The State Senate

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FINAL REPORT
OF THE
JOINT STUDY COMMITTEE ON STATE STROKE SYSTEM OF CARE

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The Honorable Cecily Hill
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State Representative, District 152

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INTRODUCTION

During its 2007 Session, the General Assembly created the Joint Study Committee on State Stroke System of Care through the passage of Senate Resolution 30. The Committee's purpose was to study the system of stroke care existing in Georgia, including such components as primary prevention, notification/response of Emergency Medical Services (EMS), acute and subacute treatments of stroke, rehabilitation, and disparities in diagnosis and treatment.

Senator Don Thomas and Representative Don Parsons served as the Committee's Co-chairmen. The other members of the Committee were Senator Gail Davenport, Senator Lee Hawkins, Senator Horacena Tate, Senator Renee Unterman, Representative Ed Rynders, Representative Gene Maddox, Representative Nikki Randall, and Representative Cecily Hill.

The Committee held public hearings on four dates: on August 15, 2007, at the State Capitol; on September 20, 2007, in Augusta at the Medical College of Georgia; on October 18th, in Albany at Albany State University; and on November 28th, at the Capitol. During these hearings, the Committee heard testimony from the following individuals: Mr. Bill Burns, Georgia Advocacy Director for the American Heart Association; Ms. Alexandria Durkee, a student at Brenau Academy in Gainesville, Georgia; Dr. John Horan, Chief of the Chronic Disease, Injury, and Environmental Epidemiology Section of the Department of Human Resources' Division of Public Health; Dr. Michael Frankel, chief of Neurology for Grady Health System and the lead neurologist for the Georgia Coverdell Stroke Registry; Dr. Barry Goldstein, Provost of the Medical College of Georgia (MCG); Dr. David Hess, chairman of the MCG Department of Neurology; Dr. Hartmut Gross, Dr. Chris Hall, Dr. Jeff Switzer, and Dr. Fenwick Nichols, faculty members of the MCG Department of Neurology; Dr. Cesar V. Borlongan, Director of the MCG Department of Neurology Cell Transplantation; Dr. Zephyrinus Okonkwo, Chair of the Albany State University (ASU) Department of Mathematics and Computer Science; Dr. Khalil Dajani and Dr. Robert Steven, professors of computer science at ASU; Dr. Jacqueline Holt Grant, Director of the Southwest Georgia Public Health District; Dr. Doug Patten, Chief Medical Officer for Phoebe Putnam Memorial Hospital in Albany; Dr. James C. Metcalf, neurosurgeon at Phoebe Putnam Memorial Hospital; Russell McGuire, PhD, R.N., Chief Nursing Officer at Palmyra Medical Center; Mr. Shawn Burton, a Registered Nurse at Phoebe Putnam Memorial Hospital; Ms. Nikole Schale, Vice President of the Department of Advocacy for the American Heart Association, Greater Southwestern Affiliate; and Mr. Marty Billings of Georgia Emergency Medical Services.

BACKGROUND

Afflicting approximately 700,000 Americans each year, strokes continue to be a leading cause of mortality and adult disability in this country. According to the American Stroke Association (ASA), a division of the American Heart Association (AHA), approximately 150,000 people die from strokes each year, making it the third leading cause of death in the United States, behind only heart disease and cancer. Moreover, an estimated 15 to 30 percent of stroke victims become permanently disabled. As a result, the ASA has estimated that stroke-related medical costs in the United States will exceed $63 billion in 2007.

For Georgians, strokes are a particularly costly and deadly crisis. As part of the "stroke belt," Georgia and other southeastern states experience significantly higher rates of stroke and stroke mortality than the rest of the nation. In 2005 in Georgia, strokes were responsible for

approximately 22,000 hospitalizations and about $1.4 billion in direct and indirect costs.[1] In that same year, Georgia's stroke mortality rate was 21 percent higher than the national rate.[2] While no one knows for certain what accounts for the higher rates of strokes and stroke death in Georgia and other stroke belt states, possible explanations include disparities in access to medical care and higher incidences of behaviors associated with a higher stroke risk. Controllable risk factors for stroke include high blood pressure, tobacco use, high cholesterol, obesity, and physical inactivity. Furthermore, demographic differences also likely account for the higher stroke rates of certain areas. African-Americans are especially at risk for stroke, experiencing rates for first-time strokes and stroke mortality rates that are nearly twice as high as those for Caucasians, according to the National Stroke Association.

While the past decade has seen major advances in stroke prevention, treatment, and rehabilitation, translating these medical breakthroughs into clinical practice has often proven difficult. At the heart of this problem is the fragmented state of stroke care that exists in most of the United States. The ASA and other health advocacy organizations have long argued that inadequate integration among health care providers and institutions has made it impossible to deliver optimal stroke therapy to all segments of the population. The problem of fragmented care is particularly pronounced for rural communities, as these areas often do not have adequate access to neurologists and other critical resources. Thus, in recent years, many states, with the support of the ASA and other national groups, have been examining how to develop a coordinated system of stroke care, one that effectively integrates all of the key components of treatment, including prevention, community education, emergency medical services notification and response, acute care, subacute treatment and secondary prevention, rehabilitation, and continuous quality improvement.

COMMITTEE HEARINGS AND FINDINGS

Overview of the Challenges Facing Georgia

During the course of its study, the Committee heard from several experts who testified to the high toll strokes have on the American public in general and Georgians in particular. The number three killer in the United States, behind only heart disease and cancer, strokes are especially a problem to Georgia and other southeastern states. As part of the "stroke belt," our state experiences higher rates of incidences of strokes and higher stroke mortality rates than the national average. In Georgia, 12,000 to 14,000 new strokes occur annually, with close to 3,800 stroke deaths each year. This is a significantly higher mortality rate than the rest of the nation, although metro areas in the state have much better survival rates. As the Committee explored the reasons behind these disparities, it became clear that several factors contribute to stroke statistics in Georgia.

Lifestyle Factors Contributing to Stroke

A common theme throughout the Committee's hearings was how certain lifestyle factors can significantly contribute to a person's risk of acute stroke. According to Dr. John Horan of the Department of Human Resources' Division of Public Health, behaviors such as poor diet, sedentary lifestyle, and smoking are known to increase the likelihood of stroke. All of these risk factors are present among Georgia's population at disproportionately high rates, leading to greater numbers of strokes and stroke deaths.

[1] Data reported by the Georgia Department of Human Resources, Division of Public Health.
[2] Ibid

In particular, there is a strong correlation between high blood pressure and the likelihood of suffering an acute stroke, and several witnesses before the Committee stressed the importance of controlling hypertension. During her presentation at the October 18 meeting in Albany, Dr. Jacqueline Holt Grant, Director of the Southwest Georgia Public Health, discussed the importance of current measures to combat hypertension. The Stroke and Heart Attack Prevention Program (SHAPP) has been partially funded by the General Assembly since 1974 and assists uninsured Georgians with uncontrolled blood pressure with the purchase of medicines. According to Dr. Grant, 2005 research showed SHAPP to be cost-effective; under the program, she said, preventative care can be provided to a participant for approximately $55 per year. While programs such as SHAPP have undoubtedly aided efforts to reduce strokes, too many Georgians still fail to receive the treatment necessary to control their hypertension and other risk factors.

Public Awareness of the Signs and Symptoms of Strokes

In the past several years, the medical community has achieved several advancements in stroke treatment and rehabilitation. However, the Committee found, optimal care for stroke depends on patients receiving treatment as soon after the onset of symptoms as possible. Many Georgians who suffer a stroke fail to seek timely medical attention because of a lack of recognition of the signs of a stroke or of the vital importance of seeking immediate medical intervention. According to the Centers for Disease Control (CDC), only about 17 percent of Americans recognize the major warning signs of a stroke and know to contact 911 immediately.

During their presentation at the Committee's Albany meeting, Dr. Doug Patten, Chief Medical Officer for Phoebe Putnam Memorial Hospital, and Dr. James C. Metcalf, a neurology surgeon at Phoebe, stressed the importance of stroke victims receiving prompt treatment and warned that too many Georgians do not understand how to recognize a stroke or appreciate the vital need to seek immediate emergency medical attention upon the onset of stroke symptoms. Unlike heart attacks, said Dr. Metcalf, strokes do not typically cause pain that would prompt a person to immediately go to an emergency room, resulting in critical delays in seeking treatment.

Although the consequences of a stroke can be dire, Drs. Patten and Metcalf said that many stroke victims can still achieve substantial recovery with proper care. Post-stroke rehabilitation is often a years-long process that may involve treatment from physical, occupational, or speech therapy that may take place in hospital, skilled nursing facilities, or home settings. One common myth, said Dr. Patten, is that a patient's post-stroke condition is unlikely to improve after the first few weeks. While it is true that patients that rapidly recover function are more likely to experience a greater level of recovery overall, there are measurable benefits to long-term therapy. Dr. Patten cited a Finnish study that demonstrated that money devoted to rehabilitation reduces the overall care costs of stroke victims over time.[3] Despite this optimism, however, they and other experts emphasized the importance of receiving prompt medical attention, as a patient's overall prognosis largely depends on the extent of the damage that has taken place within the first few hours of the onset of a stroke.

Access to Quality Stroke Care

Even in situations where stroke victims recognize their symptoms and go immediately to an emergency room, however, the quality of the care they receive will often still be far from ideal.

[3] Faculty of Medicine of the University of Kuopio for public examination in Auditorium L1, Canthia Building, University of Kuopio, on Friday 29th December 2000, at 12 noon. Kauko Pitkänen Doctoral dissertation.

This is because in many areas of the state, outside of a major metropolitan area, patients have limited access to hospitals equipped to deliver the most modern stroke treatments. According to Dr. David Hess of the Medical College of Georgia, it is critical for a stroke patient to be evaluated by a neurologist within three hours of onset of symptoms. Because of the lack of neurologists and stroke specialists in rural areas, many of Georgia's citizens are highly unlikely to receive such an evaluation. Consequently, these patients do not have the opportunity to receive potentially life-saving treatments such as Tissue Plasminogen Activator (tPA), the only drug currently approved by the FDA for the treatment of ischemic strokes. In fact, according to Dr. Hess, many pharmacies for rural Georgia hospitals do not even keep this clot-busting medication in stock. In all, only about 2 percent of Georgia stroke patients currently receive tPA.

Further complicating matters, according to many of the Committee's witnesses, emergency response personnel are often ill-prepared to deal with stroke victims. In some cases, paramedics fail to recognize the symptoms of a stroke, but even when they do, these first responders frequently do not deliver the patients to a facility that is equipped to deliver the best available stroke treatments. Even some emergency room personnel are inadequately trained in stroke protocol, resulting in stroke patients having to wait too long to receive care. During the Committee's first hearing, this problem was illustrated in the account that Ms. Alexandria Durkee, a student at Brenau Academy in Gainesville, gave of the ordeal of her uncle after he suffered from a stroke; following a delayed response from EMS, he did not receive prompt attention at the Emergency Room and is now completely paralyzed.

Demographic Factors

A topic of particular importance to the Committee has been the disparities in stroke statistics among various racial and socio-economic groups. According to the National Stroke Association, African-Americans experience rates of strokes and stroke deaths that are nearly twice that of Caucasians[4]. The CDC reports that black men are 60 percent more likely to die from a stroke than their white counterparts. Georgia has the fourth largest population of African-Americans[5], making these disparities a critical issue for this state.

At the Committee's hearing in Albany, Dr. Jacqueline Holt Grant, Director of the Southwest Georgia Public Health District, addressed the Committee again to discuss demographic disparities in stroke care. As with other speakers, Dr. Grant noted the disparate impact strokes have on states such as Georgia that belong to the Stroke Belt. For Georgia, North Carolina, and South Carolina, the "buckle" of the stroke belt, the stroke mortality rate is two to three times that of the national average. While mortality rates from strokes have declined in the last few decades, Georgia stroke victims are still 21 percent more likely to die than Americans overall, according to 2005 data. The 14 counties that comprise the Southwest Georgia Public Health District experience stroke mortality rates that are comparable to the rest of the state, but a significant disparity is revealed once the data is broken down by race. According to data from DHR's Division of Public Health, rural African-Americans have significantly higher rates of stroke deaths compared to rural whites. Although socio-economic disparities do contribute to the gap between blacks and whites, Dr. Grant explained, they are not the sole factor; stroke statistics show that low income, rural whites still have lower stroke mortality rates than their black counterparts. Other possible factors contributing to the gap discussed by Dr. Grant included

[4] See the National Stroke Association's website at http://www.stroke.org/site/PageServer?pagename=AAMER.

[5] As reported by the U.S. Department of Health and Human Services' Office of Minority Health. See http://www.omhrc.gov/templates/browse.aspx?lvl=2&lvlID=29.

biological factors/genetics, cultural differences, and racism. After reviewing the data collected by the District, Dr. Grant has come to the conclusion that race is the dominant factor for the rural/metro gap in stroke.

Solutions

While studying the problems associated with strokes in Georgia, the Committee examined several initiatives aimed at creating a more effective system of care. Among these efforts, the Committee studied federal programs such as the Paul Coverdell Acute Stroke Registry, as well as the research and development of new stroke therapies and approaches to delivering care. In particular, the Committee closely examined recommendations from the American Heart Association and medical professionals on creating a more uniform and efficient system of care for the entire state.

The Paul Coverdell Acute Stroke Registry

One of the most prominent programs aimed at combating strokes is the Coverdell Acute Stroke Registry, a federally funded project implemented by the Centers for Disease Control (CDC). Named in honor of U.S. Senator Paul Coverdell, who passed away in 2000 as a result of a massive stroke, the Registry exists to gather data that may be used to measure and improve the quality of stroke care. At the Committee's first hearing, Dr. Horan of DHR's Division of Public Health discussed our state's involvement with the program. Georgia is one of four states to have continuously received funding from the CDC since 2001[6], and Dr. Horan reported that 49 hospitals throughout the state currently participate. Benefits for Coverdell Registry affiliated hospitals include monthly conference calls with other participating facilities, quarterly in-person consultations from the AHA, and staff training on emergency assessment and management of acute strokes from the University of Miami's Advanced Stroke Life Support (ASLS) Emergency Medical Skills Training Course, as well as real-time feedback related to how well the hospital is meeting Quality of Care Indicators.[7] Considering the opportunities afforded hospitals that are part of the program, increased participation among the state's hospitals in the Coverdell Registry would greatly benefit stroke care in Georgia. Later in the meeting, when asked why more Georgia hospitals do not participate, Dr. Michael Frankel, Chief of Neurology for Grady Health System and the lead neurologist for the Georgia Coverdell Stroke Registry, said that hospitals do not or cannot participate because of a lack of financial resources, as funding available from the CDC is limited. Moreover, some facilities lack sufficient numbers of personnel available to perform the required data collection. In all, he said, approximately 25 to 35 percent of hospitals have declined to participate in the Coverdell Registry.

At its Albany hearing, the Committee heard the testimony of Russell McGuire, PhD, R.N., Chief Nursing Officer at Palmyra Medical Center, who spoke on his hospital's experience as a participating facility of the Coverdell Stroke Registry. He began his presentation with a description of the near-term goals of the Registry, which include increasing the number of participating states, developing and disseminating the best practices for stroke care, encouraging the development of statewide systems, and communicating with major stakeholders. Palmyra, he explained, began its involvement with the Coverdell Registry in 2006, as a volunteer facility. In the course of its involvement with the Registry, Palmyra collects stroke care related data that is used to compare itself with other Coverdell affiliated hospitals.

[6] The other three states are Massachusetts, Michigan, and Ohio.

[7] See the Department of Human Resources, Division of Public Health, website at http://health.state.ga.us/epi/cdiee/strokregistry.asp.

Other benefits reaped by Palmyra for its participation include opportunities to track quality of care and outcomes, monthly teleconferences with other Coverdell Registry hospitals, participation in the Advance Stroke Life Support, and participation in Pursuit of Excellence workshops. Mr. McGuire closed his presentation with an overview of solutions for rural communities in battling stroke, including greater access to comprehensive programs such as Coverdell, increased resources such as healthcare, reimbursement, and capital, and more education for the public on preventing strokes.

Recommendations of the American Heart Association Task Force

The Committee's initial meeting, held at the Capitol on August 18, focused on recommendations from the American Heart Association for stroke care and on current efforts in Georgia to realize these goals. To lead into these topics, Dr. Frankel of Grady Health System and the lead neurologist for the Georgia Coverdell Stroke Registry gave an overview of how an ideal system of stroke care would operate. Illustrating what should happen when a stroke victim receives optimal treatment, Dr. Frankel highlighted areas of care that are critical to an efficient stroke treatment system. The first area of care would be primary prevention, which includes public awareness of stroke symptoms and of the importance of seeking medical help immediately. The next stage of care he highlighted was EMS, which should ideally entail enhanced 911 with priority stroke dispatch, paramedics trained to properly access stroke patients, and the capacity to transport a patient to the nearest stroke center hospital. Next would come acute care; ideal emergency room treatment would involve the necessary assessment and a CT scan performed promptly to allow enough time for the best treatment to be administered within an early treatment window. The acute treatment phase would be completed with the transfer of a stroke patient to a neurological unit, where the next area of care, secondary prevention, would include screening and referral for rehabilitation, as well as education for the patient on reducing the risk of a second stroke. In the final areas of care highlighted by Dr. Frankel, outpatient and rehabilitation, a patient's hospital team would make contact with his or her primary care physician to ensure a healthy transition, and the patient would continue on the advised rehabilitation regimen in the weeks and months that follow his or her discharge.

Dr. Frankel next discussed the AHA's *Recommendations for the Establishment of Stroke Systems of Care*, a set of guidelines published in February 2005 that call for the building of coordinated stroke systems of care. According to the AHA's recommendations, an optimal stroke system would include certain key components: primordial and primary prevention; community education; notification and response of emergency medical services; acute stroke treatment; subacute stroke treatment and secondary prevention; rehabilitation; and continuous quality improvement activities. In 2005, the Georgia Task Force was assembled to implement the AHA's recommendations; entities involved in the task force include the Georgia Department of Human Resources, the Georgia Hospital Association, the Georgia Emergency Management Association, the Georgia chapter of the American College of Emergency Physicians, the Georgia Neurological Association, and the Georgia Hospital Association Rehab Council. Accomplishments of the Georgia Task Force so far, reported Dr. Frankel, include a signs and symptoms campaign, Acute Stroke Life Support Training for three EMS regions and for Coverdell associated hospitals, an increase in the number of E911 centers and wireless 911 counties, a survey of existing EMS protocols, the distribution of Acute Stroke Treatment Program kits and rehabilitation indicators to all Georgia hospitals, and increased education for stroke survivors. For the coming year, the task force aims to continue to conduct surveys of protocols and resources of Georgia's hospitals, EMS, and rehabilitation facilities, as well as continued public education efforts.

Telemedicine

At its second meeting, held at the Medical College of Georgia (MCG) in Augusta, the Committee heard from several members of that institution's faculty on current research and developments in the treatment of stroke care patients, particularly those in rural communities. After opening remarks from MCG Provost Dr. Barry Goldstein, Dr. David Hess, chairman of the Department of Neurology, along with MCG Department of Neurology faculty members Dr. Hartmut Gross, Dr. Chris Hall, Dr. Jeff Switzer, and Dr. Fenwick Nichols, gave a presentation focusing on the development of REACH, a telemedicine program that was designed by Dr. Hess and other MCG neurologists. One of the most significant complications in the treatment of stroke patients is the lack of neurologists and stroke specialists in rural areas. According to Dr. Hess, it is critical for stroke victims to be seen by a neurologist within the first three hours of the onset of symptoms. It is during this time that the decision must be made whether to administer Tissue Plasminogen Activator (tPA), the only drug currently approved by the FDA for the treatment of ischemic strokes. A thrombolytic agent (clot-busting drug), tPA poses an increased risk of bleeding but has been proven to significantly reduce permanent disability among stroke patients. With little or no local access to a facility equipped to administer tPA, however, stroke victims outside of metropolitan areas have a slim chance of receiving this treatment. Attempts to either have a neurologist transported to a remote hospital or to transfer a rural patient to a facility with a neurologist on call frequently fail to meet the three-hour deadline. As a result, only about two percent of Georgia stroke patients receive tPA.

In an effort to broaden access to tPA treatments, MCG neurologists developed REACH ("**R**emote **E**valuation of **A**cute Is**CH**emic Stroke"), a hub and spoke network that allows neurologists to remotely evaluate stroke patients who would otherwise not receive timely treatment. Under the REACH model, when a stroke patient arrives at a spoke hospital, the facility calls to alert an on-call neurologist affiliated with the hub hospital. Using a web browser and webcam, the neurologist can then diagnose and recommend treatment with a two-way consultation. Spoke hospitals are equipped with portable stations that allow the attending physicians and patient to see and interact with the remote neurologist.

The REACH system was first implemented in 2003 in East Georgia, with MCG serving as the hub for nine rural spoke hospitals: Washington Regional Medical Center in Sandersville; McDuffie Regional Hospital in Thompson; Emmanuel County Hospital in Swainsboro; Jenkins County Hospital in Millen; Wills Memorial Hospital in Washington; Morgan Memorial Hospital in Madison; Jefferson County Hospital in Louisville; Elbert County Hospital in Elberton; and Cobb Memorial Hospital in Royston. Since then, according to Dr. Hess, these rural hospitals have seen significant improvements in care, with approximately 100 patients having been treated with tPA, and the average "onset to treatment" time being significantly reduced. Prior to 2003, about two-thirds of stroke victims who had been transferred to MCG from a rural emergency room arrived after the three-hour interval in which tPA can be administered. Thanks to REACH, reported Dr. Hess, stroke patients at the nine spoke hospitals in East Georgia are now evaluated and treated within an average time of 129 minutes.

The REACH presentation included a live mock consultation between Dr. Gross and a "patient" (played by a nurse) at McDuffie Hospital. Committee members watched as Dr. Gross went through the diagnostic process for a stroke patient and recommended treatment procedures. At rural spoke hospitals such as McDuffie, all the necessary equipment is contained on a cart that can be easily moved throughout the hospital. As the Committee members saw, the consulting physician is able to view live images of the patient being examined, just as the patient and attending physician are able to see the remote neurologist almost as if he were in the room with them.

During the presentation, Dr. Hess and the other neurologists emphasized the practical advantages of the REACH system. Because REACH is a web turnkey based service, hub hospitals are not required to use any special software or hardware. This allows physicians from hub facilities to perform consultations using any laptop/PC, webcam, and broadband internet connection, anywhere in the world. As an example, Dr. Gross recounted an incident in which he performed a stroke consultation while in a hardware store. Moreover, since REACH is centralized, updates for new treatments would be easy to integrate into its system. The MCG neurologists also explained how REACH provides a financial incentive for hub hospitals to work with rural facilities. The two-way web camera is imperative to insurance reimbursement. Furthermore, Dr. Hess said, hospitals treating stroke patients receive three times more in payment when they administer tPA.

REACH has proven to be such a successful model that health systems in other states have sought to utilize this technology. In 2006, an initiative of the New York Health Department implemented REACH throughout the state, connecting 50 rural hospitals all across New York to neurologists at hub facilities. Dr. Hess also reported that REACH is currently used in Pensacola, Florida, and the surrounding area, and there are plans to implement the system in parts of South Carolina.

In a second presentation, Dr. Hess outlined his vision for an expanded REACH system in Georgia. A lack of neurologists in rural areas is a problem throughout the state, so all regions of the state could greatly benefit from the expansion of REACH. Dr. Hess expressed his hope for an increase in hub hospitals and the development of a statewide bank of specialists to provide acute stroke call coverage. To provide adequate coverage to all Georgians, Dr. Hess would like to see at least 50 to 70 spoke hospitals. He also would like to see the development of a database in collaboration with the Georgia Coverdell Registry to evaluate and track the system. After his presentation, Mr. Marty Billings of Georgia Emergency Medical Services voiced his support of a statewide REACH System. Such a telemedicine system would greatly improve stroke care access for all Georgians and would have the advantage of keeping EMS resources local, as it would limit the need for ambulances to cross county lines.

Research

While meeting in Augusta, the Committee also heard from Cesar V. Borlongan, Ph.D., Director of MCG Department of Neurology Cell Transplantation, on MCG's ongoing research on stem cell therapy for stroke. He detailed his research team's work to develop treatments for stroke victims and others suffering brain injuries via transplantations of adult stem cells obtained from bone marrow (none of the research involves embryonic stem cells). Currently, Dr. Borlongan's laboratory is conducting experiments on rodents to develop effective and minimally invasive transplantation procedures that could be applied in a clinical setting to improve neurological damage in patients. While such therapies hold much promise, Dr. Borlongan stated that funding for this research is scarce. Current sources of funding include National Institutes of Health grants and MCG Department of Neurology funds. Dr. Borlongan cited Proposition 71 in California as an example of effective public funding for stem cell funding and expressed his hopes that such an initiative could happen in Georgia. Proposition 71 was passed by voters in 2004 and established the California Institute for Regenerative Medicine, which is authorized to issue up to $3 billion in grants, funded by public bonds, for stem cell research. Such an initiative in Georgia, he said, would be a great boon to scientific research in our state.

Stroke-Fighting Efforts in Southwest Georgia

At its third meeting, held at Albany State University (ASU) on October 18, the Committee heard

testimony on several local initiatives in Southwest Georgia seeking to improve the health of area residents in general and aimed at improving stroke care in particular. The hearing began with a presentation by Dr. Zephyrinus Okonkwo, Chair of ASU's Department of Mathematics and Computer Science, Dr. Khalil Dajani, Professor of Computer Science, and Dr. Robert Steven Owor, Professor of Computer Science, on the technical assistance their university, in partnership with Darton College, has been providing to the Southwest Georgia Public Health District (the District). The professors walked Committee members through the District's website[8] and explained how, through software developed by ASU, the District has been able to collect a great deal of demographic data. Also during this presentation, District Director Dr. Grant briefly spoke to explain the District's "Hooked on Health" program, which encourages wellness in the workplace; components of the program include smoking cessation, weight loss, and exercise support for district employees.

Later in the day, the Committee heard a presentation by Mr. Shawn Burton, a Registered Nurse at Phoebe Putnam Memorial Hospital, on the Southwest Georgia Stroke Coalition. Formed in response to the AHA/ASA's 2005 findings that Southwest Georgia had high stroke levels but limited resources, the Coalition held its first meeting in June 2005 and included representatives from local hospitals and clinics, EMS, the Georgia Rural Health Association, the Spring Creek Health Cooperative, and the AHA/ASA. Among the most significant recent developments for stroke care in Southwest Georgia, according to Mr. Burton, was the Acute Stroke Life Support Training held in Camilla, Georgia in May 2007. With financial support from the Southwest Georgia Public Health District, instructors from the University of Miami trained 40 physicians, nurses, and paramedics on stroke recognition and stroke treatment protocols during a day-long workshop. These participants were then charged to each hold a training program within six months; since that time, Mr. Burton reported, over 100 people have received this life-saving training.

Throughout the course of the meeting, Committee members sought feedback from speakers on how the General Assembly might improve the state of stroke care in Southwest Georgia and throughout the state. Dr. Grant and others stressed the need for better preventative care. Ideas for legislative action that were cited included increased funding for SHAPP, the Smokers' Quit Line, funding for a Southwest Georgia REACH program, and tax incentives for companies who promote worksite wellness. Dr. Patten stated that two actions that the General Assembly could take that would have a significant impact on stroke prevention would be additional assistance with drug access (such as through SHAPP) and an increase in the tobacco tax.

Tiered Certification System

At the Committee's final meeting, held at the State Capitol, Mr. Bill Burns of the American Heart Association appeared to discuss AHA's goals for possible legislation in Georgia and measures that other states have taken in an effort to create a more effective system of stroke care. Fragmentation within states' stroke care systems, said Mr. Burns, is the greatest barrier to providing the best stroke care possible. The AHA, he reported, has thoroughly studied the issue of systems of care and has devised a list of elements that should be included in an ideal care system. The focus of such a model system would be a certification program to identify hospitals particularly equipped to offer optimal care to stroke patients, preferably a tier certification system that would indicate the level of stroke care available. In model legislation provided by the AHA, three designations of stroke centers would exist: (1) primary stroke centers, which would require a hospital to be certified by the Joint Commission on Accreditation of Health Care Organizations

[8] http://rtn.darton.edu/phirn.

(JCAHO) as a primary stroke center[9] or at least meet certain criteria such as constantly maintaining an acute stroke team; (2) comprehensive stroke centers, which would be awarded to hospitals that exceed the requirements of a primary stroke center (JCAHO does not currently offer a comprehensive designation); and (3) support stroke centers, a designation that would be bestowed upon rural facilities that offer timely access to a limited number of stroke care services and that coordinate with comprehensive or primary stroke centers.

Mr. Burns reported that some other states have adopted certification programs tied to the certification requirements of JCAHO, while others have devised their own certification programs. In some cases, states rely on hospitals' self-reported data in awarding a stroke center designation, but Mr. Burns stated that AHA prefers a more rigorous certification scheme than that. He cited Florida, which has adopted a tier system which recognizes primary stroke centers based on JCAHO certification and provides for the designation of comprehensive stroke center designations, and Massachusetts, which has implemented a tier system that calls for a little less than the standards of JCAHO, as examples of effective stroke care systems. Certification programs such as these, Mr. Burns reported, have seen significant improvement in stroke care, with increases in the number of stroke patients receiving thrombylotic treatment.

Mr. Burns also addressed the role telemedicine could play in a stroke care system. REACH has proven to be effective but has only been implemented on a limited basis in Georgia. MCG remains the sole hub, and some of its spoke hospitals are actually quite far away, he said. Many more hub hospitals would be needed for a statewide REACH system to be successful. Mr. Burns reported that it costs a hospital approximately just under $10,000 every two years to receive and maintain JCAHO primary stroke center certification. For a tiered certification program, with or without a telemedicine component, to be effective, it is vital to increase the number of facilities throughout Georgia willing and able to receive primary stroke center designation.

With a state certification program, medical facilities would have a list of primary stroke center hospitals that should be the first choice for stroke care. On this point, EMS personnel would need to be trained to know which facilities are most suitable to take stroke victims. Thus, the model legislation presented by AHA includes protocols to be followed by EMS providers throughout the state. Committee members expressed their concern over the current state of EMS in Georgia in regards to stroke care, with Chairman Rynders asking Mr. Burns how EMS training could be improved. Mr. Burns cited the success of the recent training program that occurred in the Southwest Georgia Public Health district (see previous section) as an example of the types of steps needed to improve emergency care for stroke victims. This program cost approximately $20,000, and according to a representative of the Division of Public Health, training of this sort should be repeated every two to three years to be most effective. Later in the Committee meeting, Mr. Billings of Georgia Emergency Medical Services (EMS) spoke briefly to acknowledge the Committee's concerns over EMS training. Traditionally, education for paramedics has focused on trauma care, but Mr. Billings expressed EMS's desire to work with

[9] The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) provides a formal process for the certification of hospitals as Primary Stroke Centers. Currently, 17 Georgia entities hold this designation: Atlanta Medical Center, DeKalb Medical Center, Emory University Hospital, Grady Health System, Gwinnett Hospital System, Inc., North Fulton Medical Center, and Piedmont Hospital, Inc., all in the Atlanta area; Doctors Hospital of Augusta and MCG Health, Inc., in Augusta; Floyd Healthcare Management, Inc., in Rome; Habersham County Medical Center in Demorest; Hamilton Medical Center in Dalton; Memorial Health University Medical Center and St. Joseph's/Candler Health System in Savannah; St. Mary's Health Care in Athens; and St. Francis Hospital, Inc. and the Medical Center, Inc., in Columbus.

communities to improve awareness among EMS personnel on how to recognize and appropriately handle stroke patients.

That a statewide certification program could make a significant difference in stroke care was a theme that was visited upon by many of the Committee's witnesses throughout its study. During its October 18 meeting in Albany, Ms. Nikole Schale, Vice President of the Department of Advocacy for the AHA, Greater Southeastern Affiliate briefly spoke about the Florida Stroke Act. Enacted in 2004, the Florida Stroke Act (S.B. 1590) created the first statewide emergency stroke system in the nation. By establishing a system of primary stroke centers, this legislation sought to ensure that paramedics throughout Florida would transport stroke patients to hospitals equipped to provide appropriate treatment. According to Ms. Schale, the Florida Stroke Act has achieved measurable success, having raised the level of stroke care by three percent. Because of this legislation, she said, the number of stroke centers within the state has increased to a total of 79. Such an increase in care in Georgia would undoubtedly benefit the citizens of this state.

CONCLUSION AND RECOMMENDATIONS

During the course of its study, the Committee sought to devise a comprehensive approach to stroke care in Georgia, one that addresses the many facets of this public health threat. Such an approach must not only focus on delivery of quality care to stroke victims, but must also address the factors that lead to stroke. Based on testimony from medical experts across Georgia, the Committee finds that prevention is a keystone of any successful system of stroke care. While the reasons behind the disproportionate impact of stroke in Georgia are many and complex, the state's higher rates of controllable risk factors - including smoking, obesity, hypertension, and sedentary lifestyle - clearly contribute significantly to the toll that strokes take on the citizens of this state. Although our state's population exhibits these risk factors at unfortunately high rates, the Committee is optimistic that increased public awareness on the dangers of these behaviors can, over time, substantially reduce the number of strokes in Georgia. Efforts to educate the public should seek to reach all segments of our citizenry, but the Committee believes that it is especially important to foster lifelong healthful habits amongst Georgia's children. As demonstrated by the alarming increases in childhood obesity and juvenile diabetes in Georgia, far too many of the state's young people are on track to grow into adults with heightened risks for many medical ailments, not the least of which is stroke. Thus, the Committee believes that more vigorous health education programs are needed in our schools. Such programs should include increased emphasis on physical education, abstinence from tobacco products, and the promotion of healthy dietary practices.

In addition to reducing risk factors for stroke among Georgians, the Committee believes that it is imperative to ensure that all stroke victims receive the most prompt and highest quality treatment available. In all of the Committee's hearings, health officials emphasized the vital importance of seeking medical attention after suffering a stroke as swiftly as possible. Clot-busting drugs such as tPA have been proven to be very effective in mitigating the effects of a stroke, but most of the state's stroke victims fail to arrive in an emergency room equipped to administer this treatment within the necessary three-hour timeframe. This fact suggests two obstacles for stroke care in Georgia. First, too many Georgians fail to recognize the symptoms of stroke and do not appreciate the urgent need to seek emergency medical help immediately. To address this dilemma, the Committee believes that increased public education on the signs of stroke and of the appropriate response would be highly beneficial. Secondly, many Georgians do not have adequate access to the best available stroke treatments. While a

person suffering a stroke in a metropolitan area such as Atlanta is in a good position to receive the best possible treatment, residents of many rural areas have little or no access to the services of a neurologist and are unlikely to be treated in a facility that can administer tPA. This dilemma is exacerbated by the fact that emergency response personnel are not always fully informed on the best approach to handling stroke patients; in some cases, a patient would be better served by bypassing the nearest hospital in favor of a facility that can offer more advanced stroke care. Moreover, health consumers may themselves be unaware of the disparities in available stroke treatments that may exist among various facilities.

These problems suggest a lack of coordination among medical providers and institutions which undermines delivery of the most modern stroke therapies available. In response, the Committee recommends establishing, through legislation, a certification program to designate stroke centers throughout the state, based on the level of care available. The Committee believes that identifying facilities equipped to treat stroke patients, based on the level of services offered, is a key step in promoting a coordinated approach to stroke care in Georgia. Ideally, a certification program should at least provide designations for primary stroke centers - those hospitals that meet or exceed the criteria certification by the Joint Commission on Accreditation of Healthcare Organizations - as well as for support centers that will coordinate with primary stroke centers to provide timely access to a limited number of stroke care services for underserved areas. Furthermore, the Committee has found that telemedicine services such as REACH hold great potential for providing quality stroke treatments to rural patients who would otherwise fail to receive adequate care. Thus, the Committee believes that facilities served by these telemedicine programs should also be recognized by the certification program, possibly with their own distinct designation.

To be beneficial, such a tiered certification program must serve as a guide for where to take a stroke patient. To this end, the Committee believes strengthening education for EMS personnel on stroke care protocol is imperative. In addition to increased training on recognizing the signs and symptoms of a stroke, EMS providers should receive information on which hospitals in their area are certified as primary stroke centers. Therefore, the Committee recommends that the General Assembly enact legislation related to EMS protocol for handling stroke victims; among other details, such legislation should address the circumstances under which an EMS provider is to bypass health care facilities in order to deliver a patient to a primary or support stroke center.

However, protocol for delivering patients to stroke centers will not have much effect if there are few centers available. The Committee recognizes that efforts to forge a more coordinated system of stroke care depend on increasing the number of stroke centers throughout the state. To encourage the certification of primary and support stroke centers, the Committee recommends the appropriation of funds for the purpose of awarding grants to acute care hospitals in Georgia seeking such designations.

As demonstrated through this Committee's findings, strokes are one of the most devastating public health problems faced by Americans. While strokes will undoubtedly continue to pose substantial challenges for Georgia's medical community, the Committee believes that the implementation of these proposals is an important step toward creating the most effective system of stroke care possible.