
- Encourage Primary Stroke Centers to develop more comprehensive public education programs
- Integrate messages of stroke prevention into the REACH South Eastern African American Center of Excellence in the Elimination of Disparities in Diabetes (SEACEED) diabetic programs in SC

- Support AHA events
3. Reduce Stroke Treatment Disparities
    - Increase faith-based organizations for SYH
    - More PTES Ambassadors
    - More Primary Stroke Centers
    - Partner with SC Primary Health Care Association & State Office of Rural Health
    - Explore possibility of stroke awareness education by Welvista to those receiving free medications
    - Work with network of free clinics in SC to provide stroke awareness education to their clients

**Rehabilitation Subcommittee Recommendations:  
Presented by Dr. Stacy Fritz**

1. Increase Medicaid coverage to include stroke rehabilitation in free-standing rehab hospitals and home health.
2. Suggest incentives to recruit and retain therapists such as tuition waivers, tax credits, or limited state income tax to meet this need in rural areas.
3. Fund resources to develop and maintain a comprehensive website with printable materials that includes information across the continuum of care including acute stay to home modifications and community resources.
4. Produce a video for hospitals or other facilities to use on patient education channels to educate patients with stroke about their rehabilitation and their risk for subsequent strokes.
5. Develop a standardize algorithm for discharge for health care practitioners and families.
6. Have a standardized discharge packet that patients can go home with.
7. A comprehensive evaluation registry.

Most subcommittees recommended some type of stroke registry, which must include mandatory reporting of a core set of data with options for additional data inclusion. This can aid in program evaluation, evaluation of stroke care in the state, and aid in identifying underserved areas.

**Review Timeline**

- Each subcommittee will review, revise, and submit their prioritized top three recommendations before the next meeting. Also begin to think about the costs associated with those recommendations.
- All recommendations will be combined into one working document. The full committee will prioritize and approve the document during the next committee meeting, tentatively scheduled for May 7, 2010.

- The approved version will then go out for external review and commentary.
- The September meeting will incorporate and discuss the information gathered in the external review process.
- The final master document is due to the General Assembly in December 2010.

Presentations are attached.

Next meeting is tentatively planned for May 7, 2010 in the McNeely conference room from 10:00 am – 3:00 pm.

Meeting adjourned.

**South Carolina  
Stroke Systems of Care Study Committee**

**SC Department of Health and Environmental Control  
1777 St. Julian Place, Columbia, SC 29204  
1st Floor McNeely Conference Room  
May 7, 2010  
10:00 a.m. – 3:00 p.m.**

**AGENDA**

- |   |                                    |
|---|------------------------------------|
| <b>I. Call to Order</b>   | <b>Robert Adams, MD,<br/>Chair</b> |
| <b>II. Roll Call</b>  | <b>Joy Brooks, SC DHEC</b>         |
| <b>III. Freedom of Information Act</b>  | <b>Joy Brooks</b>                  |
| <b>IV. Review and Approval of Minutes</b>   | <b>Robert Adams</b>                |
| <b>V. Legislative Process Overview</b>  | <b>Yarley Steedly, AHA</b>         |
| <b>VI. Stroke Systems Impact Reporting System/ SC<br/>DHEC GIS mapping for SC Stroke System of Care</b> | <b>Khosrow Heidari</b>             |
| <b>VII. Urgent Response System Subcommittee Presentation</b>  | <b>Edward Jauch, MD</b>            |
| <b>VIII. Public Awareness, Education, Prevention,<br/>and Disparities Subcommittee Presentation</b>     | <b>Stoney<br/>Abercrombie, MD</b>  |

- |   |                     |
|---|---------------------|
| <b>IX. Rehabilitation Subcommittee Presentation</b>                             | <b>Stacy Fritz</b>  |
| <b>X. Hospital-Based Stroke Treatment Subcommittee Presentation</b>             | <b>Robert Adams</b> |
| <b>XI. Discuss Prioritization of Recommendations for Final Draft</b>            | <b>Robert Adams</b> |
| <b>XII. Committee Approval of Recommendations to Submit for External Review</b> | <b>Robert Adams</b> |
| <b>XIII. Identify External Review Process, Entities/Individuals</b>             | <b>Robert Adams</b> |

The next meeting will be held on **September 10, 2010**  
in the McNeely Conference Room, 1777 St. Julian Place, 10am – 3pm

**South Carolina  
Stroke Systems of Care Study Committee  
Heritage Building  
1777 St. Julian Place  
1<sup>st</sup> Floor McNeeley Conference Room  
May 7, 2010  
10:00 a.m. – 2:30 p.m.**

**Members Present**

Stoney Abercrombie, MD  
Robert Adams, MD, Chair  
Deborah Bridgeman, RN  
Stacy Fritz, PhD  
Edward Jauch, MD  
Mark McDonald, MD  
James Rogers, FACHE  
Sheri Siegler, RN  
Alonzo Smith  
Lisa Waddell, MD

**Members Present by Proxy**

Dr. Richard Foster, MD via teleconference  
with Jimmy Walker as proxy  
  
Peter Hyman, MD with Dr. Jauch as proxy  
Charles (Doug) Silk, NREMT-P, with Dr.  
Jauch as proxy  
Aquilla Turk, DO with Dr. Jauch as proxy

**Members Absent**

Dilantha Ellegala, MD  
Rodney Harrison, MD  
Nowa Omoigui, MD  
Nancey Tsai, MD

**DHEC/AHA Staff Present**

Betsy Barton  
Carolyn Bivona  
Maggie Bobo  
Joy Brooks  
Mike Byrd  
Betsy Crick  
Khosrow Heidari  
Debra James  
Greg Kitchens  
Kay Lowder  
Teresa Robinson  
Yarley Steedly

**Visitors Present:** Megan Kirby, Lynn Murray, Mike Paredes, and Iris Smith.

**Call to Order:** Dr. Adams presided.

**Roll Call:** Ms. Brooks conducted roll call.

**Freedom of Information Act:** Ms. Brooks read the Freedom of Information Act.

**Review and Approval of Minutes:** March 2010 Meeting Minutes were approved.

**Legislative Process Overview:** Ms. Yarley Steedly with the American Heart Association gave a brief presentation of the steps involved in preparing the Final Report and the process of submitting the report to the General Assembly. She also included the legislative process that is involved when a report like ours is submitted. It was recommended that three levels of reports be submitted because of the poor economic conditions that are anticipated for the next few years in our state:

1. A top level wish list
2. A pared down version
3. A bare bones minimum

Ms. Steedly reminded everyone that the work is not finished when the report is completed; there will be meetings and calls to make to your representatives, the lobbying team will help with setting up meetings and talking with the legislators.

**Stroke Systems Impact Reporting System/GIS mapping for SC Stroke System of Care:** Presented by Khosrow Heidari, who also distributed a handout entitled “Logic Model: Stroke-Related Surveillance.” Khosrow suggested that we, as a state, need to have a different modality of collecting data besides the BRFSS. He stated that in order for his peers to get information, this committee has to define what it is that we need. The committee asked “with all the information that we currently have, what could we glean from all the information that we have if everything was linked?” What the epidemiologists/researchers currently know is the time of the pick up, who picks them up, where they were delivered, the symptoms they presented, if they received tPA and when they were released from the hospital. They don’t know when or why not if they didn’t get tPA, they also don’t know when released from rehab.

# **SECOND DRAFT RECOMMENDATIONS BY SUBCOMMITTEES:**

## **Urgent Response System Subcommittee Presentation:**

### **Presented by Dr. Edward Jauch**

#### State 9-1-1 Service

- Establish a voluntary 9-1-1 dispatcher certification program
- Provide an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke (voluntary use)
- Create and distribute training materials on the EMD related to stroke

#### EMS Dispatch Protocols

- Provide an EMD protocol to all dispatch agencies related to stroke (voluntary use)
- Create and distribute training materials on the EMD related to stroke
- Recommend future consideration of SC DHEC oversight of dispatch centers

#### EMS Triage Assessment Tool

- Develop a South Carolina specific tool for the on-scene assessment of potential stroke patients (SCENE Tool)
- Develop and provide education on the on-scene tool
- Ensure compliance with current American Stroke Association (ASA)/ECC guidelines
- Utilize statewide EMS NEMSIS II reporting to perform quality improvement processes to ensure adherence SCENE Tool use and suitability of tool

#### EMS Treatment Protocol

- Develop and distribute suspected stroke protocol for statewide use
- Ensure compliance with current ASA/ECC guidelines

## EMS Transport and Triage Protocol

- Develop SC-specific triage protocol utilizing the recommendation of the Hospital Based Stroke Treatment subcommittee identifying the 4 levels of stroke care capability facilities
- Identify non-stroke centers, work on integrating these sites into system of care with locals
- Consider developing recommendations for scene activation of air medical services in areas not served by stroke centers
- Require DHEC to send the list of all stroke enabled hospitals and primary comprehensive stroke centers as defined by DHEC to all licensed EMS providers
- Ensure compliance with current ASA/ECC guidelines
- Utilize statewide EMS reporting to perform quality improvement processes to ensure adherence to recommendations

### Different levels of hospital care:

- Level 1 = Comprehensive Stroke Center
- Level 2 = Primary Stroke Center
- Level 3 = Stroke Enabled (telemedicine) Hospital
- Level 4 = Non Stroke Centers

## **Public Awareness, Education, Prevention, and Disparities Subcommittee Recommendations:**

### **Presented by Dr. Stoney Abercrombie**

#### Stroke Prevention

- **Public Policy Approach:** Assure adequate resources for implementing a broad suite of population-based policy system approaches that have the greatest promise to prevent, treat, & control hypertension; implementing population-based approaches & initiatives to control blood pressure.
- **Systems Approach:** Encourage more HTN specialists in SC.

### Public Education and Awareness Programs

- Develop & implement a comprehensive multi-media stroke prevention campaign to general public and enhanced emphasis of Stroke Awareness Month.
- Encourage Primary Stroke Centers to develop more comprehensive public education programs.

### Reduce Stroke Treatment Disparities

- Increase the number of SYH and PTES initiatives in faith-based and other community-based organizations.
- Support the plan to increase the numbers and distribution of Primary Care Stroke centers in SC.
- Promote stroke education awareness programs by health care organizations serving non-insured or under-insured populations.

### Evaluation

- Data regarding SC knowledge of signs and symptoms of stroke will be gathered on an ongoing basis through BRFSS.
- Process measures of recommendation to be monitored.

### Fiscal

- Financial support to DHEC for more comprehensive multi-media campaign.
- Financial support for DHEC to implement more SYH and PTES initiatives (toolkits & staff time).
- Financial support for training of more hypertension specialists and training in ASLS curriculum.

Joy Brooks stated that DHEC could quantify the above numbers. Yarley Steedly stated that the AHA could determine how many states get state funding for this as opposed to how many get federal funding.

## **Rehabilitation Subcommittee Recommendations:**

### **Presented by Dr. Stacy Fritz**

- Increase Medicaid coverage to include stroke rehabilitation in free-standing rehab hospitals and home health.
- Incentives to recruit and retain therapists such as tuition waivers, tax credits, or limited state income tax to meet this need in rural areas.
- Fund resources to develop and maintain a comprehensive website with printable materials that includes information across the continuum of care, including acute stay to home modifications and community resources.
- Produce a video for hospitals or other facilities to use on patient education channels to educate patients with stroke about their rehabilitation and their risk for subsequent strokes.
- Develop a standardize algorithm for discharge location to help guide health care practitioners and families in the decision.
- Have a standardized discharge packet that included printouts from and refers patients to aforementioned website.
- A comprehensive evaluation registry.

Fiscal Impact: The cost savings from preventing or limiting recurrent strokes or subsequent hospitalizations is clear.

## **Hospital-Based Stroke Treatment Subcommittee Recommendations:**

### **Presented by Dr. Robert Adams**

All hospitals with emergency rooms are required to have a plan for stroke treatment on file with DHEC. The community will be informed of the contents of the plan. Everyone has a plan and everyone participates in one of the four following tiers, which are based on the institution's infrastructure and commitment:

- Comprehensive: ICUs staffed by personnel in advanced neuro-critical care, radiological, surgical, and research capabilities
- Primary Stroke Centers are well defined by TJC and HFAP accreditation agencies. A handout entitled "TJC and HFAP Accreditation Summaries" was distributed during the presentation
- Acute Center: Can deliver services with telemedicine capabilities

- Emergency or referral site: Needs to have an awareness of stroke

DHEC will perform bi-annual evaluations on all hospitals unless something changes in their capabilities, at which time the hospital can request an evaluation earlier than scheduled.

Dr. Adams stated the committee should also create a Stroke Systems Development and Implementation office within DHEC with a few hundred thousand dollars to keep this effort alive. This committee should be kept alive with enough funding to pay for staff support. Tell the legislators that we will come back in a few years and see how the reform bill is working. We want funds to study to see how much money we can save by treating people better with rehab. We want to find out where we can put money to best suit the needs of the people of the state. Dr. Adams feels that DHEC should request funds for this office.

Debbie Bridgeman and Mr. Rogers asked to have a more formal type of GAP analysis done.

#### **Discuss Prioritization of Recommendations for Final Draft:**

Dr. Adams suggested that the subcommittee heads and support staff get together and prioritize the recommendations and develop a final draft.

#### **Committee Approval of Recommendations to Submit for External Review:**

The Stroke Association will come up with five organizations that would be appropriate to review the final report. It was also suggested that the following be requested to review, as well:

- Hospital Association
- EMS Association
- DHEC's legislative and executive staff

It is recommended that success stories be added to the report.

#### **Review Timeline**

- The approved combined version will go out for external review and commentary in June and July.

- The September meeting will incorporate and discuss the information gathered in the external review process.
- The final master document is due to the General Assembly in December 2010.

This committee will be represented at the Tri-State Stroke Summit in Durham, NC. Joy Brooks and Carolyn Bivona will present the committees' findings May 21, 2010.

Next meeting is tentatively planned for September 10, 2010 in the McNeely conference room from 10:00 am – 3:00 pm.

Meeting adjourned.

**South Carolina  
Stroke Systems of Care Study Committee**

**SC Department of Health and Environmental Control  
Cecil Tillis Center  
2111 Simpkins Lane, Columbia, 29204  
Oct 25, 2010  
10:00 a.m. – 3:00 p.m.**

**AGENDA**

- |   |                                |
|---|--------------------------------|
| <b>I. Call to Order</b>                   | <b>Robert Adams, MD, Chair</b> |
| <b>II. Roll Call</b>                      | <b>Joy Brooks, DHEC</b>        |
| <b>III. Freedom of Information Act</b>    | <b>Joy Brooks</b>              |
| <b>IV. Review and Approval of Minutes</b> | <b>Robert Adams</b>            |
| <b>V. Review of the Stroke State Plan</b> | <b>Robert Adams</b>            |
| <b>VI. Timeline for External Review</b>   | <b>Robert Adams</b>            |
| <b>VII. Final Plan Preparation</b>        | <b>Robert Adams</b>            |
| <b>VIII. Adjourn</b>                      | <b>Robert Adams</b>            |

The next meeting will be held via teleconference and closed to committee members only  
on **November 15, 2010**

**South Carolina  
Stroke Systems of Care Study Committee  
Cecil Tillis Center**

**2111 Simpkins Lane, Columbia, 29204**

**October 25, 2010**

*(Rescheduled meeting from originally scheduled Sept. 10, 2010)*

**10:00 a.m. – 2:30 p.m.**

**Members Present**

Robert Adams, MD, Chair

Deborah Bridgeman, RN

Rick Foster, MD

Stacy Fritz, PhD

Jason Haynes

Robert Hubbard, MD

Melinda Merrill, MPH

Charles (Doug) Silk, NREMT-P

Lisa Waddell, MD

**Members Present by Proxy**

Stoney Abercrombie, MD with Dr. Adams  
as proxy

Peter Hyman, MD with Dr. Adams as proxy

Edward Jauch, MD with Dr. Adams as  
proxy

Nancey Tsai, MD with Dr. Adams as proxy

Aquilla Turk, DO with Dr. Adams as proxy

**Members Absent**

Dilantha Ellegala, MD

Rodney Harrison, MD

Nowa Omoigui, MD

Jim Rogers, FACHE

**DHEC/AHA Staff Present**

Stacia Bell

Carolyn Bivona

Maggie Bobo

Joy Brooks

Betsy Crick

Owens Goff

Khosrow Heidari

Dr. Tony Lee

Kay Lowder

Teresa Robinson

**Visitors Present:** Amy Edmunds, Kelly Hawsey, Lynn Murray, Iris Smith and Laura Yaap.

**Call to Order:** Dr. Adams presided.

**Roll Call:** Ms. Brooks conducted roll call.

**Freedom of Information Act:** Ms. Brooks read the Freedom of Information Act.

**Introduction of New Members:** Dr. Robert Hubbard, Melinda Merrell and Jason Haynes were formally introduced and recognized.

**Review and Approval of Minutes:** May 2010 Meeting Minutes were approved.

Dr. Adams thanked Joy, Carolyn and Betsy along with their staff for their leadership and support with completing the State Plan. He further thanked the subcommittees for their work on completing their reports.

Dr. Adams reminded the committee that the document should be clear and concise for the State Legislature. We would like to submit the State Plan by November 30, 2010, so all external and organizational reviews need to be completed quickly.

Committee members are required to provide nominating organizations with a copy of the final State Plan during the external review period. Formal written reviews from committees' nominating organizations will be needed to assure the agency has seen and agreed to the plan.

## **FINAL DRAFT RECOMMENDATIONS BY COMMITTEE MEMBERS:**

### **Table of Contents**

- No recommendations

### **Executive Summary**

- To be completed following external review

### **Telemedicine/GWTG/Primary Stroke Center Map**

- Map will show revised Telemed locations (12) to include Greenville & Springs (Lancaster)-Dr. Adams will confirm

- Primary Stroke Centers current
- TJC sites are current
- GWTG current

### **Burden of Stroke**

- Revise language in the 1<sup>st</sup> paragraph.
- Recommendation to rearrange bolded sentence from the 3<sup>rd</sup> bullet point.
- Recommendation to add language referring to gender or ethnic disparities to highlight section.
- Recommendation to add rural urban disparity language to section identifying counties.
- Recommendation by Doug Silk to include maps illustrating disparate counties. Joy indicated maps with this information already exist within the document.
- Recommendations to add headings or text boxes including three impactful or key points that highlight the sections. (Drs. Adams and Waddell)
- Recommendation by Dr. Adams to remove 1<sup>st</sup> bullet that begins with “The overall crude.”
- Recommendation by Dr. Adams to add bullet to indicate the young rate of stroke.
- Khosrow Heidari will confirm the stat of 3.8% coverage by Medicaid or other governmental support.
- Recommendation by Khosrow Heidari to combine hospitalizations with emergency room costs in an effort to increase percentages.

### **Developing a State Plan for Stroke**

- Recommendation to place procedural items later in the document, which after discussion, was decided against. This section is needed to provide clarity and creditability to the document.
- Titles checked for accuracy.

## **Public Awareness, Education, Prevention, and Disparities Subcommittee**

### **Recommendations:**

- Highlight “while mortality rates are improving for both Whites and blacks” in the assessment section.
- Maps are fine to illustrate stroke mortality rates per county.
- Joy Brooks confirmed that there are nine Primary Stroke Centers in SC.
- Recommendation to highlight Stroke Registry or bring into the next bullet where gaps are discussed, or final bullets to track stroke. Dr. Adams questioned why a stroke registry would be beneficial to SC.
- Khosrow Heidari reiterated that BRFSS is a telephone survey of adults in SC, which limits its precision and its usefulness for epilogical study. A registry is needed in order to understand the depth of the problem and follow up with the individuals that fall victim to the stroke condition. Khosrow feels that with this understanding, it would better support the justification for a registry.
- Recommendation by Dr. Adams that while we have some information from BRFSS, this is a limited phone survey, and what is needed to track the incidence, impact, and cost of stroke in the state is the development of a comprehensive stroke registry.
  
- **Recommendation Section Changes**
  - Revise #1 from “system chances” to “system changes.”
  - Revise #1b from “increased number of hypertension specialists” to “support measures to.”
  - Revise #3a from “improve adherence” to “support measures to improve adherence.”
  - Revise #3c & #3d to #4a & #4b. Recommendation to add #5 to fund stroke registry.
    - Revise the new 4b from “evaluate the state of the state” to “comprehensively evaluate and track the impact of the specific recommendations from the above section in terms of interventions and policy and inherence.”
  
- **Fiscal Impact Section Changes**
  - Dr. Adams questioned whether section is worded strongly enough.
  - Melinda Merrill feels that points are made, yet wonders how bullets relate back to previous section.

- Dr. Waddell provided clarification on bullets.
- Dr. Adams recommended removing bullets to alleviate confusion.

**Urgent Response System Subcommittee Recommendations:**

- Dr. Adams requested approval from Jason and Doug as to whether the assessment of current resources or gaps has been clearly identified.
- Further clarification is needed in identifying the gap for EMS. While the Emergency Medical Response System in SC has many of the needed elements, we lack a coordinated urgent response system.
- Dr. Adams requested clarification on whether the recommendations listed are items DHEC can implement or if assistance is needed from the legislature.
- Dr. Adams requested clarification on last paragraph of page 19 on “Stroke Assessment, Triage and Transport Protocols.” Doug Silk provided guidance on the state’s approval of these protocols. Citing these items (#3 – last paragraph on pg.19) would need to go through administrative or regulations for DHEC to have the authority to enforce these items. (Referencing Regulation 41-7 as the basis for this requirement.) Jason Haynes pointed out the SC EMS Protocol Illustration on page 107 that will be rolled out officially on November 1<sup>st</sup>, pointing out that at this time, it is a voluntary requirement.
- Dr. Rick Foster stated two points, the similarities to SC Mission: Lifeline where (1) the system does not support a true statewide application of stroke protocols. Decision left up o individual agencies to make the determination, and (2) funding.
- Carolyn Bivona indicated that SC EMS Medical Control Committee has approved the stroke protocols. Dr. Jauch and the Urgent Response Subcommittee developed the protocols and submitted them several months prior. Carolyn will edit language when EMS provides final approval. This will cover Assessment, Transport and Triage.
- **Recommendation Section Changes**
  - Recommendation from Dr. Adams - statement suggesting we know what to do but currently, this system is voluntary and we lack the legislative authority to ensure that these protocols are adopted statewide, and the various regions will work together towards this. Debbie Bridgeman recommends this be placed above #1 identifying we have these components, however these are where are gaps are.

- Recommendation by Dr. Rick Foster, prior to Recommendation section - add statement that various bodies have done all they could by establishing statewide protocols, but the limiting factors that will tie into the recommendation will be to provide legislative authority at a state level and funding for training.
- Per Doug Silk, there is currently no legislation nor regulating body in SC for 9-1-1 services. Any items in #1 & #2 are voluntary. Dr. Adams requested that Doug Silk, Dr. Rick Foster, and Jason Haynes collaborate and formulate what is needed for the section.
- Issue is local control for 9-1-1 services.
- Dr. Adams feels a statement is needed that describes legislative/regulatory gaps.
- Jason Haynes stated that Regulation 61-7 is being currently rewritten - many of the recommendations can be taken back and written into the new regulation.
- Dr. Adams recommended condensing section.
- Dr. Adams reconsidered last paragraph on page 19. Dr. Rick Foster recommended that it be moved further up into document. Dr. Foster stated that providers are working together, but the current legislative authority does not allow us to create an effective statewide plan or monitor its application and use. Dr. Adams is in agreement. Everything has been done up to a point where legislative and regulatory action is needed. This would cover the issues of enforcement, consistency in levels of training, and impact.
- Dr. Foster recommended the need to convey that creating this universal 9-1-1 statewide system would not only benefit stroke, it also would create a true statewide system for emergency response. The committee emphasized that addressing the problems of emergency care for stroke will have additional benefits for the care of other patients with emergency conditions in the state such as heart attacks, and chronic arrest in the field. This would replace last paragraph on pg. 19, possibly in an impactful bullet.

- **Fiscal Impact**

- Joy Brooks requested input from subcommittee on a fiscal impact statement after many recommendations were addressed regarding funding for training.

- Dr. Foster indicated that there is a cost involved and asked who would incur this cost.
- Recommendation by Dr. Adams to add a direct statement that this will require an investment and resources from sources outside the agencies involved. Agencies cannot internally fund it, but money will be required, otherwise this important aspect of the system of care will not be implemented properly.
- Joy Brooks asked about a gap analysis or fiscal analysis on what it would take to move emergency 9-1-1 or dispatch under the state EMS umbrella. Costs could be determined if this could be managed through EMS.
- Dr. Lisa Waddell sought guidance on whether there is evidence or are states with a system already in place to build the case for SC as to how this would be beneficial. What is the compelling case to address this issue?
- Add statement in 1<sup>st</sup> paragraph of Recommendations section following “most important aspect in the course of acute stroke” that states, “several surrounding states have centrally coordinated care for the delivery of emergency care service.”
- Dr. Adams stated that without a coherent system, the time sensitive part of care is not provided. You can argue that we can tolerate less organization if you have time to deal with it and do more research. Time sensitive we have to get this right, we have to get it better. Patients don’t have a second chance to go to the right place. Patients need to be taken to the right place first whenever possible. Dr. Waddell seconds this motion.

**Hospital-Based Stroke Treatment Subcommittee Recommendations:**

- Question regarding 64 hospitals statewide. Dr. Foster revised to 64 acute care hospitals, which does not include two VA’s and Moncreif Army Hospital. They are 67 acute care hospitals counting those three. Revise to 67 acute care hospitals, including three federal.
- Revise bullet #4 to 12 Acute Stroke Capable Hospitals (Telemedicine Equipped Hospitals), which includes Easley & Lancaster. List regions where these hospitals are located. Recommendation by Dr. Waddell to put information in a chart.
- Place bullet #6 above gaps. It should fall under bullet listing 12 Acute Stroke Capable Hospitals.

- Dr. Foster recommended adding hospitals to the list who are actively seeking certification.
- Revise bullets #1, #4 and #5 as gaps, and place resources above them.
- Dr. Foster recommends adding a chart that lists the existing resources, bulleted list of gaps to include: (1) uneven distribution of stroke centers across the state presently, (2) no regulation, (3) Telemed not distributed as it should be, (4) number of stroke neurologists not distributed throughout the state, and (5) list sites actively seeking certification.
- Joy Brooks requested that Maggie Bobo provide the number of hospitals actively seeking certification listed by EMS regions. Dr. Foster requested for Telemed locations as well.
- Map needs to be revised for Telemed locations only.
  
- **Recommendation Section Changes**
  - Dr. Foster requests clarification on bullet #1 as to how it would be applied and enforced. Dr. Waddell deferred this question/recommendation to Pam Dukes or Jason Haynes, who are better versed in the regulations.
  - Dr. Foster recommended that all hospitals in SC should be required by DHEC to submit a plan, and suggested to remove language stipulating a signed affidavit.
  - Harmonize #2c with what was said in the previous section stroke capable vs. stroke enabled. Acute stroke capable is the new terminology. Please revisit Urgent Response to address language change.
  - Dr. Foster recommended reference section or bibliography section for addressing BAC or TJC. Joy Brooks indicated reference section is in Appendix A and will review if BAC is listed.
  - Dr. Adams deferred to Dr. Foster for clarification on transfer agreements between hospitals. Dr. Waddell was able to provide clarification on the topic as well.
  - Dr. Foster commented on the barriers not with providers but on the inconsistent system for the management of emergency patients from an EMS and hospital point of view.
  - GAP - While hospitals may try to transfer stroke patients to higher levels of care; issues exist as to how quickly this could be done and who is responsible for the resources. Currently,

there is no formalized process to ensure transfer of stroke patients in a timely manner.

- Need to add a statement for overall impact for system with similarities for STEMI care. Precedence for organizing state resources in this way, currently being done for trauma and urgent care for heart attack.
- Recommendation by Dr. Foster that any payer source should be covering Telemed and recommendation to put into parentheses (public or private, Medicaid, Medicare) for #4.

- **Designation Section Changes**

- DHEC will be designating the hospitals in the state of SC in respect to stroke capabilities.
- Where possible, DHEC will use other certification programs such as TJC and HFAP in making these designations.
- Remove the remainder of the paragraph.

- **Level III/Stroke Enabled Centers Changes**

- Not a requirement for specific language or published by AHA.
- Hospitals designate a healthcare professional that would be responsible for the monitoring of the stroke plan for their hospitals and coordination of stroke services at the Level III.

- **Fiscal Impact**

- List #5 as a fiscal impact.
- There is data to support that prompt treatment of stroke saves money. Costs exist up front, however, there would be reduced cost for rehabilitation and disability costs.
- This system should result in more people being treated acutely for stroke, which in the long run provides economic benefit to the community and state.
- Dr. Foster stated the flip side of the fiscal impact is what we need to support and what insurers need to do for reimbursement to smaller hospitals for care provided.
- Dr. Adams recommended that the medical care system in some parts of the state will need substantial funds to carry out this plan. A coordinated system should result in more patients being

treated promptly, for which we know from previous experience in the long run saves money and helps people live more productive lives.

- Dr. Foster noted an underestimation of financial impact of stroke.

### **Rehabilitation Subcommittee Recommendations:**

- Update to new statistics for 2009 instead of 39% in 2008.
- Dr. Adams asked if there were any data to prove people with stroke in the state that are not getting rehab. Stacy confirmed that she is unable to locate data.
- Must assure data and statistics are accurate.
- Recommendation by Dr. Adams to add a statement earlier in the Rehab section that indicates a problem resides in access and the amount of rehab services available at all levels. (i.e. home health, acute care rehab beds). He indicated that it is not happening as it should be and the reason is there is a capacity problem, and there are people that cannot access the capacity we currently have due to insurance coverage.
- Recommendation from Iris Smith to quantify the levels of disability. She stated that we are still not uniformly applying a functional measure to where the patient winds up. Not capturing the devastation of the disability, which would be a powerful message.
- Dr. Adams asked if there were any data to substantiate the circumstances resulting from stroke (i.e., loss of work, disabled, no insurance). Dr. Foster stated that this is the cost burden we don't know, as we are undervaluing the cost impact to state or individual.
- Dr. Adams asked if there was any way to determine the number of individuals applying for Medicaid. Dr. Waddell and Khosrow replied that we can contact DHHS to request that information.
- Dr. Adams stated a problem exists with access to coverage and access to care.
- #1b capacity can stand on its own, per Dr. Adams.

- #2 development of stroke resources – move to subheading of #1b. There is also a need to better utilize the existing rehabilitation resources and to make more information available to people with disabilities, so that they can access these resources more effectively.
- #1c - Dr. Adams recommended a statement to be added indicating that at times rehabilitation services are lacking due to poor coordination between acute and after hospital care, and this should be addressed in the overall stroke system of care plan. Dr. Adams requested that Stacy collaborate with Joy and Carolyn to develop language, and indicated that coordination of care affects rehabilitation, and needs to be taken into consideration. Dr. Foster recommended a statement that coordination of care is limited by the variability and access to coverage.
- Confirmation of #2 folded into #1 as a subcategory.
- **Cost Benefit Analysis**
  - To be placed after recommendation section
  - Underestimates cost of Medicaid
  - Dr. Adams recommends using this section as an example of the kind of cost analysis that would show this is not definitive. Underestimates the cost of Medicaid.
  - Confirm that 14% of patients need stroke rehab. Khosrow provided clarification.
- **Recommendations Section Changes**
  - Dr. Waddell asked for clarification on #1, pertaining to increasing Medicaid coverage. Does this assume all the other insurance companies provide coverage? How to phrase this that is the least inflammatory? Dr. Adams recommended language addressing the issue of rehabilitation coverage by accessing private and public insurance sources to determine the availability of resources, or ensuring coverage by public and private payers for healthcare that stroke rehab is included.
  - Discussion on whether to combine #2 and #3, or subcategories, or be decreased.

- Recommendation to add Allied Health Practitioner back into this section. It was removed in error.
- Dr. Adams said there needs to be an overall summary recommendation that DHEC have enough resources to keep this planning committee going.
- Dr. Adams requested an overall recommendation for the full impact of stroke and the need for practitioners. It needs to be addressed that people are needed up and down the line. Dr. Adams feels it can be done in the summary recommendation.
- Stacy pointed out the last sentence on page 25 to address the overall recommendation. Dr. Adams requested that it be lifted and summarized in the overall summary recommendations, which will be located in the executive summary.

### **Discussion on Case Study**

- Dr. Adams recommended adding vignettes that will show impact. Dr. Foster recommended vignettes be placed up front with a case study for each section. Have stories be paralleled to show positive and negative outcomes with the same patient.
- Dr. Waddell recommends a visual to break up document over coordination of care.

### **Stroke Registry**

- Discussion on the purpose of the registry. Dr. Adams stated the purpose is to track patients that have stroke and determine the kind of services they receive, their outcomes, as well as opportunities for intervention, cost and recurrence rate. Not about at-risk patients. The overall goal is to improve care. The benefit is DHEC will establish a mechanism for surveillance of stroke cases and compile data.
- Dr. Adams recommended two to three sentences that say what the need is.
- Dr. Adams recommended (1) why, and (2) benefit.
- Dr. Waddell stated that DHEC will rewrite this.
- Dr. Foster agreed idea of it not being very specific.
- Dr. Foster stated the value of having a registry that can track processes and outcomes of stroke patients with multiple purposes. Adding it will require funding and the state would have to fund a great portion of the cost.

## **Fiscal Impact**

- Dr. Adams asked who has verified the numbers from DHEC. Joy confirmed the figures.
- Dr. Adams recommended that the awareness campaign be omitted. Dr. Foster recommended seeking private funds for campaign.
- Dr. Adams recommended that the Community Health Worker be omitted.
- Recommendation for ongoing committee cost. Requested \$5,000 for continued development and monitoring of the statewide plan.
- Recommendation by Carolyn Bivona to consider a 3-5 year spending plan.
- Dr. Foster recommended funding in a tiered approach that covers 1-3 years.

## **Next Steps**

- Complete revisions so that draft plan is distributed with all feedback due to Joy Brooks by November 5<sup>th</sup>.
- Forward state plan to nominating agencies for approval, recommendations or comments.
- Teleconference on November 15<sup>th</sup>.

Next meeting is tentatively planned for November 15<sup>th</sup> by teleconference.

Meeting adjourned.

**South Carolina  
Stroke Systems of Care Study Committee**

**SC Department of Health and Environmental Control  
GoToMeeting Teleconference  
November 15, 2010  
1:00 – 2:00 p.m.**

To join GoToMeeting:

<https://www1.gotomeeting.com/join/460244752>

Conference Call Phone Number: (803) 896-9993

Conference Call Meeting ID: 047983

To join the meeting from the [www.gotomeeting.com](http://www.gotomeeting.com) website,  
click on Join Meeting and when prompted,  
enter the following Meeting ID: 460-244-752.

**AGENDA**

- |  |                                |
|--|--------------------------------|
| <b>I. Call to Order</b>                        | <b>Robert Adams, MD, Chair</b> |
| <b>II. Roll Call</b>                           | <b>Joy Brooks, SC DHEC</b>     |
| <b>III. Review and Approval of Minutes</b>     | <b>Robert Adams</b>            |
| <b>IV. Review of the Stroke State Plan</b>     | <b>Robert Adams</b>            |
| <b>V. External Review Panel Considerations</b> | <b>Robert Adams</b>            |
| <b>VI. Next Steps</b>                          | <b>Robert Adams</b>            |

**South Carolina  
Stroke Systems of Care Study Committee  
Conference Call/Go To Meeting  
November 15, 2010  
1:00 p.m. – 2:00 p.m.**

**Members Present**

Robert Adams, MD, Chair  
Deborah Bridgeman, RN  
Rodney Harrison, MD  
Edward Jauch, MD  
Lisa Waddell, MD

**Members Present by Proxy**

Stacy Fritz, PhD, with Dr. Adams as proxy  
Jason Haynes, NREMT-P, with Dr. Jauch as proxy  
Melinda Merrill, MPH, with Dr. Adams as proxy  
Jim Rogers, FACHE, with Dr. Adams as proxy  
Charles (Doug) Silk, NREMT-P, with Dr. Jauch as proxy

**Members Absent**

Stoney Abercrombie, MD  
Dilantha Ellegala, MD  
Rick Foster, MD  
Robert Hubbard, MD  
Peter Hyman, MD  
Nowa Omoigui, MD  
Nancey Tsai, MD  
Aquilla Turk, DO

**DHEC/AHA Staff Present**

Betsy Barton  
Stacia Bell  
Carolyn Bivona  
Maggie Bobo  
Joy Brooks  
Betsy Crick  
Tony Lee  
Kay Lowder  
Teresa Robinson

**Call to Order:** Dr. Adams presided.

**Roll Call:** Ms. Brooks conducted roll call.

**Review and Approval of Minutes:** October 2010 meeting minutes were approved.

**Review of the Stroke State Plan:** Formatting and clarification were updated as reflected in the State Plan.

**External Review Panel Considerations:** Review panel concerns and committee responses to said concerns are as follows:

## External Review Panel Considerations

**Per Anita Holmes, JD, MPH,  
Director, HDSP Division, NC DHHS  
Member, North Carolina Stroke Advisory Council:**

In general, I would make a comment on the importance of addressing transitions of care between the components of a stroke system of care plan.

*We recognize that each element of the continuum of care must work together in an integrated fashion. Will integrate this concept within the executive summary, as well as introduce throughout the plan.*

In addition to certified hypertension specialists, highlight importance of education of other health care professionals engaged in hypertension prevention and management.

*Only MDs may be certified as Hypertension Specialists, however, advanced practitioners and MDs are trained in JNC guidelines by ASH.*

*While hypertension is an extremely important risk factor, we realize that there are other risk factors, which will be mentioned as well.*

In addition to reference on training professionals, consideration could be given to training and continuing education for community health workers/lay health advisors.

*The recommendations for Community Health Worker certification was previously included in the plan, but deleted in a previous version by the committee.*

**Per Paul Diamond, MD,  
Director of Neurorehabilitation, University of Virginia Health System  
Member, Virginia Stroke Systems Task Force:**

In the “Burden of Stroke” section, you may want to highlight some of the other costs associated with stroke including skilled and long term care nursing needs, work-related disability / lost productivity, re-hospitalization rates for long term complications of stroke-related impairments such as aspiration pneumonia, DVT / PE etc., quality of life and caregiver burden.

*The state has insufficient data to support this inquiry to add to our burden of stroke report. We can highlight other costs associated with the burden of stroke, without using specific numbers.*

Regarding coverage, there should be an effort to expand Medicaid coverage beyond acute inpatient rehab and home care services to include skilled-level rehab if not already

covered. This is an area not covered by Medicaid in Virginia and as a result limits access of patients to skilled rehab.

*The committee doesn't feel that we should include any more language at this point.*

*Jim Rogers clarifies as does DHHS Medicaid representative, that in SC Medicaid does NOT provide reimbursement for free-standing inpatient acute rehab services. This is a state optional service.*

*Jim Rogers also responded that "skilled nursing home rehab" is a service that needs to be better defined prior to advocating its inclusion as a the Medicaid reimbursement option.*

Telerehab may be an important tool for enhancing access to these services in rural areas.

*The committee concurs that there should be no special mention of telerehab at this point.*

Another important area of perceived need is establishing standards of care for post-stroke rehabilitative care. What services and equipment should be available and offered by the various rehab service providers along the continuum of care? Are there certain core services - partial body weight support gait training, Bioness and other similar estim units, constraint induced movement therapy, robotic units for ther ex... that should be available at certain centers? What outcome measures should be used?

*This is an area of quality improvement that should be addressed through health care provider groups specializing in rehabilitative care and would not be the responsibility of the General Assembly to address.*

**Per Jeffrey Ranous,  
State Advocacy Consultant, National Advocacy Department  
American Heart Association/American Stroke Association**

EMS training is mentioned in the recommendations preamble but is not listed as an actual recommendation. Assuring that coordinated stroke related training is occurring is important and I believe warrants a specific recommendation.

*Per the director of the Division of EMS, it is a function of the release of new protocols that the Division of EMS will develop curriculum and train staff as appropriate specific to protocols. Training is implied, so no special mention is necessary.*

**Per Larry Goldstein, MD,  
Director, Duke University Stroke Center  
Member, North Carolina Stroke Advisory Council:**

How would you propose that the state increase hypertension specialists? What does "certification" mean and what is the responsible entity? There is currently no ABMS specialty for "hypertension medicine."

*To address this concern, we have enhanced language to clarify the comment related to certification of Hypertension Specialists and the state's role. Information provided by Dr. Dan Lackland and Dr. Brent Egan of MUSC.*

"However, at this time, the committee feels it is not appropriate to pursue specific recommendations to make these [9-1-1] systems changes." Why not? Other states are using EMS dispatch protocols. Why not SC?

*Ideally, DHEC would regulate Emergency Medical Dispatch (9-1-1) for uniformity and quality assurance. The committee recommends that implementation be deferred at this time, due to the complexity of providing this regulatory function in addition to the current limitation of state resources.*

Certified stroke neurologists - do you mean ABMS-certified Vascular Neurologists? If so, I would use this terminology.

*Yes, and the State Plan will be corrected accordingly.*

Please remember that endovascular therapy has never been proven to affect clinical outcomes and is not FDA-approved. This may be an issue from a public policy standpoint.

*We are using the published recommendations from the Brain Attack Coalition and plan to move to National certification for CSC once criteria has been established and published.*

Registry budget. Does this include one FTE per hospital to collect the data and administer the program? Without this support, the program may not be logistically practical.

*Based on guidance from AHA/ASA national office, it is not necessary or standard practice to have an FTE per hospital to effectively implement a stroke registry.*

**Per Greg Mears, MD,  
Director, North Carolina Office of EMS  
Member, North Carolina Stroke Advisory Council**

Systems of Care (whether it be Stroke, STEMI, Trauma, Cardiac Arrest, etc.) should be inclusive where possible. Inclusive meaning, inclusive of all hospitals and EMS Agencies. The plan includes 3 levels of Stroke Centers but then a category of Non-Stroke Center.

*Non-Stroke Centers, which are referred to as such with EMS protocols, will be referred to as Emergency Stabilization Site within the State Plan, as these sites do play a role when necessary.*

Four levels of hospital participation will be tough for EMS and the community to understand from a functional and capability perspective. Consider two levels of Stroke Centers and then a third level not called a Stroke Center but a "participating hospital." This is inclusive of all hospitals but much easier to function within.

*The names for the four hospital levels are based on EMS protocols, which have been approved and released in the field. Bridge language has been added to the plan for continuity. As mentioned above, the non-stroke centers will be referred to as Emergency Stabilization Sites within the State Plan.*

Every hospital in the state should participate in the Stroke System of Care at some level. The two requirements at the "participating hospital" level should be provide data and participate in a regional or state coordination program. This might be a Regional and/or State Council.

*All hospitals will submit a plan.*

The Registry should be implemented in a fashion to collect all stroke patients and link at a minimum to EMS care. The plan describes this well but ultimately you need data from every hospital. The depth of the data at the participating hospital (non-Stroke Center) level may be descriptive of an event while the true Registry data from the Centers provides the true registry level of detail.

*This would, in fact, occur with the state stroke registry.*

**Per LynnCarol Pannell,  
Vice President of Government Relations, Mid Atlantic Affiliate  
American Heart Association/American Stroke Association**

Highly encourages a standalone recommendation for the development of a statewide stroke registry, with a data mechanism based on nationally-recognized, evidence-based

guidelines, and encourage GWTG-Stroke as the required data collection tool. Participation in the registry should be mandatory, not voluntary.

I highly encourage the designation of Primary Stroke Centers in South Carolina, and language codifying this designation be written to allow future designation for CSC and/or Stroke Capable facilities that will replace any process being facilitated by the state.

*We have addressed these recommendations/concerns in the body of the state plan.*

**Per Lisa Waddell, MD,  
DHEC Deputy Commissioner for Health Services**

Can we say anything about the cost benefit of hypertensive care?

*The management of risk factors is always more cost effective than the devastating consequences of stroke. Will reflect wording as such in the State Plan.*

Referring to “There are approximately 20 certified stroke neurologists in South Carolina but they are not evenly distributed throughout the state.” Is the issue that there aren’t enough or that they aren’t evenly distributed. Does this need to be clarified?

*The number is not sufficient, nor is there an optimal distribution. Will state this within the State Plan.*

Clarification of BAC recommendations. Does available 24/hrs a day/7 days a wk mean immediately available, w/in 30 mins, by the time pt arrives?

*The committee wishes to leave wording as is.*

Access to coverage. Implies that patients may have Medicaid coverage by no one accepts it. Clarify.

*We are clarifying this language in the plan.*

REHAB: Ensure coverage by private and public payers (including Medicaid) to cover stroke rehabilitation in free standing interdisciplinary rehabilitation hospitals and home health based on need.

*We are clarifying this language in the plan.*

Data to support shortage of rehabilitation specialists?

*Unavailable at this time.*

Regarding “Increase funding for training of professionals who are trained in treating stroke including neurologists, neurosurgeons, physiatrists, physical therapist, occupational therapists, and speech therapists.” Who are we asking will increase funding? Is this question related to providing incentives? Does this need to be clarified for the GA audience?

Replace recommendation with “Offer tax credits, or limited state income tax, for stroke rehabilitation professionals in underserved areas including physiatrists, physical therapist, occupational therapists, and speech therapists. Also increase utilization of tele-health facilitated rehabilitation to increase services in rural and underserved communities.”

### **Other considerations:**

#### Glossary

*The following additional terms were added: CMS, effective coverage, EMS, emergency medical dispatch/9-1-1, primary stroke center, and vascular neurologist*

Call-out boxes... Check for key messaging. Are we in agreement with what we want these to say?

*The committee discussed all call-out boxes, and made changes as reflected in the revised version of the State Plan.*

tPA: We don’t talk about the “so what” regarding tPA. Could we consider adding language such as “If given promptly, tPA can significantly reduce the effects of stroke and reduce permanent disability. TPA can only be given to a person within the first 3 hours after the start of stroke symptoms, another reason why an effective stroke system of care is so critical.”

*It was decided to add the following high-impact statement early within the plan, as well as within the EMS section: “There are treatments available that are time-sensitive. To have the best chance of qualifying for treatment, getting to the appropriate stroke center as soon as possible is critical.”*

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*It was decided to add the following high-impact statement early within the plan, as well as within the EMS section: “There are treatments available that are time-sensitive. To have the best chance of qualifying for treatment, getting to the appropriate stroke center as soon as possible is critical.”*

**Next Steps:** Dr. Adams stated that the State Plan must be submitted to the Governor and General Assembly no later than December 1<sup>st</sup>. In order to accomplish this, we would like the committee to support us moving forward with the recommendations we have approved on this call. DHEC staff will make the revisions, and Dr. Adams and Dr. Waddell will review the final plan prior to submission.

Once the plan is submitted, Carolyn Bivona of the American Heart Association will schedule a meeting with Sen. Darryl Jackson, sponsor of the legislation which created this study committee to review the plan and recommendations. Dr. Adams and Dr. Waddell will represent the study committee at this meeting. AHA will work with Sen. Jackson and his staff to craft legislation, based on our recommendations. As we move forward with legislation, Dr. Adams indicated that he would need the committee's assistance in testifying.

Once the plan is submitted, this committee is officially dissolved, however, we would like to continue meeting on an as-needed basis until, as based on the plan, legislation is passed to create a permanent stroke systems oversight committee.

On behalf of DHEC, the American Heart Association, and himself, Dr. Adams extended his sincere gratitude and appreciation for the outstanding work and plan this committee has accomplished.

Meeting adjourned.

## Appendix F

### South Carolina Stroke Systems of Care Study Committee Draft Recommendations Presented to full committee for consideration on May 7, 2010

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#### Public Awareness, Education, Prevention and Disparities Subcommittee Report

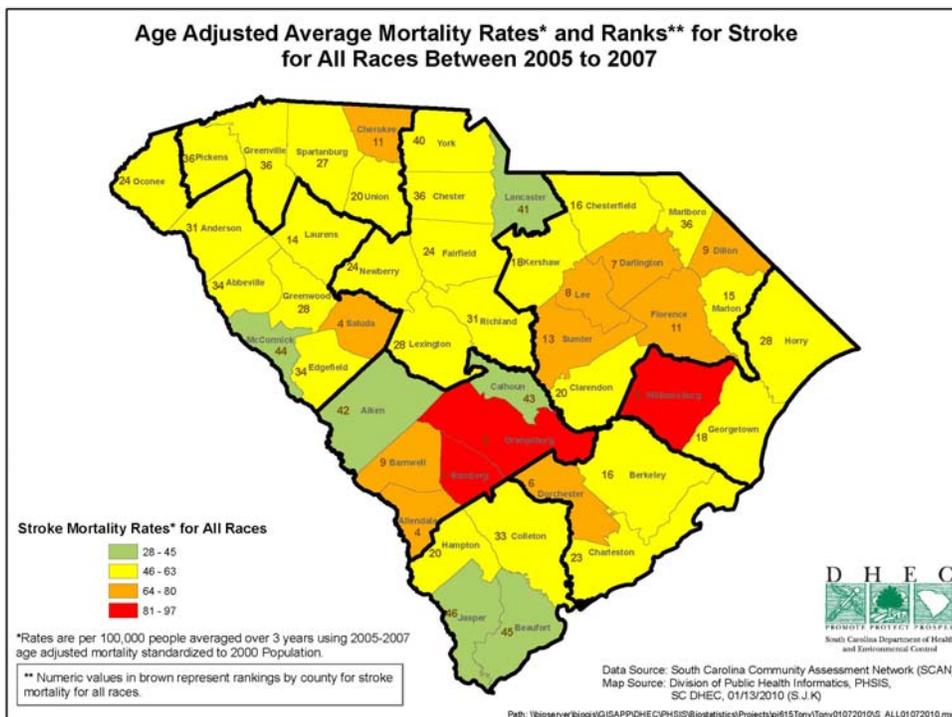
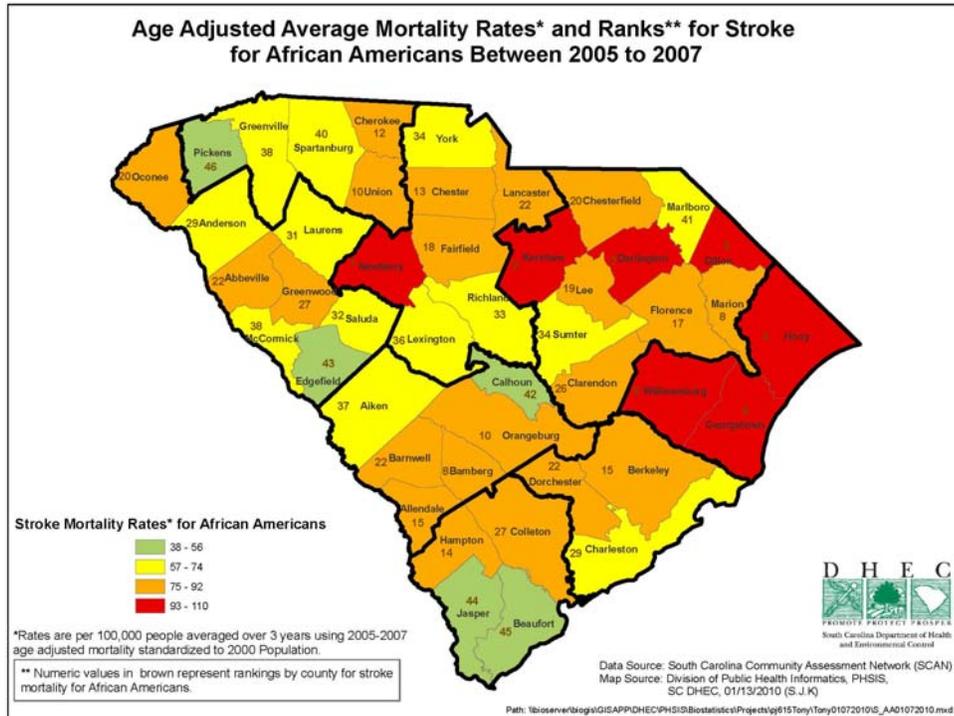
**Commission and Deliverables:** Assessment of the current state of public awareness, education, prevention, and treatment disparities of stroke in SC and recommendations to be submitted to SC Stroke of Care Study Committee.

- Development of methods to promote greater stroke prevention
- Development of a public education and awareness program on the signs and symptoms of stroke
- Identification of a strategy to reduce stroke treatment disparities among minorities, rural, and under-insured populations.

#### **Assessment of state's current status, resources and gaps:**

According to BRFSS, 2008 data reflects that 12.5 percent of South Carolinians recognize all correct stroke warning signs and reportedly would call 9-1-1 if someone were possibly having a stroke. Data from that same year depicts that 7.8 percent of African-American South Carolinians recognize all correct stroke warning signs and reportedly would call 9-1-1 if someone were possibly having a stroke.

Disparities are evident not only in recognition of stroke warning signs, but also in hospitalization and mortality rates. Although mortality rates for all populations declined for the past decade, the mortality gap between African Americans and Whites is significant. The South Carolina 1999 stroke mortality rates for African American and White populations were 118.6 and 76.2 per 100,000 respectively. In 2008, stroke mortality for African Americans and Whites decreased to 67.9 and 44.4 per 100,000, respectively. While mortality rates are improving for both Whites and blacks, African-Americans are 53 percent more likely to die from stroke than Caucasians in South Carolina. One way to quantify health disparity is to calculate the relative rate of hospitalization or mortality between two subpopulation groups. African-Americans have died due to stroke at a higher rate than Whites, and are also experiencing an increase in hospitalization due to stroke. The mortality rate ratio of African Americans to Whites decreased from 1.56 in 1999 to 1.53 in 2008. From 1999 to 2008, the rate ratio for stroke hospitalization of African Americans to Whites rose from 1.07 to 1.22.



The subcommittee identified several resources and gaps relative to the education, awareness and prevention of stroke and stroke disparities in the state. They included the following:

- The SC Department of Health and Environmental Control's (DHEC's) Heart Disease and Stroke Prevention program has identified and implemented a **media and communication strategy** to address stroke in the state. The resources are very limited federal funds thus preventing the development and implementation of a comprehensive multi-media stroke prevention campaign. Consequently, the current awareness strategy primarily promotes awareness of the signs and symptoms of stroke and the importance of calling 911.
- The National Institute of Neurological Disorders and Stroke (NINDS) has developed a comprehensive awareness campaign to help educate the public about the symptoms of stroke and the importance of getting to the hospital quickly. The campaign includes outreach to consumers and health care professionals using mass media, grassroots outreach, partnerships, and community education. These materials are being used in a limited capacity, primarily with the EMS community.
- The American Heart Association/American Stroke Association have developed two signature cultural health community-based heart disease and stroke prevention initiatives, designed to capture the energy and culture of the African American community in order to facilitate the delivery of an effective stroke prevention message. The stroke awareness initiative has been implemented in SC, through collaboration with DHEC and the AHA/ASA.
- DHEC's Office of Minority Health, with support from a federal grant, implemented a **faith-based health initiative focusing on cardiovascular health**. The program, now in its fifth year, has worked with 45 churches across South Carolina to promote the adoption of healthy policies (tobacco-free church grounds) and healthy lifestyles (physical activity and healthy nutrition). Thirty churches fully implemented healthy lifestyle behavior policies during the grant cycle. One hundred percent of the 20 churches participating in year five have policies in place. The continuation and expansion of this program is limited due to limited financial resources to support the program.
- The DHEC HDSP Program and the American Society of Hypertension (ASH) Inc., Georgia and Carolinas Chapter partner to provide continuing medical education for SC physicians that support increased knowledge and compliance with current hypertension control guidelines. This training encourages and prepares physicians to become certified as **Hypertension Specialists** through an annual examination process by ASH, Inc. Physicians certified as hypertension specialists can function as local or regional consultants for complex and difficult to manage

hypertension cases, and can advise regarding treatment guidelines and outcomes improvement. To date, over 1,251 SC providers have received training in these courses. SC leads the nation in the number of ASH Certified Hypertension Specialists per capita, with 50 physicians certified.

- The DHEC HDSP Program is providing support to the DHEC EMS Division to provide advanced stroke training for EMS and ED providers. More than 1,553 providers have been trained since 2003.
- There are a limited number of Primary Stroke Centers in SC. The depth and breadth of stroke awareness and education efforts varies by center. Examples of prevention efforts include: stroke educational packets provided to all patients; visible displays of stroke prevention materials throughout the hospital; sponsorship of quarterly community health screenings that include individualized education regarding stroke and risk factors, and cholesterol and blood pressure screenings; and seminars and lecture series related to stroke for the community and health care professionals.
- The South Carolina Primary Health Care Association (SCPHCA) is a membership organization that supports the state's **federally qualified community health centers**. Many of the state's uninsured and underinsured are served in these primary care centers. The SCPHCA hosts regular seminars for the centers' clinical staff. Up to date information regarding stroke is provided during these professional development seminars.
- **Epidemiological data and information regarding stroke in SC**, such as the Behavioral Risk Factor Surveillance System (BRFSS), show that there are racial inequities with stroke occurrence, but there are also gaps that need to be assessed. Additionally, we have hospitalization data and mortality data, all of which highlight disparity. There exists a need for a comprehensive stroke registry which will further our understanding of disparities throughout the stroke continuum of care.

#### **Subcommittee Recommendations:**

1. Support evidenced-based policy and systems changes which promote stroke prevention:
  - a. Promote public policy which addresses reduction in sodium consumption.
  - b. Increase the number of certified hypertension specialists.

2. Support campaigns to enhance public education and awareness of stroke:
  - a. Implement a comprehensive multi-media stroke prevention campaign to the general public with enhanced emphasis on Stroke Awareness Month.
  - b. Enlist Primary Stroke Centers in South Carolina to enhance reach of public education programs in their areas of influence.
3. Provide resources to implement strategies to reduce stroke treatment disparities:
  - a. Improve adherence to best practice guidelines for prevention and treatment of stroke in primary care settings by providing Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC) provider education.
  - b. Remove economic barriers to effective anti-hypertensive medications for individuals who have difficulty accessing them.
  - c. Provide funding for the development of a steering committee to promote the development of a statewide certification for community health workers to promote public health education for all chronic diseases, including cardiovascular disease.
  - d. Additional resources are needed in order to comprehensively evaluate the state of the state specific to the above recommendations, interventions or policy adoption and adherence

### **Fiscal Impact**

Preventive care including hypertension treatment has been shown to be both more cost effective and to prevent more adverse outcomes than no treatment. A Georgia study (Rein, et.al, 2006) reported that overall costs, including cost of preventive treatment and cost of treatment for adverse events was from 12% to 25% below the costs of no preventive treatment, and the number of heart attacks and strokes with preventive treatment was predicted to be half of those with no treatment. The authors found that implementation of their heart attack and stroke prevention program resulted in both lower costs and greater potential health benefits than no treatment.

In 2009, the cost of hospitalization and emergency visits for stroke in SC was more than \$507 million. Currently the direct and indirect cost of stroke care in SC among Medicaid and Medicare beneficiaries is estimated to be in excess of \$193 billion using the CDC's CVD Cost Calculator model (Reference:

<http://www.cdc.gov/chronicdisease/resources/calculator/index.htm>). By using the preventive model similar to the Georgia's pilot site intervention of providing preventive treatment, South Carolina could lower the expected stroke care cost between \$23 (12%) and \$48 billion (25%) annually statewide.

- Financial support to DHEC for more comprehensive multi-media campaign
- Financial support for DHEC to implement more evidence-based programming (materials and staff time)
- Financial support for training of more hypertension specialists and advanced stroke training for EMS and ED providers

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**Urgent Response System Subcommittee Draft Report and Recommendations  
Presented to full committee for consideration on May 7, 2010**

**I. Commission and Deliverables:**

This subcommittee was charged with the assessment of the current state of the Urgent Response System and recommendations, which must address but is not limited to:

The development and implementation of an urgent response system that is built on the PSC model as designated by The Joint Commission's Primary Stroke Systems model to develop a statewide system of care which will provide appropriate care to stroke patients in the timeliest manner possible;

- Recognition and implementation of a standardized stroke triage assessment tool that will be used by all certified Emergency Medical Service (EMS) personnel and for the education of prehospital and hospital health care providers on the signs and symptom of stroke;
- Assessment of the capacity of emergency medical services system and hospitals to deliver recommended treatments in a timely manner;
- Coordination with state trauma regions for the purposes of coordinating the delivery of stroke care within those regions.

**II. Assessment of state's current resources and gaps.**

- E911 Coverage  
100% of state has 911 coverage (landline); 92% of population covered by Phase II / wireless E911 (All but Richland County)
- 911 dispatchers required to be trained in EMD?  
No, dispatcher systems in SC are still voluntary; not all counties have adopted an EMD program. Dispatch systems operate differently in each county. Some by Sheriff's department, some are public safety departments and some are split with EMS. A 40-hour class is needed to bring some SC centers up to the level of other states. There is currently no statewide guidance as to what is the priority of EMD. At any one time there are approximately 400 EMD workers working statewide. In order to standardize the EMD, legislation would have to be passed. (Source: Stroke Systems of Care Study Committee meeting 12/09/09, minutes; presentation by Steve McDade, President, SC EMS Association)
- Statewide implementation that all EMS Response Systems utilize a stroke triage assessment tool that meets AHA/ASA guidelines?

In 2005, the SC EMS Medical Control Committee recommended that all SC EMS providers be trained in Advanced Stroke Life Support / Cincinnati Stroke Scale.

- Is the EMS System coordinated at the state level?  
Yes, as a Division of the South Carolina Department of Health and Environmental Control (DHEC). The state Emergency Medical Services and Trauma Division director has been granted authority, by the state legislature, to develop, implement, and monitor state EMS regulations. (S.C. Code of Laws Section 44-61-30. Title 44=Health, Chapter 61=Emergency Medical Services. DHEC, with the advice of the EMS Advisory Council shall develop standards and prescribe regulations for the improvements of EMS.)
- How is the state trauma system structured, funded, regulated?  
The subcommittee explored the similarities with the trauma system. While trauma is also an emergent situation, it is structured and funded in a way that is not particularly compatible with the stroke system of care.

**III. Subcommittee Recommendations:** Three to five meaningful, high-impact, prioritized recommendations. Include evaluation method and projected cost associated with each.

Several recent studies have reinforced the importance of 911 access and Emergency Medical Service utilization in acute stroke – early activation, rapid identification and treatment, and most importantly selective triage and transport to the highest level of local stroke care is the most important aspect in the course of acute stroke. Working with regional stroke resources (stroke prepared hospitals, PSC, and CSC), EMS personnel should be trained to identify acute stroke and make the necessary destination decisions for patients with suspected stroke.

*Items italicized are considered priority recommendations*

1. State 9-1-1 Service
  - a. Establish a voluntary 9-1-1 dispatcher certification program
  - b. Provide an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke (voluntary use)
  - c. Collaboration between stroke experts within the state and SC DHEC EMS services to create and distribute training materials on the EMD related to stroke
2. EMS Dispatch Protocols

- a. Provide an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke (voluntary use)
  - b. Create and distribute training materials on the EMD related to stroke
  - c. Recommend future consideration of SC DHEC oversight of dispatch centers
3. EMS Triage Assessment Tool
- a. *Develop the South Carolina Emergency Neurologic Evaluation Tool (SCENE Tool) for the on-scene assessment of potential stroke patients*
  - b. As before, with state stroke experts and SC DHEC, develop and provide education on the SCENE tool
  - c. Ensure compliance with current American Stroke Association (ASA) / ECC guidelines
  - d. Utilize statewide NEMSIS II reporting for Quality Improvement to ensure adherence to SCENE Tool use and suitability of training.
4. EMS Treatment Protocol
- a. *Develop and distribute suspected stroke protocol for state wide use*
    - i. Ensure compliance with current ASA / ECC guidelines
    - ii. Develop regionally specific versions appropriate for local EMS resources
5. EMS Transport and Triage Protocol
- Develop South Carolina specific triage protocol utilizing the recommendation of the Hospital Based Services subcommittee identifying stroke centers*
- a. Identify non-stroke centers and work on integrating these sites into systems of care with local stroke facilities
  - b. Define circumstances for air medical transport from the scene to comprehensive stroke centers
  - c. Define triage priority when multiple stroke hospitals are of similar transport distances (consider triage to highest level of care)
  - d. Require SC DHEC to send the list of all stroke enabled hospitals, primary and comprehensive stroke centers as defined by DHEC to all licensed EMS providers on a recurring basis
  - e. Ensure compliance with current ASA/ ECC guidelines
6. Utilize statewide EMS reporting to perform quality improvement processes to ensure adherence to recommendations

The Subcommittee presented Recommended Stroke Assessment, Triage, and Transport Protocols to the SC EMS Medical Control Committee. They were approved by the Medical Control Committee and were released to the field for public comment, June 2010. Final approval and release expected by October 2010.

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**Hospital-Based Stroke Treatment Subcommittee Draft Recommendations**  
**Presented to full committee for consideration on May 7, 2010**

**Commission and Deliverables:** This subcommittee is charged with assessment of the current state of Hospital-Based Stroke Treatment and recommendations which will be submitted to the SC Stroke Systems of Care Study Committee for inclusion in the plan to be submitted to the General Assembly by December 2010.

This plan must address, but is not limited to:

- Development of methods in which systems will be evaluated and monitored to demonstrate the impact on the burden of stroke in South Carolina;
- Compilation and assessment of peer-reviewed and evidence-based clinical research and guidelines that provide or support recommended treatment standards;
- Creation of criteria for the designation of acute stroke capable hospitals within the state of South Carolina;
- Recommendations for policy and legislative changes that may be needed including appropriations, designation of facilities based on stroke treatment capabilities, and program development and implementation based on national standards.

**Assessment of state's current status, resources and gaps**

Of the state's 64 hospitals, we have now:

- 9 Primary Stroke Centers; 8 certified by The Joint Commission (TJC) & 1 by Healthcare Facilities Accreditation Program (HFAP). South Carolina has four geographic regions, as defined by the SC EMS Division, and the state's eight primary stroke centers are distributed as follows: Midlands Region – 0, Pee Dee – 0, Upstate Region – 3, and Lowcountry Region – 6.
- 1 Certified Primary Stroke Center with Neuro Interventional Specialties.
- 17 Hospitals using Get With The Guidelines Stroke program
- 10 Acute Stroke Capable Hospitals (Telemedicine hospitals)
- The state does not have regulation that requires hospitals to have a stroke plan of care. These sites range from large academic centers such as Palmetto Health Richland, which without doubt has substantial stroke capacity to Critical Access Sites such as Hampton Regional Medical Center with limited access to neurologists much less Vascular Neurologists that will surely be classed as an Emergency Support and Referral Site.
- There are approximately 20 certified stroke neurologists in South Carolina but they are not distributed throughout the state.

- Utilization of tele-health services appears generally low in South Carolina and elsewhere. Medicaid provides limited coverage of tele-health services, but private insurance does not. Without insurance coverage, patients in rural areas may not receive the best possible care. Tele-health is defined as the use of interactive audio, video, or other telecommunications technology by a health care provider to deliver health care services within the scope of the provider's practice at a site other than the site where the patient is located.
- South Carolina does not have a centralized statewide registry

The certification of hospitals based on their ability to provide prompt and appropriate care for stroke patients in the US is an area of critical need. The initiation of the TJC certification program in 2004 for Primary Stroke Centers (PSCs), based on concepts put forward by the Brain Attack Coalition (BAC), and supported by the ASA, represented a crucial change in the hospital based treatment of stroke. It was now possible to be relatively certain that a certified site would conform to specific evidence based treatment measures with specified and monitored frequency. Given the time urgency of treatment with tPA, the assurance that the PSC had a plan and protocol for tPA evaluation and use was a key feature of this program.

In 2006 the ASA took the next step by outlining for the professional, policy and lay audiences what a "Stroke System of Care" might look like, or at least what elements it should address to deal with the full range of stroke problems. Its emphasis on patient benefit and regional cooperation, rather than competition, and the key importance of integration of EMS into the plan was instrumental in several states moving forward to plan and execute state plans for stroke.

Essential to the successful implementation and operation of any state or regional "Stroke System of Care" is the ability to "populate the map" geographically with sites of varying capability to manage both the acute and longer term needs of stroke patients. Transfer of patients between facilities, while sometimes necessary, is time consuming, and reduces the opportunity to "save brain" and patients and society from the devastating costs of stroke. This can be minimized by proper planning beforehand (system development) and on site triage (system operation).

### **Subcommittee Recommendations:**

The subcommittee has drawn on national committee deliberations to recommend the following.

1. All hospitals in S.C. should be required by DHEC to submit a signed affidavit by the CEO of the organization to DHEC which details their compliance with the requirements designated in the below levels of stroke designation and promulgate to the community a formal plan for the care of stroke patients that arrive through the Emergency Department or

are discovered in hospital. DHEC shall have the responsibility of designating all sites (see below) and will classify each hospital into one of the four distinct levels as indicated below based on national AHA/ASA recommendations and updated as necessary

2. The four levels should be:

a. *Level I Stroke Hospital/Comprehensive Stroke Center (CSC)* based on the Brain Attack Coalition (BAC) recommendations.

- *The Acute Stroke Team is led by a neurologist, a neurosurgeon or another qualified healthcare professional with experience and expertise in treating patients with cerebrovascular disease.*
- Members of the Acute Stroke Team are available on a 24 hours/day, 7 days/week basis.
- Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
- Brain imaging of the head should be completed, read and interpreted in 45 minutes
- Clinical laboratory services
- 24/7 stroke call and capability for IV tPA for eligible patients
- 24/7 endovascular call and capabilities for endovascular therapy for eligible patients
- 24/7 Neurosurgery call
- Neuro-intensive care unit and neuro-intensivist
- Stroke registry and quality improvement process

b. *Level II Stroke Hospital/Primary Stroke Centers* meeting the TJC or equivalent certification as recommended by AHA/ASA qualifications or potentially those of other certifying bodies that may be granted “deemed status” by DHEC for this purpose.

- *The Acute Stroke Team is led by a neurologist, a neurosurgeon or another qualified healthcare professional with experience and expertise in treating patients with cerebrovascular disease.*
- Members of the Acute Stroke Team are available on a 24 hours/day, 7 days/week basis.
- Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
- Brain imaging of the head should be completed, read and interpreted in 45 minutes
- Clinical laboratory services
- Capability for IV tPA for appropriate patients
- Stroke registry and monitoring of harmonized measures

*c. Level III/ Stroke Enabled Centers.* This level is able to deliver urgent evaluation and care which includes meeting TJC standards for use of thrombolytics, but lacks the capacity to meet one or more of the other critical standards used to define a PSC.

- *The Acute Stroke Team is led by a neurologist, a neurosurgeon or another qualified healthcare professional with experience and expertise in treating patients with cerebrovascular disease.*
- Members of the Acute Stroke Team are available on a 24 hours/day, 7 days/week basis.
- Emergency Department 24 hours a day with physician or physician extender and nursing staff trained in neurologic care on-site 24 hours a day
- Brain imaging of the head should be completed, read and interpreted in 45 minutes
- Clinical laboratory services
- Telestroke video/conferencing capabilities
- 24/7 stroke call with capabilities for IV tPA therapy for eligible patients
- Transfer agreements established in advance to ensure orderly transition from Level III Stroke Hospital to specialized stroke care facility (Level II or I)

*d. Level IV/Non-Stroke Hospitals.*

- Basic stroke evaluation plan but unable to provide acute treatment
- A rapid transfer plan to an SEC, PSC or CSC should be in place for those stroke patients that arrive by private vehicle or are discovered in hospital
- This site serves as a support site which may be by-passed in the EMS plan
- These sites will not be considered as a destination for stroke patients except under unusual circumstances, for example, an EMS transport time of more than 60 minutes.

3. Process of Designation. DHEC will be the designating body of all hospitals certified by TJC or equivalent certification as recommended by AHA/ASA. The Bureau of Health Regulations of DHEC shall establish a process to recognize primary stroke centers in SC. A hospital shall be designated as an “SC primary stroke center” if it has received a certificate of distinction for primary stroke centers issued by TJC; DHEC shall recognize as many hospitals as SC primary stroke centers as apply and are awarded certification by TJC (or other nationally recognized equivalent certification body). DHEC may suspend or revoke a hospital’s state designation as an SC primary stroke center, after notice and hearing, if DHEC determines that the hospital is not in compliance with the

requirements of their certification. All hospitals providing stroke services will become certified by TJC or an equivalent national certifying body, or become a telemedicine site by January 1, 2013. These certifications will be published on the DHEC website, enabling EMS transport to respective certified facilities. DHEC reserves the right to unscheduled site visits with just cause. DHEC reserves the right to review sites as needed to verify compliance.

4. Insurers shall not exclude a service for coverage solely because the service is provided through tele-health and is not provided through face-to-face consultation or contact between a health care provider and a patient for services appropriately provided through tele-health.

5. Sufficient resources should be allocated to insure accurate initial designation and continuous quality improvement in this crucial domain of system activity. It will be important that DHEC be sufficiently staffed for this activity.

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**Rehabilitation Subcommittee Draft Report and Recommendations  
Presented to the full committee for consideration on May 7, 2010**

**Commission and Deliverables:** This subcommittee is charged with assessment of the current state of Stroke Rehabilitation and recommendations which will be submitted to the SC Stroke Systems of Care Study Committee. This plan must address, but is not limited to:

- Development of methods to promote greater, more effective rehabilitation after stroke
- Compilation and assessment of peer-reviewed and evidence-based clinical research and guidelines that provide or support recommended treatment standards

**Assessment of state's current status, resources and gaps** (reference information source).

- Stroke is the leading cause of severe, long-term disability in the US, and SC rates are higher than other states. In SC the number of individuals reporting having a stroke rose from 2.8% in 2003 to 3.2% in 2008 while the nation's average stayed at 2.6%. This means that either more people in SC are having strokes or more people are surviving strokes. **Either way this translates to increased need for rehabilitation for stroke survivors in SC.**
  - Annually around 18,000 South Carolinians suffer a stroke and between 2,100 and 2,500 patients (about 14%) would need stroke rehabilitation services immediately post discharge from the hospital.
- The need for effective, efficient, cost-appropriate rehabilitation is clear. There are a number of barriers that stand in the way. This subcommittee identified two main barriers to stroke care: **1) access to rehabilitation care and 2) development of stroke resources.** These are outlined in Section IV.

**Subcommittee Recommendations:**

1. **Access to Rehabilitation Care:**
  - a. *Limitation 1:* The committee views the most significant barrier to stroke rehabilitation in SC as **limited access for those who have Medicaid or no insurance.** Currently, Medicaid does NOT cover rehabilitation costs for acute rehabilitation centers. Because of the relatively young age of SC stroke survivors (those typically covered by

Medicaid- not Medicare), this significantly **limits access to care**, **limits functional return**, and **increases the risk for secondary disability** including subsequent strokes for this population. People under age 65, that have been hospitalized for stroke, has grown from 33% of all reported strokes in SC in 1999 to 39% in 2008. Therefore the only option for these patients is home health, which Medicaid in SC also has a strict restriction on the number of allowable visits. This limitation affects the state's young stroke population including pediatrics stroke survivors to those in the most fiscally productive years of life.

- i. *Suggested Recommendation/Solution: Increase Medicaid coverage to include stroke rehabilitation both in free-standing rehab hospitals and home health.*
- b. *Limitation 2: There is a **shortage of rehabilitation specialists** in the state (rehabilitation physiatrists, occupational, physical, and speech therapists) especially in rural areas.*
  - i. *Suggested Recommendation/Solution: We suggest incentives to recruit and retain therapists such as tuition waivers, tax credits, or limited state income tax to meet this need in rural areas.*

**Fiscal Impact:** This could decrease costs long term by decreasing secondary impairment and return hospitalization following stroke and increasing productivity of the stroke survivor. Literature demonstrates additional rehabilitation and preventative care saves money. Duncan et al. in a *Clinical Practice Guideline for Management of Adult Stroke Rehabilitation Care* state that "Secondary prevention is fundamental to preventing stroke recurrence, as well as coronary vascular events and coronary heart disease-mediated death." Therefore early intensive rehabilitation intervention is critical. (Duncan 2005, Jørgensen 2005)

#### ***ESTIMATION of cost:***

*For Limitation 1: While we do not know how many people would benefit from the allowance of Medicaid coverage of inpatient rehabilitation, we have estimated a contingent sample:*

*We know that approximately 14% of patients (2500 patients) in SC currently have rehabilitation services following an inpatient stay. According to 2009 BRFSS data we know that 4.3% of stroke inpatient costs are paid by Medicaid. Therefore, the number of Medicaid patients that may require rehabilitation services following acute hospital discharge could be estimated at 108 patients (4.3% of 2500).*

*If you consider the average length of stay for inpatient rehabilitation is 14 days and an average inpatient rehab cost per day of \$900, an estimate of average*

*charges per stay would be \$12,600 per person. (Figures from HealthSouth Rehabilitation Hospital)*

*Therefore, a safe estimate of utilization according to current data is that 108 patients per year ( at \$12,600 per visit) would translate to an approximate cost of \$1.5 million annually. This cost could bring needed rehabilitation to the younger citizens of SC and subsequently result in improve quality of life and increased productivity.*

*For Limitation 2: To increase rehabilitation specialists in the state there are a number of options. The state could allot more money to the education of new therapists, however, recruitment of already trained therapists may be a more economically feasible option. Therapists incur a great deal of debt, similar to medical school, therefore options to repay school debt for practicing rehabilitation specialists in rural areas(defined as underserved areas) may be an option. Assuming a tuition reimbursement program of \$10,000 per year of service, the state could receive 50 year equivalent for every \$500,000 invested. This is off set by brining professionals to a rural area, which will improve local economies. Another suggested option would be offer tax credits or limit state income tax for needed professionals in underserved areas.*

## **2. Development of Stroke Resources:**

*c. Limitation: There had been a great deal of needed emphasis on preventative stroke education. However, of the more than 700,000 people a year that have a stroke, 200,000 (28%) are recurrent strokes. **The cost savings from preventing/ limiting recurrent stroke is clear.***

*i. Suggested Recommendations/Solutions*

- 1. Fund resources to develop and maintain a comprehensive website with printable materials that includes information across the continuum of care including acute stay to home modifications and community resources.*
- 2. Produce a video for hospitals or other facilities to use on patient education channels to educate patients with stroke about their rehabilitation and their risk for subsequent strokes.*

**FISCAL IMPACT:** The cost savings from preventing or limiting recurrent strokes or subsequent hospitalizations is clear. The *estimated* upfront cost for the development of a professional website and professional videos could be performed for about \$200,000.

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**South Carolina Stroke Registry**  
**Presented to the full committee for consideration on May 7, 2010**

- The purpose of the South Carolina Stroke Registry is to reduce the incidence of death and disability caused by stroke.
- South Carolina must be able to assess the use of best practice guidelines for acute stroke prevention, treatment and rehabilitation by conducting real-time data collection on stroke incidence. Using these data sets, emergency medical services (EMS), Emergency Departments, hospitals and Rehabilitation Services will be able to measure, monitor and improve the quality of patient care throughout SC.
- DHEC must establish a mechanism for surveillance of stroke cases in SC that compiles stroke incidence and care information and statistics that align with the stroke consensus measures developed and approved by the AHA/ASA, CDC, and The Joint Commission. This task will include collection, compilation, analysis and reporting of all stroke encounters throughout the continuum of care.
- DHEC must develop a mechanism to link the data from all system components.
- DHEC must generate an annual stroke surveillance and burden report utilizing the SC stroke registry.
- DHEC must receive sufficient funding support to perform the registry work, which is projected to be \$300,000 per year.

**Public Awareness, Education, Prevention, and  
Disparities Subcommittee Meeting Minutes  
December 9, 2009**

**Attendees:** Mark McDonald, MD; Sheri Seigler; Lisa Waddell, MD; Betsy Crick; Kay Lower

**Subcommittee Members Not Present:** Nowa Omoigui, MD; and although Stoney Abercrombie, MD, was present by proxy in full committee, he was unable to be represented in this subcommittee breakout session

As directed by Dr. Adams, the Public Awareness, Education, Prevention, and Disparities Subcommittee met after the adjournment of the Stroke Systems of Care Study Committee to collaborate on the deliverables assigned to this group.

Subcommittee members requested DHEC support staff to:

- Email subcommittee members to determine if anyone volunteers to serve as chairperson for the group
- Provide state of the state data
- Provide summary of DHEC & AHA public awareness and education efforts
- Assess what other states are doing with prevention efforts, and determine if Joy Brooks or Dr. Adams have comparison of states as a PDF
- Provide maps illustrating stroke burden layered with HDSP Division community and provider education efforts
- Assess underserved population initiatives of the SC Primary Health Care Association memberships and/or those represented by the Office of Rural Health
- Determine stroke prevention efforts by primary stroke centers

Our next meeting will be held via teleconference on January 12 from 2:00 p.m. to 4:00 p.m. DHEC support staff will schedule this conference call.

Respectfully Submitted,

Betsy Crick  
Public Information Coordinator, DHEC HDSP Division  
Primary Support Staff, Stroke Prevention Subcommittee

**South Carolina Stroke Systems of Care  
Public Awareness, Education, Prevention and Disparities Subcommittee  
January 12, 2010  
2:00 p.m. – 4:00 p.m.**

**AGENDA**

- I. Review and Approval of Dec. 9 Subcommittee Minutes
- II. Discuss of Background Materials
- III. Discuss Next Steps and Timeline
- IV. Schedule Next Subcommittee Meeting

**Public Awareness, Education, Prevention, and  
Disparities Subcommittee Meeting Minutes  
January 12, 2010**

**Attendees:** Stoney Abercrombie, MD; Mark McDonald, MD; Sheri Seigler; Lisa Waddell, MD; Betsy Crick; Kay Lowder

**Subcommittee Member Not Present:** Nowa Omoigui, MD

Dr. Abercrombie, Subcommittee Chairperson, led our conference call.

Dr. Waddell suggested that we restate the charge of our subcommittee in our December 9 meeting minutes.

The subcommittee discussed all handouts provided for the meeting:

- Dr. Waddell suggested that we compile background information for the group regarding the “Give Me 5” messaging that the DHEC Heart Disease and Stroke Prevention Division has embraced.
- Kay Lowder discussed the stroke burden maps. We will send instructions on the map layers in preparation for our next conference call. Dr. Waddell asked that we work with the Epidemiologists to determine a denominator.
- Dr. Waddell believes that the article distributed for today’s conference call was used for the development for the Power to End Stroke initiative, and is having someone look into this.
- Kay Lowder discussed DHEC and AHA stroke prevention education efforts.
- We should have our subcommittee recommendations template prior to our next conference call. Betsy Crick will follow-up with Joy Brooks about the status of the template.
- Our subcommittee is still awaiting information on:
  - Assessments of what other states are doing with prevention efforts - Genentech document currently with the American Heart Association (AHA) Government Relations Director.
  - Assessment of stroke prevention efforts by primary stroke centers – Awaiting feedback from AHA Quality Improvement Director.

- Assessment of underserved initiatives of the SC Primary Health Care Association – Awaiting feedback from organization.

Our next meeting will be held via teleconference on February 25 at 3:30 p.m. DHEC support staff will schedule this conference call.

Respectfully Submitted,

Betsy Crick  
Public Information Coordinator, DHEC HDSP Division  
Primary Support Staff, Stroke Prevention Subcommittee

**South Carolina Stroke Systems of Care  
Public Awareness, Education, Prevention and Disparities Subcommittee  
February 25, 2010  
3:30 p.m.**

Call-in info:  
Phone Number: 803-896-9993  
Meeting ID: 348066

**AGENDA**

- I. Review and Approval of Dec. 9 and Jan. 12 Subcommittee Minutes
- II. Discussion of Background Materials
- III. Discuss Compilation of Subcommittee Recommendations
- IV. Schedule Next Subcommittee Meeting, if deemed appropriate

**Public Awareness, Education, Prevention, and  
Disparities Subcommittee Meeting Minutes  
February 25, 2010**

**Attendees:** Stoney Abercrombie, MD; Mark McDonald, MD; Lisa Waddell, MD; Betsy Crick; Stephanie Huston; Kay Lowder; Tony Lee

**Subcommittee Members Not Present:** Nowa Omoigui, MD; Sheri Seigler

Dr. Abercrombie, Subcommittee Chairperson, led our conference call.

The December 9 and January 12 Subcommittee Minutes were approved.

Dr. Abercrombie stated that the CDC Web site indicates a majority of citizens don't know stroke symptoms. He also referred to a recent *LA Times* article, urging that early detection is important.

Dr. Waddell indicated that our challenge is quick access to stroke centers. The subcommittee agreed that encouraging more geographically dispersed hospitals to become stroke-certified is paramount.

Dr. Waddell indicated that DHEC had limited resources for promotion of awareness strategies. The subcommittee agreed that the Stroke Collaborative's "Give Me 5" awareness messaging was succinct and had great recall rates when tested, and noted that the messaging does not include blood pressure control. Betsy offered to email the group a hyperlink to the "Give Me 5" Web site for further information.

Dr. Waddell suggested that we both enhance current strategies and possibly implement new ones, in the absence of best practices. The Genentech document was helpful, but did not include many strategies for public awareness, education, prevention and disparities.

Support staff will provide the following to the subcommittee prior to our next teleconference:

- Stroke center certification details, including cost
- Maps provided by Dr. Tony Lee
- Comparison of Give Me 5, Search Your Heart, and Power to End Stroke
- Information regarding Hypertension Specialists
- Advanced Stroke Life Support details

Dr. Waddell offered to check with the S.C. Primary Health Care Association regarding stroke prevention and education efforts. She also offered to look into a mobile awareness unit (much like the mobile mammography and flu initiatives).

Dr. McDonald offered to call hospitals to determine what it would take for them to become stroke centers.

Dr. Abercrombie offered to draft the subcommittee recommendations, which would be discussed and finalized during the March 17 conference call, in preparation for presentation to the full committee on Friday, March 19. Dr. Waddell offered to draft the assessment section.

Our next meeting will be held via teleconference on March 17 at 3:00 p.m. DHEC support staff will schedule this conference call.

Respectfully Submitted,

Betsy Crick  
Public Information Coordinator, DHEC HDSP Division  
Primary Support Staff, Stroke Prevention Subcommittee

**South Carolina Stroke Systems of Care  
Public Awareness, Education, Prevention and Disparities Subcommittee  
March 17, 2010  
3:00 p.m.**

Call-in info:  
Phone Number: 803-896-9993  
Meeting ID: 896813

**AGENDA**

- I. Review and Approval of February 25 Subcommittee Minutes
- II. Review and Finalize Subcommittee Recommendations
- III. Discuss Next Steps

**Public Awareness, Education, Prevention, and  
Disparities Subcommittee Meeting Minutes  
March 17, 2010**

**Attendees:** Stoney Abercrombie, MD; Mark McDonald, MD; Lisa Waddell, MD; and Betsy Crick

**Subcommittee Members Not Present:** Nowa Omoigui, MD; and Sheri Seigler

Dr. Abercrombie, Subcommittee Chairperson, led our conference call.

The February 25th Subcommittee Minutes were approved.

Dr. Abercrombie led discussion regarding the draft recommendations to be presented at the March 19<sup>th</sup> full committee meeting. Dr. Waddell asked if there were any potential opportunities with WelVista, such as education outreach. She also mentioned tapping into the network of free clinics, who serve many patients with blood pressure issues, and said she would look further into this possibility. Dr. Waddell said that our plan could certainly include process evaluation measures, i.e., “increase the number of hypertension specialists in our state,” and the group agreed that the Behavioral Risk Factor Surveillance System (BRFSS) could provide data as an evaluation measure as well. Dr. Abercrombie offered to develop a PowerPoint presentation with the subcommittee’s recommendations for the full committee meeting on March 19<sup>th</sup>.

Dr. McDonald indicated that he would arrive late for the March 19<sup>th</sup> committee meeting, and Dr. Waddell is unable to attend.

Our next meeting will be held via teleconference on April 21<sup>st</sup> at 1:30 p.m., and DHEC support staff will schedule this conference call.

Respectfully Submitted,

Betsy Crick  
Public Information Coordinator, DHEC HDSP Division  
Primary Support Staff, Stroke Prevention Subcommittee

**South Carolina Stroke Systems of Care  
Public Awareness, Education, Prevention and Disparities Subcommittee  
April 21, 2010  
1:30 p.m.**

Call-in info:  
Phone Number: 803-896-9993  
Meeting ID: 616600

**AGENDA**

- I. Discuss potential policy recommendation for report
- II. Review feedback provided at 3/19/10 committee meeting
- III. Discuss next steps

**Public Awareness, Education, Prevention, and  
Disparities Subcommittee Meeting Minutes  
April 21, 2010**

**Attendees:** Stoney Abercrombie, MD; Mark McDonald, MD; Lisa Waddell, MD; Betsy Crick, and Kay Lowder

**Subcommittee Members Not Present:** Nowa Omoigui, MD; and Sheri Seigler

Dr. Abercrombie, Subcommittee Chairperson, led our conference call.

The March 17th Subcommittee Minutes were approved.

The “Give Me 5 for Stroke” campaign is no longer active, and Betsy has called the American Heart Association for details. The IOM is issuing a report today on policy regarding sodium reduction, and we can possibly pull language from this for our subcommittee recommendations. In February, the IOM issued a report on hypertension regarding population-based strategies. Dr. Waddell referenced a recent article in the *American Journal of Public Health* by Dr. Frieden, which she will have support staff distribute to the subcommittee.

The group discussed edits to the subcommittee recommendations, as well as general feedback from the 3/19 full committee meeting. Joy Brooks can assist the group with wording for support of the American Society of Hypertension, Inc. initiative. Support staff will also check with Joy to determine the deadline and required format for subcommittee recommendations. After today’s IOM call, support staff will send an update to the subcommittee.

Our next meeting will be held via teleconference on May 4th at 4:30 p.m., and DHEC support staff will schedule this conference call.

Respectfully Submitted,

Betsy Crick  
Public Information Coordinator, DHEC HDSP Division  
Primary Support Staff, Stroke Prevention Subcommittee

**Stroke Systems of Care Study Committee  
Urgent Response System Subcommittee  
Meeting Minutes  
December 9, 2009**

**Attendees:** Edward Jauch, MD, Chair; Peter Hyman, MD; Alonzo Smith; Charles “Doug” Silk.

Staff support present: Carolyn Bivona

As directed by Dr. Adams, the Urgent Response Subcommittee met after the adjournment of the Stroke Systems of Care Study Committee to address the deliverables assigned to this group.

Subcommittee members identified the following critical issues<sup>1</sup>:

- Cross state transport – what are the challenges and how to address
- How does the urgent response system for stroke overlap with trauma and STEMI system
- What is the best method to track diversion
- Important to work on linkage and data sharing between pre-hospital and hospital systems. EMS providers want feedback on patients transported –what is working well and opportunities for improvement
- All SC pre-hospital providers to be reporting run report on line by end of 2009
- Stroke Toolkits (pre-hospital quality improvement process) are up and running. State EMS office will be able to generate reports in 2010
- Consistency in training for pre-hospital providers. Stroke curriculum is standard for state. (Advanced Stroke Life Support). No consistency between regional or local training
- Triage protocols – most providers use 3 step Cincinnati on scene and MENDS en route

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<sup>1</sup> Subcommittee is charged to present final draft to the full committee on March 19 SC Stroke Systems of Care Study Committee meeting

- Next subcommittee meeting will be held via conference call. Date and time TBD.

Subcommittee action items:

- Carolyn Bivona will send subcommittee SC STEMI System maps and AHA SC EMS survey data
- Alonzo Smith will send subcommittee copy of the Stroke Toolkit

Respectfully Submitted,

Carolyn Bivona

American Heart Association / American Stroke Association

**Stroke Systems of Care Study Committee  
Urgent Response System Subcommittee Meeting Minutes  
February 5, 2010; 3:00 –4:00 pm**

**Subcommittee members attending:** Edward Jauch, MD, Chair; Charles “Doug” Silk.

Staff support present: Carolyn Bivona

**Meeting facilitated by Dr. Edward Jauch, Chair and included discussion on:**

- Minutes from 12/09/09 subcommittee meeting reviewed and accepted as submitted
- Reviewed Los Angeles stroke protocol and SC EMS Draft 33 stroke protocols
- Discussed option of creating SC specific stroke checklist similar to MENDS – how can check list be simplified?
- Reviewed treatment protocols from Charleston County
- Dr. Jauch provided update from national on comprehensive stroke center certification
- How do the trauma regions handle dispatch?
- Utilization of air medical resources – should the subcommittee come up with recommendations for this area?

**Subcommittee action items:**

- Dr Jauch will revise Stroke Alert Check list and send out to group for review
- Carolyn Bivona will survey subcommittee for best time for next meeting week of February 15<sup>th</sup>.

Respectfully Submitted,

Carolyn Bivona  
American Heart Association / American Stroke Association

**Stroke Systems of Care Study Committee  
Urgent Response System Subcommittee Meeting Minutes  
February 17, 2010; 3:00 –4:00 pm  
Conference Call**

**Subcommittee members attending:** Edward Jauch, MD, Chair; Peter Hyman, MD, Alonzo Smith, Charles “Doug” Silk.

**Staff support present:** Carolyn Bivona

**Subcommittee meeting facilitated by Dr. Jauch and included discussion on:**

**Subcommittee Recommendations:**

- 1) EMS Dispatch Protocols
  - Provide an Emergency Medical Dispatch (EMD) protocol to all dispatch agencies related to stroke (voluntary use)
  - Create and distribute training materials on the EMD related to stroke
  - Recommend future consideration of SC DHEC oversight of dispatch centers
  
- 2) EMS Triage Assessment Tool
  - Develop a South Carolina specific tool for the on-scene assessment of potential stroke patients
  - Develop and provide education on the on-scene tool
  - Ensure compliance with current American Stroke Association (ASA) / ECC guidelines
  - Utilize statewide EMS reporting to perform quality improvement processes to ensure adherence SCENE Tool use and suitability of tool
  
- 3) EMS Treatment Protocol
  - Develop and distribute suspected stroke protocol for state wide use
  - Ensure compliance with current ASA / ECC guidelines
  
- 4) EMS Transport and Triage Protocol
  - Develop South Carolina specific triage protocol utilizing the recommendation of the Hospital Capacity subcommittee identifying stroke centers (4 levels of stroke capabilities)
  - Identify non-stroke centers and work on integrating these sites into systems of care with local stroke facilities
  - Utilize statewide EMS reporting to perform quality improvement processes to ensure adherence to recommendation
  - Ensure compliance with current ASA / ECC guidelines

Subcommittee action items:

- Dr Jauch will finalize draft recommendations and e-mail to group for review

Respectfully Submitted,

Carolyn Bivona

American Heart Association / American Stroke Association

# SC EMS Protocol 34 Suspected Stroke

## Suspected Stroke

**History**

- Previous CVA, TIA's
- Previous cardiac / vascular surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma

**Signs and Symptoms**

- Altered mental status
- Weakness / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension / hypotension

**Differential**

- See Altered Mental Status
- TIA (Transient ischemic attack)
- Seizure
- Hypoglycemia
- Tumor
- Trauma

**Universal Patient Care Protocol**

**F** **Prehospital Stroke Screen** **F**

Screen Positive →

If Positive and Symptoms < 8 hours, transport to the destination as per the **EMS System Stroke Plan**.  
Limit Scene Time to 10 Minutes  
Provide Early Notification

Negative ↓

**A** **IV Protocol** **A**

**B** **Blood Glucose** **B**

**B** **12-Lead ECG** **B**

**A** **50% Dextrose** **A**

**P** **Glucagon if no IV** **P**

Glucose < 60 →

Consider other protocols as indicated

- Altered Mental Status
- Hypertension
- Seizure
- Overdose/Toxic Ingestion

↓

**M** **Notify Destination or Contact Medical Control** **M**

**Pearls**

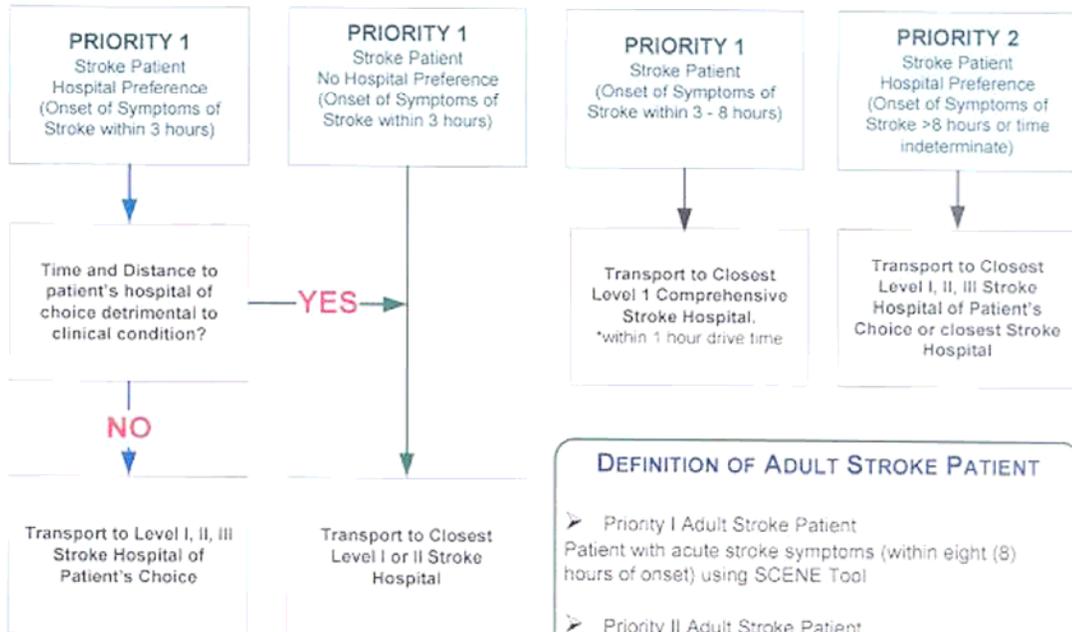
- Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro
- Items in Red Text are key performance measures used in the EMS Acute Stroke Care Toolkit
- The **Reperfusion Checklist** should be completed for any suspected stroke patient. With a duration of symptoms of less than 8 hours, scene times should be limited to 10 minutes, early destination notification/activation should be provided and transport times should be minimized based on the EMS System Stroke Plan.
- **Onset of symptoms** is defined as the last witnessed time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptom free)
- The differential listed on the Altered Mental Status Protocol should also be considered
- Elevated blood pressure is commonly present with stroke. Consider treatment if diastolic is > 120 mmHg.
- Be alert for airway problems (swallowing difficulty, vomiting/aspiration)
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- Document the Stroke Screen results in the PCR.
- Document the 12 Lead ECG as a procedure in the PCR.

Protocol 34
2010

Medical Protocols



## Adult Stroke Patient Destination Determination by Stroke Center Capability



**DEFINITION OF ADULT STROKE PATIENT**

- Priority I Adult Stroke Patient  
Patient with acute stroke symptoms (within eight (8) hours of onset) using SCENE Tool
- Priority II Adult Stroke Patient  
Patient with acute stroke symptoms > 8 hours of onset or time indeterminate using SCENE Tool

- Level I Stroke Hospital  
COMPREHENSIVE STROKE CENTER**
- Physician / Nursing Staff trained in neurologic care on-site 24 hours a day
  - Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
  - CT of the head with technician on-site 24 hours a day
  - Clinical Laboratory Services
  - 24 / 7 Stroke Call and capabilities for IV tPA therapy for eligible patients
  - 24 / 7 Endovascular Call and capabilities for endovascular therapy for eligible patients
  - 24 / 7 Neurosurgery Call
  - Neuro-Intensive Care Unit and neurointensivists
  - Stroke Registry and Quality Improvement Process

- Level II Stroke Hospital  
PRIMARY STROKE CENTER**
- Physician / Nursing Staff trained in neurologic care on-site 24 hours a day
  - Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
  - CT of the head with technician on-site 24 hours a day
  - Clinical Laboratory Services
  - 24 / 7 Stroke Call and capabilities for IV tPA therapy for eligible patients
  - Stroke Registry and Quality Improvement Process

**Level IV Non-Stroke Hospitals**  
No organized treatment for acute stroke

- Level III Stroke Hospital  
STROKE ENABLED CENTER**
- Emergency Department 24 hours a day with Physician or physician extender and nursing staff trained in neurological care on-site 24 hours a day.
  - CT of the head with technician on-site 24 hours a day
  - Clinical Laboratory Services
  - Telestroke Video – Conferencing Capabilities
  - 24 / 7 Stroke Call with Capabilities for IV tPA therapy for eligible patients
  - Transfer agreement established in advance to ensure orderly transition from Level II Stroke Hospital to specialized stroke care facility

Adult Stroke Destination Determination



Standards Procedure (Skill)

## Stroke Screen: LA Prehospital

### Clinical Indications:

- Suspected Stroke Patient

F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P

### Procedure:

1. Assess and treat suspected stroke patients as per protocol.
2. The Los Angeles Prehospital Stroke Screen (LAPSS) form should be completed for all suspected stroke patients (see appendix). There are six screening criteria items on the LAPSS form.
3. Screen the patient for the following criteria:
  - Age over 45 years
  - History of a seizure disorder
  - New onset of symptoms in last 24 hours
  - Patient ambulatory prior to event
  - Blood glucose between 60-400
4. The final criterion consists of performing a patient exam looking for facial droop, unilateral grip weakness/absence, or unilateral arm weakness. One of these exam components must be positive to answer "yes" on the screening form.
5. **If all of the LAPSS screening criteria are met ("yes" to all criteria), follow the EMS System Stroke Plan and alert the receiving hospital of a possible stroke patient as early as possible.**
6. All sections of the LAPSS form must be completed.
7. The completed LAPSS form should be attached or documented in the PCR.

### Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
- **MIAMI or SC PRE-HOSPITAL STROKE SCREEN HERE – IN PLACE OF LA STROKE SCREEN**

# SC EMS Appendix D SCENE Tool



## SCENE Tool

South Carolina Emergency Neurologic Evaluation

### STROKE ALERT / SCENE\* TOOL PREHOSPITAL CHECKLIST

\*South Carolina Emergency Neurologic Evaluation

DATE & TIMES				
Date:	Dispatch Time:	EMS Arrival:	EMS Departure:	ED Arrival:

BASIC DATA				
Patient name	Age	Gender		
Witness Name	Witness Phone			
Chief Complaint	SBP	DBP		
Last Time Normal	Glucose	Pulse	Resp	

FAST NEUROLOGIC EXAM (Check if abnormal)	YES	NO
Facial Droop (Smile, show teeth)		
Arm Drift (Extend both arms, eyes closed)		
Speech ("You can't teach an old dog new tricks")		

STROKE ALERT CRITERIA	YES	NO
Time of onset < 8 hours		
Positive FAST (=1 or more from FAST NEURO EXAM)		
Blood glucose > 60 mg/dL (if fingerstick possible)		

If YES to all STROKE ALERT CRITERIA, transport to nearest stroke hospital and call Stroke Alert.

Minimize scene time and transport patient urgently.

Destination Hospital:	Hospital Contact:
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PAST HISTORY / MEDICATIONS / ALLERGIES			
Recent events:	PMH:	Medications:	Allergies:

MANAGEMENT REMINDERS
Do not treat hypertension Do not allow aspiration (keep NPO) Provide oxygen (if O2 sat < 94%) Do not administer glucose (unless glucose < 60 mg / dL)

STROKE SPECIFIC REPORT TO EMERGENCY DEPARTMENT			
<b>BASIC DATA</b> • Age • Gender • Chief complaint	<b>SYMPTOMS</b> • Last normal • Trauma • Seizure • Headache	<b>HISTORY</b> • Recent surgery • Recent illness • Medications • VS & glucose	<b>EXAM</b> • GCS • FAST Scale • Other

# SC EMS Procedure 40 Reperfusion Checklist



Standards Procedure (Skill)

## Reperfusion Checklist

### Clinical Indications:

Rapid evaluation of a patient with suspected acute stroke and/or acute myocardial infarction (STEMI) to:

- Determine eligibility and potential benefit from fibrinolysis..
- Rapid identification of patients who are not eligible for fibrinolysis and will require interventional therapy.

F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P

### Procedure:

1. Follow the appropriate protocol for the patient's complaint to assess and identify an acute condition which could potentially benefit from fibrinolysis. If a positive finding is noted on one of the following assessments, proceed to step 2.
  - Perform a 12-lead ECG to identify an acute ST elevation myocardial infarction (STEMI).
  - Perform the Pre-hospital Stroke Screen to identify an acute stroke
2. Complete the Reperfusion Check Sheet to identify any potential contraindications to fibrinolysis. (See Appendix)
  - Systolic Blood Pressure greater than 180 mm Hg
  - Diastolic Blood Pressure greater than 110 mm Hg
  - Right vs. Left Arm Systolic Blood Pressure difference of greater than 15 mm Hg
  - History of structural Central Nervous System disease (tumors, masses, hemorrhage, etc.)
  - Significant closed head or facial trauma within the previous 3 months
  - Recent (within 6 weeks) major trauma, surgery (including laser eye surgery), gastrointestinal bleeding, or severe genital-urinary bleeding
  - Bleeding or clotting problem or on blood thinners
  - CPR performed greater than 10 minutes
  - Currently Pregnant
  - Serious Systemic Disease such as advanced/terminal cancer or severe liver or kidney failure.
3. Identify if the patient is currently in heart failure or cardiogenic shock. For these patients, a percutaneous coronary intervention is more effective.
  - Presence of pulmonary edema (rales greater than halfway up lung fields)
  - Systemic hypoperfusion (cool and clammy)
4. If any contraindication is noted using the check list and an acute Stroke is suspected by exam or a STEMI is confirmed by ECG, activate the EMS Stroke Plan or EMS STEMI Plan for fibrinolytic ineligible patients. This may require the EMS Agency, an Air Medical Service, or a Specialty Care Transport Service to transport directly to a specialty center capable of interventional care within the therapeutic window of time.
5. Record all findings in the Patient Care Report (PCR).

### Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.

Procedure 40

2009

# SC EMS Appendix H Reperfusion Checklist



## Reperfusion Checklist

The Reperfusion Checklist is an important component in the initial evaluation, treatment, and transport of patients suffering from an acute ST-elevation myocardial infarction (STEMI) or acute Stroke. Both of these conditions can be successfully treated using fibrinolysis (thrombolytics) if the patient arrives at the appropriate hospital within the therapeutic window of time.

This form should be completed for all acute STEMI and acute Stroke patients.

Patient's Name: \_\_\_\_\_

PCR Number: \_\_\_\_\_ Date: \_\_\_\_\_

**1. Has the patient experienced chest discomfort for greater than 15 minutes and less than 12 hours?**  
 Yes     No

**2. Has the patient developed a sudden neurologic deficit with a positive SCENE?**  
 Yes     No

**3. Are there any contraindications to fibrinolysis?**

If any of the following are checked "Yes", fibrinolysis MAY be contraindicated.

- |                              |                             |  |
|------------------------------|-----------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Systolic Blood Pressure greater than 220 mm Hg   |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Diastolic Blood Pressure greater than 120 mm Hg  |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Right vs. Left Arm Systolic Blood Pressure difference of greater than 15 mm Hg   |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | History of structural Central Nervous System disease (tumors, masses, hemorrhage, etc.)  |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Significant closed head or facial trauma within the previous 3 months  |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Recent (within 6 weeks) major trauma, surgery (including laser eye surgery), gastrointestinal bleeding, or severe genital-urinary bleeding |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Bleeding or clotting problem or on blood thinners  |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | CPR performed greater than 10 minutes  |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Currently Pregnant   |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Serious Systemic Disease such as advanced/terminal cancer or severe liver or kidney failure.   |

**4. (STEMI Patients Only) Does the patient have severe heart failure or cardiogenic shock?**  
 These patients may benefit more from a percutaneous coronary intervention (PCI) capable hospital.

- |                              |                             |   |
|------------------------------|-----------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Presence of pulmonary edema (rales greater than halfway up lung fields) |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Systemic hypoperfusion (cool and clammy)                                |

**If any contraindication is checked as "Yes" and an acute Stroke is suspected by exam or a STEMI is confirmed by ECG, activate the EMS Stroke Plan or EMS STEMI Plan for fibrinolytic ineligible patients.** This may require the EMS Agency, an Air Medical Service, or a Specialty Care Transport Service to transport directly to a specialty center capable of interventional care within the therapeutic window of time.

**Hospital-Based Stroke Treatment Subcommittee  
Meeting Minutes  
December 9, 2009**

**Attendees:** Robert Adams, MD, Deborah Bridgeman, RN, Rodney Harrison, MD, Aquilla Turk, DO

**Subcommittee Members Not Present:** Dilantha Ellegala, MD; Rick Foster, MD, was present by proxy (James Walker) in full committee meeting and the subcommittee breakout session

As directed by Dr. Adams, the Hospital-Based Stroke Treatment Subcommittee met after the adjournment of the Stroke Systems of Care Study Committee to collaborate on the deliverables assigned to this group.

Support staff present: Joy Brooks, Stacia Bell, and Janayah Hudson

Subcommittee members discussed<sup>2</sup>:

- Subcommittee recommended that every hospital ED have a stroke plan, if not a stroke primary or comprehensive hospital they will be a referral site. The stroke plan must include referral to a higher level stroke center
- The stroke plan should include defined relationships between primary stroke centers and comprehensive stroke centers
- There must be an agreement or cooperation between hospitals to relieve the frustration from the smaller hospitals (treatment vs. movement)
- Data sharing needs to be a continuous cycle from prehospital to hospital to ensure patients are treated as soon as possible with no delays in treatment
- SC DHEC already in the process of establishing a data linkage between NEMSIS and hospital data
- Subcommittee proposed that hospitals that do not opt for JCAHO or HFAP designation can opt for a Level I, II or II stroke designation through SC DHEC
- SC DHEC needs to establish meaningful guidelines for certification. The agency must define levels of ability to treat stroke and categorize hospitals based on their ability to treat stroke.
- Subcommittee must define fiscal resources for DHEC to certify hospitals
- Subcommittee proposed using framework of the REACH telemedicine model for bridging the gap in rural areas of our state for stroke treatment

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<sup>2</sup> Subcommittee is charged to present final draft to the full committee on March 19 SC Stroke Systems of Care Study Committee meeting

- Subcommittee's goal to populate the map through primary and/or comprehensive stroke centers or REACH sites
- Subcommittee questioned whether or not to wait on recommendations on comprehensive stroke center criteria from the Brain Attack Coalition
- Research how other successful states handled capacity diversion protocols. It was noted that PreMIS will have 24 hour hospital capacity information
- The next meeting will be held via teleconference during the first or second week of January. Maggie Bobo will solicit feedback for best the date and time

Subcommittee action items:

- Debbie Bridgeman to provide JCAHO and HFAP Accreditation summaries to the committee
- Maggie Bobo will provide information on current primary stroke centers and who may be populating the map in 2010. She will also make available hospital assessments that have been conducted
- Genentech PDF resource will be made available to subcommittee following a comprehensive review of best practice assessment relative to each subcommittee's work
- Joy Brooks will contact Mary Jo Roue from the SC DHEC Health Bureau of Certification regarding existing diversion policies

Respectfully Submitted,

**Maggie Bobo, M.S.**

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 American Heart Association  
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**Hospital-Based Stroke Treatment Subcommittee  
Meeting Minutes  
January 15, 2010**

**Attendees:** Robert Adams, MD, Deborah Bridgeman, RN, Rodney Harrison, MD, Rick Foster, MD

**Subcommittee Members Not Present:** Dilantha Ellegala, MD; Aquilla Turk, DO

Support staff present: Maggie Bobo, Yarley Steedley, Joy Brooks, Stacia Bell, and Janayah Hudson

Subcommittee members discussed<sup>3</sup>:

- Debbie Bridgeman reviewed the TJC and HFAP accreditation summaries
- Per Maggie Bobo, there is discussion within AHA/ASA to evaluate HFAP's criteria/guidelines for stroke certification.
- It was stated that HFAP does not required hospital-wide accreditation to become certified as a Primary Stroke Center, but TJC does require it
- Per Debbie Bridgeman, it cost Spartanburg Regional Hospital approximately \$7,000 for the Primary Stroke Center Certification through HFAP
- Dr. Adams stated that having cost estimates for stroke certification may be helpful to interested hospitals
- Currently there are six hospitals certified as Primary Stroke Centers by TJC and one hospital certified by HFAP
- Eight hospitals within the state are preparing for Primary Stroke Center certification using Get With The Guidelines
- By the end of 2011 it is estimated that 25% of SC hospitals will be certified Primary Stroke Centers.
- Dr. Adams proposes DHEC's role should be to certify all hospitals regardless if they currently hold TJC or HFAP certification and be responsible for the certification of hospitals as Acute Stroke Capable since there is no national certification process.
- Yarley Steedley suggested that a three tier system be used and to keep Primary Stroke Center as the top tier. Yarley explained AHA/ASA's position regarding primary stroke center certification. She reiterated that AHA/ASA does not recommend that the state get into the process of certifying hospitals for stroke care where nationally recognized certification already exists. Since there is no unified national certification for comprehensive stroke centers at this time, AHA/ASA will be in support of the state focusing on a system of care with

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<sup>3</sup> Subcommittee is charged to present final draft to the full committee on March 19 SC Stroke Systems of Care Study Committee meeting

- Primary Stroke Centers as the top tier, that can be nationally certified by the Joint Commission which would alleviate state responsibility and its limited time and resources.
- Dr. Foster recommended that the second level designation include telemedicine and require a stroke plan and transfer agreements with a Primary Stroke Center.
  - Guidelines from both TJC and HFAP can be used to create an internal DHEC process for certifying Acute Stroke Capable hospitals.
    - ⇒ Procedures and measures for up to first four hours of treatment (emergency stabilization)
    - ⇒ Transfer agreements in place with Primary Stroke Centers
    - ⇒ Ability to achieve Primary Stroke Center certification in the future
  - Joy Brooks spoke briefly on Diversion policies, per a memo provided by Alonzo Smith from 2004, EMS must take patients to the nearest appropriate hospital unless the receiving hospital has made other arrangements.
  - The subcommittee will need to define and build upon “appropriate” within the EMS diversion policy.

Subcommittee action items:

- Joy Brooks will contact and meet with Pam Dukes (DHEC Health Regulations) to discuss cost estimates of what it would take DHEC to have on the ground consultants go into all SC hospitals for disease specific certification for stroke.
- Dr. Adams will draft recommendations for Acute Stroke Capable certification and define the tier system. He will also begin drafting language for the subcommittee’s review of the hospital-based stroke treatment portion of the state plan to be presented to the full committee on March 19.
- Dr. Harrison will draft language to provide Acute Stroke Capable hospitals with guidelines for appropriate emergency stabilization and timely transfer to a Primary Stroke Center.
- Maggie Bobo and Debbie Bridgeman will draft a narrative of the HFAP and TJC Primary Stroke Center certification requirements and recommend criteria, combining requirements from both certifying bodies, for stroke certification

Respectfully Submitted,

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- Dr. Adams to review of “Acute Stroke Hospitals Recommendations Paper Background Document”
- Discussion surrounding recommendations/draft of Hospital Based Treatment Subcommittee submission to State Plan and presentation to full committee.

Determine next meeting time in preparation for March 19<sup>th</sup> full committee presentation.

## **Rehabilitation Sub-Committee Meeting Minutes**

**December 9, 2009**

Members Present: Stacy Fritz, Chair; James Rogers and Teresa Robinson

Members Absent: Nancey Tsai, MD; Stacia Bell

As directed by Dr. Adams, the Rehabilitation subcommittee met after the adjournment of the Stroke Systems of Care Study Committee to collaborate on the deliverables assigned to this group.

The Committee discussion centered on the following points:

- **Funding**
  - Major barrier to care of the stroke patient
  - Expansion of Medicaid benefits
  - Current SC Medicaid regulations prohibit reimbursement to free-standing specialty hospitals such as psych and acute rehab. Also, funding for acute rehabilitation care at acute care hospitals is below actual cost of care.
- **Manpower**
  - Therapists shortage across state
  - Incentives to recruit and retain therapists
- **Education**
  - Education for stroke patients through rehab is crucial for prevention of further strokes
  - Prevention care from fall or injury for other secondary problems post-stroke
- **Consistency of Care/Levels of Care**
  - Address rates of re-admittance
  - Enhancement
- **Placement Approach to Algorithm**
  - Delivery of stroke care
  - Re-admittance rate
- **Evaluation**
  - Manpower shortage
  - Number of secondary stroke
- **Next Steps**
  - Committee members will meet at HDSP offices and teleconference with Dr. Nancey Tsai
  - Dr. Tony Lee will be invited to meeting to discuss Program Evaluation for this committee

- Tentative meeting planned for January 2010. Please provide available dates.
- Teresa will work with Carolyn Bivona to obtain a copy of statewide assessment and White paper conducted by the American Heart Association for the committee to review.

**South Carolina Stroke Systems of Care  
Rehabilitation Subcommittee Meeting  
January 13, 2010**

**11:00 AM – 1:00 PM**

**Agenda**

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- |      |                                    |  |
|------|------------------------------------|--|
| I.   | Welcome/Introduction               | Stacy Fritz, PhD, PT   |
| II.  | Purpose                            | Stacy Fritz, PhD, PT   |
| III. | AHA/ASA National Perspective       | Carolyn Bivona, Director<br>State Health Alliances<br>Mid-Atlantic Affiliate |
| IV.  | Group Sharing/Discussion           | All  |
| V.   | Program Evaluation                 | Dr. Anthony Lee<br>Epidemiologist  |
| VI.  | Schedule Next Subcommittee Meeting | Stacy Fritz, PhD, PT   |
| VII. | Adjourn                            |  |

**South Carolina Stroke Systems of Care  
Rehabilitation Subcommittee Meeting Minutes  
January 13, 2010**

The following is a brief summary of our meeting on January 13, 2010 from 11:00 a.m. to 1:00 p.m. in the 4<sup>th</sup> floor conference room.

**Present:**

Stacia Bell (DHEC)	Carolyn Bivona (AHA)
Tracey Brasher (Voc. Rehab)	Joy Brooks (DHEC)
Stacy Fritz, PhD (USC), Chair	Tony Lee (DHEC)
Teresa Robinson (DHEC)	James Rodgers, FACHE
Tina Shadley (DHEC)	

**Absent:** Nancey Tsai, MD (MUSC)

**Purpose:**

One of four sub committees charged with developing a prioritized list of items that would help stroke care via rehabilitation to be incorporated into a plan the SC Stroke Systems of Care Study Committee would submit to the Legislature in December 2010.

➤ **Carolyn:**

- Passed out two documents:
  1. ASA's Policy Recommendations for the Establishment of Stroke Systems of Care (specifically starting with page 8)
  2. Progress Markers
- Stated that one of her goals to be completed by June 30 is to do a statewide assessment of what type of resources are available for stroke rehabilitation.
- Pulled the National Survey for Rehab Facilities (Acute), which was updated by the Virginia Stroke Systems Task Force. She thinks this is the best and most current survey. She requested that the subcommittee review as is and give her any feedback, comments and/or additional items that are needed – they agreed. She plans to get this sent out to facilities by February 15, give them a three-week turn around and then compile information by the end of March.
- Feedback offered during the meeting:
  1. Add Case Management
  2. Home Environmental Services (building handicap ramps)
  3. Revise the equipment list
  4. Number of beds or patients seen per year

- Home Health is far above anyone else as far as outcomes are concerned because they have “The Oasis” evaluation - a standardized outcome for every patient.
- Reviewed the “List” from the short initial meeting and came up with the following revised prioritized list:
  1. Evaluation/Stroke Registry –
    - Voc Rehab/Community Outreach, second strokes, placed correctly
    - Measure success, Program Evaluation, Need to explain how this helps the rehab role.
    - Consistency of Care – Consistent as far as rehabilitation evaluations are concerned throughout the different levels of care (i.e.: rehab, acute, home health etc).
    - Stroke registry must include mandatory reporting
  2. Access to Rehabilitation Care
    - Because of the relatively young age of a large amount of SC stroke survivors, their rehabilitation cannot be reimbursed with Medicaid funds. Pediatric care.
    - Shortage of physical, speech, and occupational therapists across the state, with occupational therapists hurting most specifically in the rural areas. Consider incentives to recruit and retain therapists (suggestion: tax credits, limited state tax)
  3. Secondary Stroke Education –
    - Patient education: primarily lifestyle education for stroke second avoidance and those that have fallen or in danger to fall. Consider use of patient education channel and community programs.
    - Health care professional education: appropriate discharge for patients – case management, use standardized algorithm for aide in discharge location.

Teresa will try to locate and invite to the next meeting someone who is pediatric (infant) rehab focused.

Carolyn will try to locate a copy of Maryland’s statewide, standardized Discharge Screening tool.

Tony will send Stacy an electronic version of the grant he worked on last year for the CDC (through the Stimulus Funds) about Stroke Registries. He will also contact the individual that started the Stroke Registry in Tennessee to get more information and bring to the group.

Everyone will email Teresa about possible meeting dates. Meeting adjourned.

**Agenda**  
**Rehabilitation Subcommittee Meeting**  
**February 9, 2010**

**2:00 PM – 4:00 PM**

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- I. Review and Approval of Jan. 13th Subcommittee Minutes
  
- II. Discuss of Materials and Resources
  
- III. Discuss Next Steps and Timeline
  
- IV. Schedule Next Subcommittee Meeting
  
- V. Adjourn

**South Carolina Stroke Systems of Care  
Rehabilitation Subcommittee Meeting Minutes  
February 9, 2010**

The following is a brief summary of our meeting on February 9, 2010 from 2:00 p.m. to 3:00 p.m. in the 1st floor conference room.

**Present:**

Stacia Bell (DHEC)	Carolyn Bivona (AHA)
Stacy Fritz, PhD (USC), Chair	Teresa Robinson (DHEC)
Tina Shadley (DHEC)	Nancey Tsai, MD (via phone)
Stephanie Huston, RN (Intern)	

**Purpose:**

One of four sub committees charged with developing a prioritized list of items that would help stroke care via rehabilitation to be incorporated into a plan the SC Stroke Systems of Care Study Committee would submit to the Legislature in December 2010.

Stacy facilitated the meeting.

- Overview of the previous meeting and approved the minutes.
- Much discussion on the following questions:
  1. What can be asked of the state to address home care/home bound clients?  
Transportation is a problem with a lot of people and access in terms of geography.

Suggestions included: make reimbursement easier, reimburse travel expenses for therapists, and increase reimbursement for home services. Maybe give more therapies/visits. Provide county transportation.

2. How is homebound determined? Home Health regulations for Medicare transportation are limited – state and federal regulations are different – even state to state regulations are different. Some if there is no transportation, some if they are no longer home (perhaps at the store) when home health workers make their visits. Medicaid does not cover home therapy. This limitation is related to how the state interprets homebound. Need to evaluate how homebound is defined and maybe suggest changing this definition to cover more patients in need of home services.
3. How independent are they? Functional vs. appropriate movement. Lack of transportation is not a reason to be classified as homebound. Thus, geography is really

important. Recommend covering mileage for therapists and offering public transportation to help improve access to rural areas.

4. How can we prevent recurrent strokes? Reviewed statistics of stroke mortality. 200,000 out of 700,000 people that have strokes each year are recurrent strokes. If we can prevent the 200,000 recurrent strokes, how much money can the state save? Carolyn Bivona (AHA) and Teresa Robinson (DHEC) will research what the other complications of stroke patient's care. Suggested further evaluation of statistics by age group to show the amount of younger patients that have stroke and emphasize benefits of improving mortality in these patients. Use statistics to help emphasize the importance of access to rehab care and secondary stroke prevention. In the 2004 AHA update, SC was ranked 52<sup>nd</sup> in mortality due to stroke.
5. How can learned helplessness be combated? Suggested discharge education that addresses the reality of the disease and what realistic goals would be. Dr. Tsai is working on trying to script out discharge teaching related to this goal. Problem when patients think that once they get home they are going to be better.
6. How can education regarding resources be made available to patients? Tax exemptions in SC for stroke patients. Recommend developing a handbook to help guide these patients to appropriate resources and how to prepare the home. Often patients have come from traditional homes and have difficulty maintaining the home (learning the role/function that the stroke patient performed in the home). Recommended developing a public website with most recent information and then educating case manager/social worker/healthcare provider about this website that they can go to and print this information to give to their patients. This resource/education would help answer their question of "what next?" for stroke patients.
7. Recommended adding shortage of physiatrists under access to rehabilitation care.
8. How can patient/family questions best be addressed? Recommended stroke hotline to help answer patient questions or direct them to appropriate resources. Question of feasibility and staffing issues. Have disclaimer on hotline to direct patients to call 911 if they think they are having a stroke. This recommendation may fit best under access to rehabilitation care. DHEC has "The Care Line" which is a 24/7 hotline. These employees would need to be provided with information to answer these questions. Also, United Way has a hotline for crisis counseling and information for referrals.
9. Reviewed algorithm for guidelines for stroke discharge. (from PVA guidelines). Recommended that this may be a good resource in developing the handbook for patients. Stacy Fritz will send out link that goes to the full resource. **The link for the**

**PVA guideline for the discharge algorithm can be located at the following link web link: [http://www.healthquality.va.gov/Management\\_of\\_Stroke\\_Rehabilitation.asp](http://www.healthquality.va.gov/Management_of_Stroke_Rehabilitation.asp)**

10. How adequate is home support? Recommended including resources in handbook of where to go/ what community resources available to help in making home modifications/ where to find support groups/ grant funding for home modification assistance. Discussed how orientation to the reality and devastation of stroke impacts patient/family planning related to home modifications. Often patient/families do not think they need this assistance.
11. How can we improve home modifications prior to discharge? Recommended home evaluations prior to discharge with appropriate reimbursement. Add this under access to Rehab care.
12. What information should be mandated in reporting to the stroke registry? Importance of stroke registry emphasized (#1 priority). Suggested mandating top five and then recommending other data points to be included. Previously, a stroke registry proposal was submitted to CDC and approved but not funded. Recommended utilizing this document to help in formulating the registry plan.

- The template for recommendations and report example reviewed.
- Team to review other documents individually (full grant document).
- Dr. Tsai to contact Dr. McDonald again regarding pediatric stroke. Roger C. Peace Rehab Center for Pediatric Rehab. No pediatric rehab at MUSC.
- Carolyn tried to gain access to standardized discharge screening tool from Maryland. She was declined access, as it is in the final stages of approval.
- Will bring in Yarley Steedly to next meeting for policy legislation and advocacy.
- Khosrow Heidari, Epidemiologist Director, to bring in some statistics regarding pediatrics and stroke.
- Teresa will follow-up about format for presentation to full committee on March 19. **The subcommittee is encouraged to present a PowerPoint presentation to the full committee on their recommendation at the March 19, 2010 meeting.**
- Carolyn recommended bringing a stroke survivor to the next committee meeting. **Janet Walker, RN, stroke survivor will be attending the next meeting.**

The next meeting is scheduled for February 24, 2010 at 11:00 a.m. at 1800 St. Julian Place, 4<sup>th</sup> floor conference room, Columbia, SC 29204. Meeting adjourned.

Appendix G

